SIXTH FIVE-YEAR REVIEW REPORT FOR IRON HORSE PARK SUPERFUND SITE OPERABLE UNITS 1, 2, 3, AND 4 NORTH BILLERICA, MASSACHUSETTS

Prepared by

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LIST OF ABBREVIATIONS & ACRONYMS

µg/dL	micrograms per deciliter
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
1,1-DCE	1,1-Dichloroethene
1,2-DCA	1,2-Dichloroethane
ALM	Adult Lead Methodology
AOC	Area Of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
ATV	All-Terrain Vehicle
AWQC	Ambient Water Quality Criteria
B&M	Boston and Maine
BLL	Blood Lead Level
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMR	Code of Massachusetts Regulations
CFR	Code of Federal Regulations
COC	Chemical of Concern
CSX	CSX Transportation, Inc.
cm^2	Centimeter squared
EPA	United States Environmental Protection Agency
ERA/WRIA	Ecological Risk Assessment/Wetlands Remedial Investigation Addendum
ESD	Explanation of Significant Differences
FS	Feasibility Study
FYR	Five-Year Review
GCB	Groundwater Compliance Boundary
HFPO-DA	Hexafluoropropylene oxide-dimer acid
HQ	Hazard Quotient
ICs	Institutional Controls
ICL	Interim Cleanup Level
IEUBK	Integrated Exposure Uptake Biokinetic Model
IRIS	Integrated Risk Information System
LOEC	Lowest Observed Effects Concentrations
MassDEP	Massachusetts Department of Environmental Protection
MATC	Maximum Acceptable Toxic Concentration
MBTA	Massachusetts Bay Transportation Authority
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/cm^2	milligrams per centimeter squared
mg/kg	milligrams per kilogram
MMCL	Massachusetts Maximum Contaminant Level
MNA	Monitored Natural Attenuation
MNR	Monitored Natural Recovery
MRL	Minimum Risk Level
NAUL	Notice of Activity and Use Limitation
NCP	National Contingency Plan
ng/L	Nanograms per Liter
NHANES	National Health and Nutrition Examination Survey
NOEC	No Observed Effects Concentration
NPL	National Priorities List

NRWQC	National Recommended Water Quality Criteria
O&M	Operation and Maintenance
OLEM	Office of Land and Emergency Management
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	Perfluorobutanesulfonic acid
PFDA	Perfluorodecanoic acid
PFHpA	Perfluoroheptanoic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexanesulfonic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
POTW	Publicly Owned Treatment Works
ppb	Parts Per Billion
PPRTV	Provisional Peer-Reviewed Toxicity Value
ppt	Parts Per Trillion
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSL	Regional Screening Level
SD	Settling Defendant(s)
SL	Screening Level
SWDA	Solid Waste Disposal Act
TCE	Trichloroethene
TDS	Total Dissolved Solids
TSCA	Toxic Substances Control Act
TPH	Total Petroleum Hydrocarbons
UU/UE	Unlimited Use and Unrestricted Exposure
VC	Vinyl Chloride
VOC	Volatile Organic Compound
WQC	Water Quality Criteria

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 Code of Federal Regulations [CFR] Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the sixth FYR for the Iron Horse Park Superfund Site (the Site). The triggering action for this statutory review is the fifth FYR, which was signed on September 20, 2018. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of four operable units (OUs), and all four OUs will be addressed in this FYR. The remedy for OU-1, the B&M (Boston & Maine) Wastewater Lagoons, initially was bioremediation, but was changed by an Explanation of Significant Differences (ESD) in 1997 to removal and off-site asphalt batching of contaminated soils. The OU-1 remedy was completed in 2003 and subsequent sampling has documented that the remedial action achieved unrestricted use standards. EPA continues to evaluate the OU-1 remedy during the FYR process in the context of revised soil cleanup levels. The remedy for OU-2, the Shaffer Landfill, included capping of the landfill and long-term environmental monitoring. Construction of the OU-2 remedy was completed in 2003. The remedy for OU-3, the remaining source areas at the site, involves capping of landfills and contaminated soil at six different areas of concern (AOCs), as well as maintenance of a landfill cap at a seventh area of concern. Construction of the OU-3 remedy was fully completed in 2022. The remedy for OU-4, which consists of site-wide surface water, sediment, and groundwater (except for groundwater associated with OU-2), includes excavation of sediments from B&M Pond, Monitored Natural Recovery (MNR) for sediments in Unnamed Brook and an additional unnamed waterway, stormwater runoff controls, and long-term groundwater and surface water monitoring, including installation of sentinel monitoring wells. Construction of the OU-4 remedy was completed in 2021.

The Iron Horse Park Superfund Site FYR was led by Christopher Kelly of EPA, Remedial Project Manager for the Site, with support from AECOM, contractor to EPA Region 1. The review began on January 11, 2023.

Site Background

The Iron Horse Park Superfund Site, located in Billerica, Massachusetts near the Tewksbury town line (Figure 1), is a 553-acre industrial complex which includes manufacturing and rail yard maintenance facilities, open storage areas, landfills, and former wastewater lagoons. A long history of activities at the site, beginning in 1913, has resulted in the contamination of soil, groundwater, sediment, and surface water. The Site is bounded on the north by the Massachusetts Bay Transportation Authority (MBTA) railroad tracks, on the west by High Street and an auto parts facility, on the east by Gray Street, and on the south by a wetland, Pond Street, and the Middlesex Canal (Figure 1). The Middlesex Canal flows through the site to the east, where it joins Content Brook at the southeastern edge of the Shaffer Landfill. There are abundant wetlands at the site. Groundwater flows in both the overburden and bedrock at the site and flow direction is generally from the southwest to the northeast. Investigation data indicate that overburden groundwater discharges to surface water at the Site.

The Iron Horse Park Superfund Site was historically surrounded by residential properties and wetlands. This land use remains today and is expected to continue in the future. The majority of the site itself has been historically utilized for commercial and industrial purposes, with an emphasis on rail-related activities. The commercial and industrial uses at the site are expected to continue in the future.

The Site was listed on the National Priorities List (NPL) in 1984. In 1984, prior to final placement on the NPL, EPA conducted a removal effort, capping a 13.3-acre asbestos landfill now part of OU-3. This area had been used as a landfill for asbestos sludge and other asbestos mill wastes generated by the Johns-Manville Products Corporation, which had a facility within the Iron Horse Park industrial complex. EPA capped this landfill in 1984 as part of an "Immediate Removal Action" under CERCLA.

Following an initial site-wide Remedial Investigation (RI) (Phase 1A RI; CDM, 1987), the site was divided into three OUs. Although part of the same NPL listing, each operable unit has separate usage and contamination histories. OU-1 - the B&M Wastewater Lagoons (Figure 2), consists of a former 15-acre wastewater lagoon area. A Record of Decision (ROD) selecting a bioremediation remedy to treat contaminated lagoon sediments and soils was issued for OU-1 on September 15, 1988. An ESD revising the remedy to treating the contaminated material via off-site asphalt batching was issued on October 1, 1997. OU-2 - the Shaffer Landfill, is a 60-acre landfill (Figure 2). A ROD selecting a cap reconstruction as the remedy was issued for OU-2 on June 27, 1991. A settlement to implement the landfill capping remedy at OU-2 was reached with responsible parties (OU-2 Settling Defendants [SDs]) in the fall of 2000. An ESD modifying the OU-2 remedy to remove leachate via extraction wells was issued on September 8, 2000. The Remedial Action (RA) for OU-1 has been completed, while at OU-2, construction activities were completed in 2003 and operations and maintenance (O&M) is ongoing.

OU-3 consists of the remainder of the source areas at the site. A ROD selecting the source control remedy at OU-3 was issued on September 30, 2004 which includes the capping of landfills and contaminated soil areas at six different areas of concern and maintenance of a landfill cap at a seventh area of concern (Figure 2). A settlement to implement the source control remedy at OU-3 was reached with responsible parties (OU-3 SDs) in the fall of 2007. An ESD modifying the remedy to eliminate a regulatory requirement (compliance with Toxic Substances Control Act regulations at AOC7) from the list of Applicable or Relevant and Appropriate Requirements (ARARs) was issued on June 19, 2009.

A fourth operable unit, OU-4, consists of impacts to site-wide surface water, sediment, and groundwater (except for groundwater at OU-2). A ROD selecting the remedy for OU-4 was issued on July 25, 2011 which includes sediment removal from B&M Pond, monitored natural recovery of sediment in other areas, implementing stormwater controls to prevent re-contamination of sediment, and long-term monitoring of groundwater. An ESD modifying the volume of sediment to be removed from B&M Pond, as well as allowing use of toxicity testing to delineate limits of sediment excavation in B&M Pond, was issued on July 22, 2014. A settlement to implement the remedy at OU-4 was reached with responsible parties (OU-4 SDs) in the fall of 2014.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Iron Horse Park		
EPA ID: MAD051787323		
Region: 1	**State:** MA	**City/County:** Billerica/Middlesex

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**
Author name (Federal or State Project Manager): Christopher Kelly
Author affiliation: EPA Region 1
Review period: 1/11/2023 - 9/20/2023
Date of site inspection: 4/12/2023
Type of review: Statutory
Review number: 6
Triggering action date: 9/20/2018
Due date *(five years after triggering action date)*: 9/20/2023

II. RESPONSE ACTION SUMMARY

II.1.A Basis for Taking Action at OU-1

The B&M Wastewater Lagoons (OU-1) is an approximately 15-acre area which consisted of five unlined lagoons. The lagoons were constructed and put into operation in 1915. During operations (until 1992), the lagoons received industrial and sanitary wastewater and some stormwater from the Iron Horse Park industrial complex via a piping system. The lagoons were dredged numerous times, with the material being placed in soil stockpiles adjacent to the lagoons. A focused RI was conducted at OU-1 in 1988 to determine the nature and extent of contamination in and around the B&M Lagoons (Phase 1B RI; CDM, 1988).

Hazardous substances which have been released at OU-1 in the following media include:

Soil/Lagoon Sediment

Polycyclic Aromatic Hydrocarbons (PAHs)
Antimony

Arsenic
Cadmium
Chromium
Lead

II.1.B Response Actions at OU-1

The Remedial Action Objectives (RAOs; at the time of the ROD these were called "remedial response objectives") were developed in response to existing or future risks and were utilized to develop remedial alternatives to address those risks. The RAOs for OU-1 are:

- To protect human health and the environment by stopping the ongoing discharge to the lagoons;
- To protect human health and the environment by reducing current and future risks due to contaminant levels found in soils and sludges from the B&M Lagoons;
- To protect human health and the environment by reducing current and future risks due to releases of contaminants to groundwater, surface water and air; and
- Meet State and federal ARARs.

These RAOs and the risk-based cleanup levels for OU-1 are still valid for assumed commercial/industrial land use since the PAHs and metals exceeding CERCLA residential risk levels were removed from the site.

On September 15, 1988, EPA signed a ROD choosing the remedy for OU-1. The remedy included the following:

- Excavating lagoon sediments and contaminated soil piles to a constructed treatment cell;
- Treating the contaminated material from the lagoons by bioremediation;
- Returning the treated material to the lagoon area, covering it with clean soil, and establishing a vegetative cover;
- Establishing land use restrictions limiting disturbance of the treated material and cover soil without prior review by state and federal authorities; and,
- Decontaminating the lagoon system's piping and pumps.

In a Consent Decree (CD) which was entered on September 13, 1990, Boston and Maine (B&M, now owned by CSX Transportation, Inc.) agreed to perform the remedial design/remedial action (RD/RA). The CD also established the following performance standards for the bioremediation remedy:

- 60-80% removal (or ≤ 1 ppm) of total PAHs;
- 50-60% removal of total petroleum hydrocarbons (TPH); and
- nC_{17}/pristine ratios of $\leq$ 0.2.

TPH cleanup requirements were subsequently quantified (in July 1993), in alignment with Massachusetts requirements, at 5,000 ppm. This cleanup level is consistent with non-residential use under State regulatory standards. TPH remediation is under State regulatory authority, rather than CERCLA.

In the fall of 1991, the first contaminated material was placed into the bioremediation treatment cell. In the fall of 1994, as required by the ROD, the lagoon system distribution piping was removed, decontaminated, and sent off-site for recycling. The treatment process for contaminated soils and sediments was significantly slower than predicted and had difficulty in achieving cleanup levels. In 1996, it was determined that bioremediation would not achieve the PAH cleanup criterion in a timely manner. As a result, EPA initiated an evaluation of alternatives to bioremediation which resulted in the issuance of an ESD revising the remedy. The ESD for OU1 was signed by EPA on October 1, 1997 (1997 ESD).

The revised remedy specified in the 1997 ESD includes the following:

- Excavation of contaminated material, and transport off-site to an asphalt batching plant for treatment;
- Implementation of protective measures during excavation and transport of contaminated material, to prevent the creation of excess dust and spillage; and
- Verification sampling to ensure that all material requiring treatment has been excavated and that any material left at the lagoons does not contain contamination above cleanup criteria (based on non-residential use). In addition, remaining contaminant concentrations have been shown to be below concentrations which would pose a residential risk (see Section V.1). Because no contamination remains in place above unrestricted use levels, this operable unit does not trigger FYR requirements, although Site-wide FYRs still need to be conducted to address other OUs at the Site.

Following the 1997 ESD, an Asphalt Batching Work Plan was prepared to document activities to be conducted to implement the revised remedy. These activities included:

- Targeting soil removal areas;
- Soil Disposal Characterization sampling;
- Test pit excavation; and
- Post-excavation confirmatory sampling.

Soil areas to be remediated were delineated based on a review and evaluation of historical soil characterization data, as well as data collected in the early fall of 1997. Data were also used to characterize soils for acceptance at a soil recycling facility. Soil removal activities were conducted in October and November 1997 and were documented in a February 1998 report entitled, "Soil Excavation and Asphalt Batching Report."

In October 2000, additional soil excavation and confirmatory sampling were conducted. The purpose of this effort was to gather confirmatory samples to assess whether additional excavation was necessary and to evaluate potential risks associated with metals in soil. The results of the field work demonstrated that additional soil removal and re-sampling would be necessary.

In December 2001, the following activities were performed at the site:

- Limited additional excavation of soil piles;
- Collection of confirmatory soil samples for PAH and TPH; and
- Collection of limited confirmatory samples for lead.

The soils excavated in December 2001 were stockpiled at the site. In August 2002, the stockpiled soils were transported off-site for asphalt batching.

II.1.C Status of Implementation at OU-1

As noted in the previous section, remedial actions at OU-1 are complete.

II.1.D Systems Operations/Operation & Maintenance at OU-1

As documented in the Site Summary Report (ERM, 2003), confirmatory soil samples were collected and showed that soils with contaminants above cleanup requirements (approximately 23,350 tons) were removed from the site. It was later shown that the remaining contaminant concentrations in OU-1 soils were also below concentrations which would pose a residential risk [EPA, 2008]). There are no O&M requirements at OU-1.

II.2.A Basis for Taking Action at OU-2

OU-2, the Shaffer Landfill, is an approximately 60-acre former landfill, which was used for disposal of residential and commercial waste for more than 30 years. Shaffer Landfill stopped receiving waste in 1986. The landfill, which consists of two lobes, is primarily located on a 106-acre property, and extends onto two adjacent former and active railroad properties along its north side and is bordered by Pond Street to the west, undeveloped/wetland areas to the north of the two railroad properties, Gray Street to the east, and the Middlesex Canal to the south. A focused RI was conducted at OU-2 in 1989 to determine the nature and extent of contamination in and around the Shaffer Landfill (Phase 1C RI; CDM, 1989).

Hazardous substances which have been detected at OU-2 in the following media include:

Groundwater	Sediment	Surface Water
Arsenic	acetone	barium
Benzene	toluene	mercury
1,2-Dichloroethane	PAHs	lead
1,2-Dichloroethene	arsenic	nickel
Ethylbenzene	lead	arsenic
Methylene Chloride	zinc	chromium
Pentachlorophenol		
Toluene		
1,1,2-Trichloroethane		
Trichloroethene		
Vinyl Chloride		
Xylene		

II.2.B Response Actions at OU-2

The RAOs for OU-2 which were utilized to develop remedial alternatives are:

- Prevent ingestion/direct contact with landfill waste contamination;
- Prevent migration of contamination via leachate which would result in groundwater concentrations in excess of federal Maximum Contaminant Levels (MCLs), non-zero Maximum Contaminant Level Goals (MCLGs), proposed MCLs and MCLGs, and Massachusetts Groundwater Quality Standards;
- Prevent migration of contamination via leachate to surface waters and sediments to ensure that National Recommended Water Quality Criteria (NRWQCs) are not exceeded due to the landfill;
- Prevent damage and loss of wetlands caused by eroding soil from the landfill cap, and meet all federal and state wetlands protection ARARs;
- Prevent ingestion of water having contamination in excess of federal MCLs, non-zero MCLGs, proposed MCLs and MCLGs, and Massachusetts Groundwater Quality Standards; and
- Restore groundwater aquifer beyond the point of compliance to contaminant concentrations below federal MCLs, non-zero MCLGs, proposed MCLs and MCLGs, and Massachusetts Groundwater Quality Standards.

On June 27, 1991 EPA signed a ROD choosing the remedy for OU-2. The remedy, reconstructing the landfill cap, determined that reconstruction would be accomplished by:

- Removing the existing topsoil layer exposing the existing in-place low-permeability soil;
- Raising existing gas collection well heads as necessary up to reconstructed cap surface level and adding additional gas extraction wells;
- Adding additional low-permeability soil;
- Grading of low-permeability soil to:

    - Provide a 5% grade on the top of the landfill lobes, and
    - Provide a consistent smooth sub-grade on the landfill side slopes;
- Installing an impermeable textured membrane liner over the entire landfill area;
- Installing a 6-inch drainage layer on top of the textured membrane liner over the entire landfill area;
- Installing a non-woven filter fabric between the drainage and topsoil layers;
- Reinstalling the topsoil layer and adding additional topsoil to achieve a topsoil depth of 12 inches;
- Reinstalling an upgraded surface drainage system; and
- Reseeding of the disturbed areas.

The remedy also includes:

- Maintenance of cap, surface drainage system, and landfill gas collection/flare system. If necessary, improvements will be made based upon the protectiveness and effectiveness of these components;
- Monitoring of the gas collection/flare system;
- Monitoring of groundwater and surface water quality;
- Construction, operation, and maintenance of leachate collection facilities;
- Off-site treatment and disposal of leachate;
- Construction of site perimeter security fence;
- Institutional Controls, and
- Post Closure Plan.

Groundwater, beyond the groundwater compliance boundary for the landfill, is the only media for which interim cleanup levels were established in the ROD. Those interim cleanup levels are as follows:

Arsenic	50 parts per billion (ppb)
Benzene	5 ppb
1,2-Dichloroethane	5 ppb
Methylene Chloride	5 ppb
Pentachlorophenol	1 ppb
1,1,2-Trichloroethane	3 ppb
Trichloroethene	5 ppb
Vinyl Chloride	2 ppb

The ROD contains discussion regarding the leachate collection facilities which conceptualize a toe-drain system constructed to collect liquid from above the groundwater table. During the Remedial Design process, the design of the leachate toe-drain system posed a number of difficulties, most importantly disagreement over the final elevation of the collection system. There was a dual concern that the toe-drain system: a) would be relatively ineffective in collecting leachate from above the groundwater table (as required by the ROD); and b) carried the risk of being inundated by an elevated groundwater table. The first issue would limit greatly the volume of leachate subject to removal while the second issue would potentially necessitate the collection, treatment, and disposal of large volumes of relatively clean groundwater. To reach resolution, on September 8, 2000, EPA issued an ESD (2000 ESD) modifying the remedy. The 2000 ESD modified the remedy so that leachate would be removed via extraction wells directly from the interior of the landfill. Under the modified remedy, leachate would still be collected at a central location for treatment and disposal offsite.

The Remedial Design was approved by EPA in the fall of 2000. Also in the fall of 2000, a settlement, via a CD, was reached with the OU-2 SDs. Under the terms of the CD, the OU-2 SDs agreed to perform the Remedial Action at the Shaffer Landfill implementing the remedy selected in the ROD as modified by the 2000 ESD. Construction of the remedy at the Shaffer Landfill began in the spring of 2001. The Remedial Action Work Plan outlined a process whereby one of the landfill lobes would be capped in 2001 and the second lobe would be capped in 2002. Concurrent with the capping process, the other required elements of the remedy would be completed. These other elements included: installation of groundwater monitoring wells; wetland restoration activities; and initiation of periodic (groundwater and surface water) monitoring. The 2001 construction season proceeded as planned, with the

substantial completion of construction activities on the first lobe of the landfill. In 2002, a design change which entailed capping a larger area, as well as the onset of wet fall/early winter weather, prevented completion of the second lobe. Construction of the landfill cap was completed in the summer of 2003. The OU-2 SDs, which performed the construction, submitted a final construction report in September 2003 (GeoSyntec, 2003), documenting the construction activities and demonstrating compliance with the requirements of the project. This report was reviewed and approved by EPA, certifying completion of construction. Institutional Controls (ICs) still have not been established for the landfill, although a deed notice for the largest affected property is in progress. Access to the fenced area of the landfill is restricted by the OU-2 SDs. Activities on the active railroad property are controlled by the MBTA. O&M activities conducted by the SDs monitor whether trespassing or other disturbance of the remedy has occurred.

The ROD did not document any exceedances of established groundwater cleanup standards beyond the compliance boundary for the landfill identified in the ROD. Subsequent monitoring of groundwater shows that there currently are groundwater contaminants beyond the landfill compliance boundary at levels that exceed the ROD's interim cleanup levels (ICLs) (see Section IV), but hydrogeological studies overseen by EPA are ongoing to better define extent of contamination and assess exposure potential. These exceedances do not impact short-term remedy protectiveness because there is no use of impacted groundwater identified beyond the OU-2 compliance boundary. No determination has been made as to whether the remedy will need to be modified by a future CERCLA decision document to address risks posed by site-related groundwater contamination beyond the landfill compliance boundary.

II.2.C Status of Implementation at OU-2

As noted in the previous section, the landfill cap construction has been completed and O&M is ongoing to maintain the cap and the management of migration components of the remedy. Groundwater beyond the landfill's compliance boundary does not meet all ROD ICLs (see Section IV). However, as noted above, studies are ongoing to better define extent of contamination and assess exposure potential. Institutional controls remain to be implemented, although Site access restrictions are being maintained on property within the fence line of the Site and activities on the active railroad property are controlled by the MBTA. While the ROD does not require groundwater ICs beyond the compliance boundary for the landfill, areas where groundwater exceedances have been identified beyond the compliance boundary since the ROD are not being used for any purpose. An assessment is being conducted to determine whether any modification of the remedy will be required to address potential risks posed by site-related groundwater contamination identified beyond the landfill compliance boundary.

IC Summary Table

Table 1: Summary of Planned and/or Implemented ICs at OU-2

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater and Engineered controls (e.g., the landfill cap and associated features)	Yes	Yes	18-19-1 (landfill parcel)	Protect landfill cap and associated features. Prevent use of groundwater within the groundwater compliance boundary for the landfill. Establish temporary ICs beyond the compliance boundary	Deed Notice in development

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
				until groundwater cleanup standards are achieved.	
Groundwater and Engineered controls (e.g., the landfill cap and associated features)	Yes	Yes	CSX-Owned Right-of-Way	Protect landfill cap and associated features. Prevent use of and/or exposure to groundwater within the groundwater compliance boundary for the landfill.	Notice of Activity and Use Limitation (NAUL) in development
Groundwater	Yes	Yes	MBTA-Owned Right-of-Way	Protect remedial infrastructure for the landfill. Prevent use of and/or exposure to impacted groundwater beyond the compliance boundary for the landfill.	NAUL in development

II.2.D Systems Operations/Operation & Maintenance at OU-2

The Operation and Maintenance phase of the project began in the fall of 2003 (final plan approved January 9, 2004). This phase entailed inspection and maintenance of the landfill cap and associated features of the remedy, as well as monitoring of groundwater, burning of landfill gas (via the on-site flare) and collection and disposal of leachate. Leachate collection occurred on a limited basis. Pretreatment was not required prior to off-site disposal at a Publicly Owned Treatment Works (POTW). In addition, wetlands inspections and maintenance were conducted during the first four years of O&M, and periodic monitoring of groundwater and surface water are currently conducted. Under the terms of the CD, the OU-2 SDs are performing the bulk of the required O&M activities for a 40-year period (which began on May 23, 2005), after which the Commonwealth of Massachusetts (the Commonwealth) will assume responsibility for O&M. The exceptions to this are: landfill soil gas migration monitoring; flare compliance monitoring, and surface water monitoring, which, as appropriate, are currently being conducted by the Commonwealth. In addition, in accordance with the CD, the Commonwealth took over responsibility for groundwater monitoring activities in 2019 based on the determination that the remedy is "working properly and as designed" and a maximum number of years of monitoring by the OU-2 SDs.

Due to the reduction in landfill gas production over time, the on-site enclosed flare was having difficulty running continuously. In fall 2013, candlestick flares tied directly into a limited number of individual gas wells were installed and the flare was shut down on October 1, 2013. The candlestick flares are inspected monthly.

On September 7, 2012, the Commonwealth of Massachusetts issued a solid waste landfill Post-Closure Use Permit (Transmittal No. X241512) (the "Permit") establishing requirements for the installation, operation, maintenance, and removal of a solar energy facility, which finished construction on the landfill (covering an area of 25 acres) in

2014. The Permit allows the permit holder for the solar energy facility to operate until November 11, 2052, provided all conditions required by the permit continue to be met (including not disturbing the landfill cap so as to cause an adverse impact to public health, safety, or the environment).

II.3.A Basis for Taking Action for OU-3

OU-3 is characterized by numerous source areas, multiple property owners, a complex history and widespread environmental impacts to soils, sediment, surface water, and groundwater. During the Remedial Investigation/Feasibility Study (RI/FS) process for OU-3, EPA conducted a risk assessment for both human health and ecological receptors. Each potential source area (Area of Concern, or AOC) in OU-3 is unique and underwent an independent risk assessment.

AOCs in OU-3 consist of the B&M Railroad Landfill (AOC1), the RSI Landfill (AOC2), the B&M Locomotive Shop Disposal Areas (AOC3), the Old B&M Oil/Sludge Recycling Area (AOC4), the Contaminated Soils Area (AOC5), and the asbestos contamination areas (including the Asbestos Landfill [AOC6] and the Asbestos Lagoons [AOC7]). The medium of concern in OU-3 is surface and subsurface soil, while groundwater, surface water, and sediment are the primary media of concern in OU-4, which was created due to the widespread distribution of groundwater, surface water, and sediment impacts across the Site. A site-wide evaluation of depositional asbestos in soil was also performed as part of OU-4. Contaminants detected most frequently on site included volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinated biphenyls (PCBs), asbestos, and metals.

Extensive sampling was conducted during 1993 to evaluate the nature and extent of contamination in the above-mentioned media and associated with a number of source areas around the Iron Horse Park industrial complex. Additional investigations, including a risk assessment, began in 1994. A RI was completed in the fall of 1997. A Feasibility Study (FS) was completed in May 2004 to evaluate potential alternatives for the remediation of this area. In addition, a Proposed Plan recommending a series of cleanup alternatives was completed in May 2004. The ROD selecting the remedies for the affected media was signed on September 30, 2004. This ROD, which addressed the OU-3 source areas only, chose capping in place as the remedy for the various source areas. A focused evaluation of ecological exposures to surface water and sediment, and a re-evaluation of site-wide groundwater contamination (excluding OU-2), were deferred to OU-4. In September 2007, EPA reached a settlement with the OU-3 SDs, which required the OU-3 SDs to implement the remedies chosen in the September 2004 ROD. Design and construction of the remedies has been completed for all AOCs. Construction of the remedies is complete for all seven AOCs (see Section II.3.C).

Hazardous substances which have been released at OU-3 in the following media include:

Soil
Asbestos
Cadmium
Copper
Lead

II.3.B Response Actions for OU-3

The RAOs for OU-3 which were utilized to develop remedial alternatives are:

Human Health

- Soil - Prevent ingestion of lead from soil-derived dust at the B&M Locomotive Shop Disposal Areas, Old B&M Oil/Sludge Recycling Area, and Contaminated Soils Area that results in estimated maternal blood levels of greater than 4.2 µg/dL, a site-specific level protective of a 95th percentile fetal blood lead level of 10 µg/dL. This results in preventing exposure to lead soil concentrations greater than 1,736 mg/kg.

- Soil - Prevent exposure to asbestos at the Asbestos Landfill.
- Soil - Prevent exposure to asbestos at the Asbestos Lagoons.
- Groundwater - Limit migration of contaminants in the B&M Landfill, RSI Landfill, B&M Locomotive Shop Disposal Areas, Old B&M Oil/Sludge Recycling Area, Contaminated Soils Area, and Asbestos Lagoons into groundwater.

Ecological

- Protect short-tailed shrews and other small mammals from exposure to levels of metals associated with a Hazard Quotient (HQ) greater than 1 (cadmium) in soils at the B&M Railroad Landfill.
- Protect short-tailed shrews and other small mammals from exposure to levels of metals associated with a HQ greater than 1 (copper and lead) in soils at the B&M Locomotive Shop Disposal Areas.

These RAOs for OU-3 remain valid except for the lead soil concentration specified in the human health soil RAO. A revised lead screening level for industrial/commercial exposure, and based on revised lead modeling parameters has been determined to be 1,000 mg/kg (EPA, 2018).

On September 20, 2004, EPA signed a ROD choosing the remedy for OU-3, which includes capping of landfills and contaminated soil areas at six different AOCs and maintenance of an existing landfill cap at a seventh AOC. The major components of this remedy include:

1. Capping of source areas at the following AOCs (with capping standards that apply):

- B&M Railroad Landfill (AOC1) – Hazardous Waste Cap – *Region 1 Alternative Cap Design/Solid Waste Disposal Act (SWDA), Subtitle C*
- RSI Landfill (AOC2), B&M Locomotive Shop Disposal Areas (AOC3) and the Asbestos Lagoons (AOC7) – Solid Waste Cap – *SWDA, Subtitle D*
- Old B&M Oil/Sludge Recycling Area (AOC4) and the Contaminated Soils Area (AOC5) – Solid Waste/Asphalt Cap – *MassDEP Landfill Technical Guidance Manual/Solid Waste Disposal Act (SWDA), Subtitle D*
- Asbestos Landfill (AOC6) – Maintenance of the existing *Toxic Substances Control Act (TSCA)* cap

2. Institutional Controls
3. Groundwater monitoring to assess effectiveness of source control actions.

Soil is the only media for which cleanup levels were established in the ROD. Those cleanup levels are as follows:

Contaminant of Concern	**Cleanup Level and Applicability**
Lead	1,736 mg/kg (The current screening level is 1,000 mg/kg) – Applicable at B&M Locomotive Shop Disposal Areas, Old B&M Oil/Sludge Recycling Area, and Contaminated Soils Area; based on commercial adult worker exposures
Cadmium	15.4 mg/kg – Applicable at B&M Railroad Landfill; based on ecological exposures
Copper	2213 mg/kg – Applicable at B&M Locomotive Shop Disposal Areas; based on ecological exposures
Lead	868 mg/kg – Applicable at B&M Locomotive Shop Disposal Areas; based on ecological exposures

II.3.C Status of Implementation for OU-3

In September 2007, EPA reached a settlement with OU-3 SDs requiring them to implement the remedies selected in the September 2004 ROD. Design and construction of the remedies by the OU-3 SDs, with EPA oversight, is complete.

The FYR performed in 2008 noted that "it may be appropriate to calculate and establish a new lead cleanup level based on the additional population statistics under EPA's adult lead methodology." This evaluation was first performed in 2009. At that time, a revised lead soil screening level of 1,107 mg/kg was calculated to replace the 1,736 mg/kg cleanup level noted above. Refer to Section V, Question B of the 2018 FYR (EPA, 2018), for discussion on the most current update to the lead screening level (1,000 mg/kg).

AOC7 remedy construction (capping of the Asbestos Lagoons) was completed in 2010, as summarized in the Final Remedial Construction Report dated November 29, 2010 (W&C, 2010). Groundwater monitoring to assess effectiveness of the source control action has been ongoing. Recent monitoring data is included in Appendix D.3. AOC7 is currently in the O&M phase.

During the design process for AOC7, it was determined that a regulatory requirement (a provision of the TSCA regulations for transport and disposal of asbestos waste) was inappropriately included as an ARAR for AOC7 in the 2004 ROD. An ESD modifying the remedy to eliminate this ARAR was issued on June 19, 2009 (2009 ESD).

AOC4 and AOC5 remedy construction (capping of contaminated soil in portions of the Old B&M Oil/Sludge Recycling Area and Contaminated Soils Area) was initiated in 2012 and completed in spring 2013, as summarized in the Final Remedial Construction Report dated September 25, 2014 (ERM, 2014).

AOC2 (capping of waste in the RSI Landfill) and AOC6 (cover erosion repair of the Asbestos Landfill) remedy construction was initiated in 2016 and completed in summer 2017, as summarized in the Final Remedial Construction Report dated September 19, 2017 (ERM, 2017).

AOC3 remedy construction (capping of waste in the B&M Locomotive Shop Disposal Areas) was initiated in 2018 and completed in 2019, as summarized in the Final Remedial Construction Report dated November 19, 2020 (ERM, 2020b). Monitoring of constructed wetland mitigation areas associated with this remedy is ongoing.

AOC1 remedy construction (capping of waste in the B&M Railroad Landfill) was initiated in 2020 and completed in 2022, as summarized in the Remedial Construction Report dated November 9, 2022 (ERM, 2022). Monitoring of constructed wetland mitigation areas associated with this remedy is ongoing.

As noted above, cap/cover construction has been completed and O&M is ongoing to maintain the caps/covers. Institutional controls remain to be implemented at most of the land parcels within OU-3, although access restrictions are being maintained for the landfill caps through use of fencing. A model NAUL for use on all OU-3 property parcels was developed in coordination with the SDs, Massachusetts Department of Environmental Protection (MassDEP), and EPA. On March 16, 2023, a NAUL was recorded for the land parcels containing AOC 5 and a small portion of AOC 3. As of 2023, the SDs have either recorded a NAUL, or are in the process of drafting NAULs for properties within the Site boundary that require use restrictions as part of the OU-3 remedy.

IC Summary Table

Table 2: Summary of Planned and/or Implemented ICs at OU-3*

*Some parcels apply to both OU-3 and OU-4. If an AOC is located upon the property, the parcel has been included in this table.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath cap	Yes	Yes	16-43-0	Protect cap and associated features at AOC7. Prevent use of groundwater under the cap.	NAUL in development
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath cover	Yes	Yes	17-1-2	Protect cover and associated features at AOC5. Prevent use of groundwater under the cover.	NAUL emplaced March 16, 2023; Middlesex North Registry of Deeds Book 37727/Page 110
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath caps/covers	Yes	Yes	17-2-2	Protect caps/covers and associated features at AOCs 3 and 5. Prevent use of groundwater under the caps/covers. Prevent sediment disturbance to extent possible.	NAUL emplaced March 16, 2023; Middlesex North Registry of Deeds Book 37727/Page 144
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath cap	Yes	Yes	17-2-4	Protect cap and associated features at AOC6. Prevent use of groundwater under the cap.	NAUL in development
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath caps; sediment	Yes	Yes	17-2-5	Protect caps and associated features at AOCs 1, 2, 3, and 6. Prevent use of groundwater under the caps. Prevent sediment disturbance to extent possible.	NAUL in development
Engineered controls (e.g., the cover and associated features), groundwater underneath cover	Yes	Yes	23-34-4	Protect cover and associated features at AOC4. Prevent use of groundwater under the cover.	NAUL in development

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Engineered controls (e.g., the landfill cap and associated features)	Yes	Yes	23-35-1	Protect caps and associated features at AOC3. Prevent sediment disturbance to extent possible.	Necessity of ICs being evaluated by land survey
Engineered controls (e.g., the landfill cap and associated features), groundwater underneath caps	Yes	Yes	24-185-0; 24-200-1	Protect caps and associated features at AOC3. Prevent use of groundwater under the caps. Prevent sediment disturbance to extent possible.	NAUL in development

II.3.D Systems Operations/Operation & Maintenance at OU-3

The Operation and Maintenance phase for OU-3 has been performed as each cover/cap was constructed. Periodic inspections, maintenance, and monitoring are performed per the approved O&M/monitoring plans (ERM, 2023a; W&C, 2023b).

II.4.A Basis for Taking Action at OU-4

OU-4 of the Iron Horse Park Superfund Site includes site-wide surface water, sediment, and groundwater (OU-4 does not include groundwater contamination associated with OU-2). With the many sources at the site (OU-1, OU-2, and OU-3), separate evaluation of these media was determined to be appropriate via development of a fourth operable unit. An Ecological Risk Assessment/Wetlands Remedial Investigation Addendum (ERA/WRIA; M&E, 2006a) was performed to better quantify risks to ecological receptors exposed to contaminants in surface water and sediment throughout the site. Surface water exposures were not associated with significant ecological risk; however, a number of organics and metals were found to be associated with risk to benthic invertebrates in sediment. A Groundwater Data Evaluation report (M&E, 2006b) was generated in 2006 to provide a summary of groundwater sampling performed in the winter of 2005/2006. A Supplemental Human Health Risk Assessment (M&E, 2008) was performed to determine risk drivers associated with future groundwater use, which include miscellaneous organics and metals. A focused Feasibility Study was completed in 2010 (M&E, 2010), and a ROD selecting the remedies for the affected media was signed on July 25, 2011. This ROD chose excavation and disposal of contaminated sediment from B&M Pond, MNR for other sediment exceeding cleanup levels, implementing storm water runoff controls, long-term groundwater monitoring, and institutional controls to prevent use of groundwater.

In 2014, EPA performed additional toxicity testing in B&M Pond to better determine the extent of cleanup. An ESD was signed on July 22, 2014 (2014 ESD) which refined the extent of cleanup in B&M Pond based on the toxicity testing results. The 2014 ESD also established that toxicity testing would be used to delineate extent of remediation in B&M Pond, rather than cleanup levels. In October 2014, EPA reached a settlement with the OU-4 SDs, which requires the OU-4 SDs to implement the remedies chosen in the September 2011 ROD. Additional pre-design investigations were performed in 2017 to define the extent of sediments requiring remediation in B&M Pond.

Hazardous substances which have been released at OU-4 in the following media include:

Groundwater	Sediment
1,2-Dichloroethane	PAHs
1,4-Dichlorobenzene	PCBs
Benzene	4,4'-DDD
Carbon tetrachloride	Chromium
cis-1,3-Dichloropropene	Copper
Tetrachloroethene	Lead
Trichloroethene	Vanadium
Vinyl Chloride	Zinc
Atrazine	
Bis(2-choroethyl)ether	
Dibenz(a,h)anthracene	
Dieldrin	
Arsenic	
Cadmium	
Lead	
Manganese	

II.4.B Response Actions at OU-4

On July 25, 2011, EPA signed a ROD choosing the remedy for OU-4. The major components of this remedy include:

- Excavation of about 7,400 cubic yards of B&M Pond contaminated sediment;
- Dewatering, transport, and disposal of contaminated sediments (either on or off-site);
- Treatment (if necessary) and discharge of sediment dewatering fluid and potential stabilization of sediment prior to disposal;
- Wetland mitigation as required;
- MNR in Unnamed Brook and other unexcavated sediments that exceed sediment cleanup levels;
- Implementing stormwater runoff controls to prevent sediment recontamination;
- Institutional Controls, including at least yearly compliance monitoring, to protect stormwater controls and to prevent disturbance of wetlands undergoing MNR (until sediment cleanup standards are achieved - approximately 20 years);
- Groundwater monitoring to confirm that contaminants do not migrate beyond the compliance boundary for the Site (including the installation of new wells to supplement the existing monitoring well network);
- Institutional Controls to prevent use of groundwater on site and to protect components of the remedy, including at least yearly compliance monitoring; and
- Five-year reviews

The 2014 ESD reduced the volume of sediment excavation to approximately 1,000 cubic yards.

II.4.C. Status of Implementation at OU-4

As noted above, in October 2014, EPA reached a settlement with OU-4 SDs, which required the OU-4 SDs to implement the remedies chosen in the September 2011 ROD. Design of the remedy by SDs, with EPA oversight, was completed in 2020 (ERM, 2020a). Sediment was excavated from B&M Pond in 2020 and placed on AOC1 prior to cap construction. MNR evaluation activities are ongoing for the Unnamed Brook and waterways. OU-4 groundwater monitoring (beyond that necessary for source area cap/cover evaluation related to each AOC in OU-3) is ongoing, with sentinel wells having been installed to evaluate contaminant migration relative to the

groundwater compliance boundary established in the 2011 OU-4 ROD. Stormwater runoff controls are included as part of the remedy in order to limit contamination entering Site water bodies. A berm was repaired, and general housekeeping is performed to limit the stormwater runoff from migrating to the Unnamed Brook and waterways.

OU-4 construction was summarized in the OU-4 Remedial Action Construction Completion Report dated November 10, 2021 (ERM, 2021). Institutional controls are in the process of being implemented. ICs are in place to prevent use of contaminated groundwater at the properties containing AOC 5 and part of AOC 3. For properties containing the remaining AOCs at the Site, ICs relating to groundwater will combine groundwater restrictions with other restrictions in the NAULs. For properties that do not contain an AOC, but which are located within the OU-4 Groundwater Compliance Boundary, or require restrictions to prevent disturbance of sediment, NAULs containing the relevant restrictions will be recorded for those properties.

IC Summary Table

Table 3: Summary of Planned and/or Implemented ICs at OU-4*

*Parcels only related to OU-4 included below. Parcels related to both OU-3 and OU-4 are listed in Table 2 above in Section II.3.C.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater and remedy components	Yes	Yes	16-119-0; 17-1-1; 17-43-1	Prevent use of groundwater within the compliance boundary and protect remedy components.	NAUL emplaced for parcel 17-1-1 on March 16, 2023; Middlesex North Registry of Deeds Book 37727/Page 86; NAULs in development for parcels 16-119-0 and 17-43-1
Sediment	Yes	Yes	16-132-0	Prevent sediment disturbance to extent possible.	NAUL in development

II.4.D Systems Operations/Operation & Maintenance at OU-4

The Operation and Maintenance phase for OU-4 has been initiated and includes housekeeping related to storm water control and monitoring. These tasks are being implemented per the approved O&M/monitoring plan (ERM, 2023a).

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations. Note that construction of the OU-4 remedy was initiated after the completion of the previous FYR and was therefore not evaluated.

Table 4: Protectiveness Determinations/Statements from the 2018 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy at OU-1 is protective of human health and the environment.
2	Short-term Protective	The remedy at OU-2 currently protects human health and the environment, as exposure pathways that could result in unacceptable risks are being controlled. The landfill is fenced to prevent access and there is no current use of groundwater. However, in order for the remedy to be protective in the long-term, institutional controls will be created and recorded to restrict inappropriate land uses (including use of groundwater) and protect the landfill cap and other components of the remedy. Operation and Maintenance activities have been initiated and will ensure that the landfill and associated components of the remedy remain in good condition. In addition, monitoring of groundwater and surface water will continue to assess the continued protectiveness of the capping remedy and progress towards attainment of groundwater cleanup levels beyond the landfill compliance boundary. This includes incorporation of new monitoring parameters not previously evaluated. In addition, a CERCLA decision document is needed to update groundwater standards used during monitoring and to update federal floodplain protection requirements.
3	Will be Protective	The remedy at OU-3 is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas.

Table 5: Status of Recommendations from the 2018 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	Institutional controls restricting inappropriate land uses (including temporary ICs to prevent the use of groundwater beyond the landfill's compliance boundary until groundwater cleanup standards are achieved) and protecting the landfill cap and other	Discussions between EPA, MassDEP, and the property owners are ongoing. Upon completion of discussions between the parties, institutional controls should be established at OU-2 by the end of 2019.	Ongoing	EPA is finalizing a Deed Notice on the primary landfill property and will be working with landowners to establish NAULs on the two railroad properties on the north side of the Operable Unit.	2023

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
	components of the remedy need to be established.				
2	A future ESD would be required to incorporate the change to the arsenic MCL and the repromulgation of State Groundwater Quality Standards at 314 CMR 5.11, and update federal floodplain protection requirements.	A CERCLA decision document to incorporate the change to the arsenic MCL and State Groundwater Quality Standards into the OU-2 remedy and to update federal floodplain protection requirements should be completed before the next five-year review.	Considered But Not Implemented	May be incorporated into any future CERCLA decision document that may be required.	Not Applicable
2	Groundwater monitoring has not historically included analysis of PFAS, nor 1,4-dioxane, so it is unclear if these chemicals are of concern at OU-2.	Include analysis for PFAS and 1,4-dioxane in future groundwater monitoring rounds to determine if these chemicals are of concern at OU-2.	Completed	Sampling completed by the Commonwealth of MA with final results received on 1/25/2022.	1/25/22
2	The extent of ICL exceedances in groundwater is not fully defined and the reduction in groundwater concentrations outside of the existing compliance boundary (edge of landfill) is progressing slowly.	Define the extent of ICL exceedances in groundwater and evaluate response options. Either (1) evaluate refinement of the compliance boundary, including consideration of an exclusion area for offsite groundwater extraction; (2) potentially consider groundwater reclassification in the area; or (3) conduct an MNA	Ongoing	An assessment is being conducted to determine whether any modification of the remedy will be required to address potential risks posed by site-related groundwater contamination identified beyond the landfill compliance boundary.	Not Applicable

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
		assessment to determine if groundwater beyond the compliance boundary can achieve groundwater cleanup standards within a reasonable time period. A future CERCLA decision document may be necessary.			
3	O&M housekeeping items need to be addressed in order to maintain protectiveness. Items include the following: gravel cover related to AOC5 is missing and needs to be replaced; asphalt cracks are getting larger at AOC4 (on Cooperative Reserve property) and need to be sealed; and vegetative growth at AOC6 is getting larger and may begin to compromise the cap.	Place gravel at AOC5 where missing; seal cracks at AOC4; and remove larger woody growth at AOC6.	Completed	Gravel has been placed at AOC5 (2018) and large woody growth has been removed at AOC6 (2021). The SD is in the process of making arrangements for patching the asphalt at AOC4.	8/30/22

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date**.** Interviews regarding all operable units of the Iron Horse Park Superfund Site were performed on February 14 through February 15, 2023 with MassDEP, a Billerica, Massachusetts community member, and the Middlesex Canal Association. The Town of Billerica did not respond to multiple interview requests. Results of these interviews are summarized in Appendix A.2. In general, the respondents acknowledge that the remedy appears to be functioning as designed. Residents would like to see an easement associated with the historical Middlesex Canal. MassDEP noted that the remedial activities took longer than they should have, and O&M of OU-3 covers should be improved.

A public notice was made available by an EPA press release titled "EPA to Review Cleanups at Six Massachusetts Superfund Sites this Year" announcing that EPA was beginning five-year reviews of six Massachusetts sites, on 1/18/2023, stating that there was a five-year review and inviting the public to submit any comments to the U.S. EPA. The results of the review and the report will be made available at the Site information repository located at Billerica Public Library, 15 Concord Road, Billerica, MA 01821 and on U.S. EPA's website at www.epa.gov/superfund/ironhorse.

Data Review

OU-1

No contaminated material above unrestricted use risk levels was left at OU-1 (see Section V.1). The implementation of the remedial action (which entails all cleanup activities) has been formally completed, as defined by review and approval of the Site Summary Report (ERM, 2003), which was submitted by the SD. Confirmatory sampling results from the Site Summary Report have been included in Appendix B.2.

OU-2

Appendices C.2 and C.3 contain groundwater and surface water post-construction sampling results. Note that the compliance boundary is currently defined as the edge of waste. As all monitoring wells are beyond the edge of waste, any exceedances of cleanup levels or other standards are beyond the compliance boundary.

The 2008 FYR noted the presence of four analytes in groundwater (arsenic, benzene, trichloroethene [TCE], and vinyl chloride [VC]) at concentrations in excess of MCLs. As discussed in that report, many of the organics detected in groundwater around the landfill were observed to have decreasing concentrations. A review of the data in the 2013 FYR confirmed this observation. TCE and VC were not detected above ICLs. Benzene concentrations in ENSR-11B had been decreasing slightly, while concentrations in GZA-6A and GZA-3B had been fairly stable over those five years, slightly above the ICL of 5 micrograms per liter (µg/L). A review of the data in the 2018 FYR showed some inconsistent results for organics, with some elevated detections of TCE, VC, and cis-1,2-dichloroethene in one or two monitoring rounds.

A review of the data in the past five years shows some resolution of the elevated detections. There were no TCE detections above the MCL. Elevated detections of VC and cis-1,2-dichloroethene previously observed at ENSR-11A went down in 2018 and 2019 and were not detected in 2021 and 2022. Benzene concentrations in ENSR-11B (north) remain around the MCL (5 ppb), with only one monitoring round showing a detection (6 ppb) slightly above the MCL. Benzene detections at GZA-6A (south) showed a decline over the past five years, with detections now below the MCL.

Arsenic concentrations have remained consistent, with exceedances of the ICL (50 ppb) at multiple (7) wells outside of the compliance boundary (edge of waste). ICL exceedances were observed in at least one well in clusters GZA-6 (south), MW-2 (north), GZA-3 (northeast), and MW-4 (east). Arsenic is often observed in both groundwater and surface water near landfills due to reducing conditions in the aquifer caused by the release of organics from landfill wastes. Since the OU-2 ROD was issued in 1991, the arsenic MCL has changed from 50 ppb to 10 ppb. A determination will be made as to whether the revised arsenic MCL will need to be incorporated into the OU-2 remedy through a future CERCLA decision document in order to maintain the protectiveness of the remedy. An additional four wells exceeded the arsenic MCL (10 ppb) in the recent sampling events. MCL exceedances were observed in at least one well in clusters GZA-3 (northeast), ENSR-11 (north), and RFW-4 (south). It should be noted that arsenic detections in overburden wells downgradient of the landfill are likely to be discharging to area wetlands and arsenic has not been detected above the MCL in the bedrock well downgradient of the landfill heading towards Gray Street (MW-4B).

As discussed, many of the organics detected in groundwater around the landfill (outside of the compliance boundary) have been observed to have decreasing concentrations. Following further reduction of these organic concentrations, it is expected that arsenic concentrations will also begin to decrease. However, the time frame for

this reduction could potentially be lengthy, based on historic observations. It should also be noted that, while there are no wells beyond the existing monitoring wells which would define the current extent of ICL exceedances, much of the groundwater discharges to local wetlands/surface water bodies.

Mann-Kendall analysis was performed to evaluate potential trends in the groundwater monitoring wells over the past 10 years for arsenic and benzene (see Appendix C.2). For arsenic, 11 out of 18 wells evaluated showed no trend/stable/decreasing trend. For the seven locations which apparently showed increasing trends, all were not detected (reporting limit of 5 ppb) for at least the last two years. The trends for these locations were primarily based on changes in reporting limits over the years. For benzene, there was only 1 out of 18 wells which showed a "probably increasing" trend, and similar to arsenic, there were no detections (reporting limit of 1 ppb) at that well for the past 4 years. This analysis shows that groundwater at the site is stable or improving.

In 2021, a subset of seven wells was sampled and analyzed for PFAS, with a summary of the results presented in Appendix C.2. Exceedances of the current Massachusetts MCL (20 parts per trillion [ppt]) for the sum of six PFAS compounds (known as "PFAS6") occurred in 4 of the 7 wells sampled: GZA-3B, ENSR-11A, MW-2A, and MW-2C. These locations are to the north and northwest (downgradient) of the OU-2 landfill, but no determination has been made as to whether the exceedances are site-related. MW-4 and MW-4A, to the southeast, showed minor PFAS detections below the State MCL. EPA has developed risk-based Regional Screening Levels (RSLs) for multiple PFAS compounds (see Section V.2 for further details). There have been detections above EPA RSLs of PFOA (all 7 wells) and PFOS (5 of 7 wells; all but MW-4 and MW-4A).

Volatile organic compounds (VOCs), though sporadically detected in surface water, are present at low concentrations that do not exceed NRWQC for protection of human health; formerly designated as Ambient Water Quality Criteria, or AWQC, and would not pose a risk or hazard to human health.

During the review period, several inorganic compounds detected in surface water exceeded NRWQC. These compounds included arsenic, cadmium, copper, cyanide, lead, mercury, and zinc. Detections of compounds other than arsenic exceeding human health NRWQC in surface water were inconsistent and generally confined to sampling locations (SW-G, SW-H, SW-I, SW-J, and SW-K1) located within rehabilitated wetlands immediately southeast of each landfill lobe.

Mann-Kendall analysis was performed to evaluate potential trends in surface water over the past 10 years for arsenic, manganese, iron, and total dissolved solids (see Appendix C.3). For arsenic, 2 out of 11 locations evaluated showed no trend. Similar to groundwater, most of the locations showing increasing trend did not actually have detections (reporting limit of 5 ppb) in recent monitoring events. However, there were two locations, SW-H and SW-I, which showed significant arsenic detections for at least the last two years. These two locations are to the northeast area of the landfill, near the wetland mitigation area. For manganese and iron, all 11 locations evaluated were either no trend or probably decreasing.

OU-3/OU-4

Data associated with OU-3 and OU-4 is combined, as the OU-4 monitoring is presented and evaluated along with the OU-3 data.

OU-3 - AOC7 Groundwater and Surface Water

Appendix D.3 contains groundwater monitoring data collected at AOC7, along with a figure showing the monitoring locations. Review of the data shows that most analyte concentrations have been generally stable or decreasing. At OW-9 (downgradient bedrock well), tetrachloroethene (PCE) and TCE concentrations have increased, but appear to have stabilized over the past five years. PCE and TCE have generally reduced in concentration at OW-10 (downgradient deep overburden well), OW-20 (side-gradient deep overburden well), MW-208D (side/upgradient deep overburden well), OW-11 (downgradient shallow overburden well), and MW-208S (side/upgradient shallow overburden well). The originating source of these detections is unclear, although, based on groundwater direction and other detections at the site, it is possible that, in addition to possibly originating at AOC7, the detections may

have originated at AOC4. Based on these consistent results, groundwater monitoring will now be performed biennially, with the next event scheduled for 2023 (W&C, 2023a).

OU3 - AOC7 Landfill Gas

Landfill gas monitoring performed at AOC7 (see Appendix D.3) shows minimal emissions/contaminants being discharged from the passive vents. Based on these results, passive gas vent monitoring will be performed every five years, with the next event scheduled for June 2027 (W&C, 2023a).

OU-3/OU-4 Groundwater

Since the 2018 FYR, multiple groundwater and surface water monitoring events associated with the OU-3 source areas and OU-4 sitewide groundwater have occurred, including one event which included PFAS monitoring at a subset of monitoring wells (ERM, 2023b). The current sampling matrices showing the monitoring locations, frequency, and analyses are presented in Appendix D.2, along with monitoring location figures, groundwater contour maps, and 2022 analytical results presented both visually and in tabular form. In general, groundwater and surface water monitoring results are consistent across monitoring events.

In both the June and October 2022 sampling events, concentrations of PCE exceeded applicable clean-up standards in two AOC5 bedrock wells (MW-207B and OW-37) and one AOC5 deep overburden well (OW-38). None of these locations are outside the groundwater compliance boundary (GCB). These observations were consistent with historical data, with the exception of OW-37 and OW-38. These locations had not been accessible due to MBTA construction until the November 2021 event and had concentrations of PCE below clean up levels in previous events. OW-37 and OW-38 are not near the GCB; however, further groundwater sampling data is needed to evaluate any trends regarding the presence of PCE at these locations.

TCE concentrations exceeded applicable clean-up standards at several locations within AOC1, AOC5, and AOC6 (in June 2022, two AOC1 bedrock wells (MW-213B and OW-49), two AOC5 bedrock wells (MW-207B and OW-37), and in one AOC6 bedrock well (MW-308B); in October 2022, two AOC1 bedrock wells (MW-213B and OW-49), one AOC5 bedrock well (OW-37), and in one AOC6 bedrock well (MW-308B)). However, no VOCs are above applicable clean up levels at the SEN-1 and SEN-2 clusters, and therefore there is currently no evidence of off-site migration.

As mentioned above, TCE concentrations above standards were identified near the GCB at OW-49. This well is located near AOC1 where the remedy (landfill capping) was recently completed. As such, the SDs will continue to monitor this location to determine if the remedy shows improvement in chlorinated solvent concentrations.

Although groundwater flow is consistently observed to the northeast toward B&M Pond (within the GCB), it is possible that seasonal and temporal variation of groundwater flow could contribute to the migration of TCE beyond the GCB. To monitor for potential migration, the SDs will begin sampling for VOCs at MW-01, MW-01B, and MW-01A in 2023.

In June and October 2022, 1,4-dioxane was detected above MassDEP GW-1 standard in multiple AOC1 (MW-213, MW-213D, MW-213S, OW-49, and OW-50) and AOC6 (MW-305D, MW-307S, MW-307D, MW-307B, MW-308B, OW-28, and OW-29) monitoring wells along the eastern and northeastern boundaries of the GCB, consistent with historical observations.

A source of 1,4-dioxane may be landfill leachate; however, since the AOC1 remedy was recently completed, the SDs will continue to monitor these locations next year to determine if the capping of AOC1 shows improved 1,4-dioxane concentrations. Additionally, the SEN-1 and SEN-2 clusters will be sampled for 1,4-dioxane in future monitoring events to monitor the potential migration outside the GCB near AOC6.

In June and October 2022, concentrations of 1,1-dichloroethene (1,1-DCE) were detected at OW-37 above the MCL and GW-1 standard. However, this location has limited data as it was previously not accessible during the December 2020 and May 2021 events due to MBTA construction. Prior to the November 2021 sampling event, concentrations

of 1,1-DCE were below clean up levels (7 µg/L). Since November 2021, 1,1-DCE has steadily decreased to 10 µg/L. Additional data is needed to evaluate any further trends at this location.

Concentrations of 1,2-dichloroethane (1,2-DCA) exceeded applicable clean up levels in one deep overburden (MW-307D) and two bedrock (MW-307B and OW-28) monitoring wells in AOC6. As these exceedances were limited to a confined area, no additional sampling is proposed at this time. Concentration trends will continue to be monitored going forward.

Concentrations of benzene exceed applicable clean up levels in the shallow overburden well MW-307S, associated with AOC6. Additionally, concentrations of chlorobenzene exceeded the MCL and GW-1 clean up levels in MW-307S. Both of these results are consistent with historical observations, and the SEN-1 and SEN-2 clusters continue to verify these impacts have not migrated off site. Concentration trends for benzene and chlorobenzene will continue to be monitored going forward.

In October 2022, dichloroethyl ether was detected above groundwater performance standards in AOC6 (deep overburden and bedrock wells MW-307D and MW-307B respectively) consistent with historical observations. Evidence of migration to other locations, including those outside the GCB, has not been observed.

Cyanide was detected above GW-3 (30 µg/L) in MW-207B in AOC5, located upgradient of AOC6, consistent with previous sampling events. These elevated cyanide concentrations may be related to past releases associated with historical operations. Cyanide has not been detected above MassDEP GW-3 standards in any of the wells located downgradient of MW-207B, and therefore does not appear to be migrating off-site.

Historically, cadmium and lead were detected within (MW-303S) and downgradient (MW-202D) of AOC4 above all applicable clean up levels, likely due to residual impacts from oil recycling activity. In the November 2022 event, only lead was detected above the applicable clean up level. Evidence of migration to other locations, however, has not been observed.

Manganese was detected above the applicable performance standards in multiple (37) locations across the site - within each geologic unit, in all AOCs and in downgradient locations outside the GCB. Locations with elevated concentrations were consistent with previous data.

Elevated levels of manganese were measured in deep overburden and bedrock monitoring wells in and proximal to capped waste disposal landfills, consistent with reducing conditions observed in these areas. Elevated concentrations of manganese were also observed in locations outside the GCB (SEN-2B and 2D), downgradient of the landfills. Observations of elevated manganese at SEN-3B and SEN-3D (located to the west-northwest and hydraulically cross-gradient of on-site landfills and along the border of the GCB) suggests that reducing conditions at these locations are not due to the on-site landfills.

In the shallow overburden, however, elevated levels of manganese in the shallow overburden were observed in almost all AOCs, in each hydraulic direction and outside the GCB (SEN-2S). Although the waste landfills are likely contributing to reducing conditions in groundwater, the ubiquitous observations in this geologic unit suggest that reducing conditions may be naturally occurring.

Arsenic was detected above applicable clean up levels at multiple (19) locations across the site – within each geologic unit, within all AOCs (except AOC3), and in downgradient locations outside the GCB.

The majority of arsenic exceedances were measured in the shallow and deep overburden monitoring wells surrounding on-site landfills. Previously, the highest arsenic concentrations were observed in AOCs 2 and 6, however, the latest data set shows highest concentrations in AOC2 and AOC4.

There is no clear evidence of offsite migration in these geologic units, given that elevated levels of arsenic were not detected outside the GCB. However, concentrations above clean up levels were observed in OW-50 and OW-51

(along the northeastern edge of the GCB); and in SEN-3S and SEN-3B (cross-gradient along the northwestern edge of the GCB).

Exceedances in bedrock were only observed at MW-214B in AOC1. Other AOC1 monitoring wells in bedrock located downgradient of MW-214B met applicable clean up levels. It should be noted that arsenic may also be naturally occurring on-site. Arsenic will continue to be monitored in the sentinel wells to monitor for off-site migration.

Isoconcentration maps for multiple contaminants from the June and October events are found in Appendix D.2. Mann-Kendall trend analysis results for groundwater are also presented in Appendix D.2.

For monitoring of per- and polyfluoroalkyl substances (PFAS) in groundwater, of the 30 wells sampled as part of the November event, 19 wells exceeded the GW-1 (drinking water) standard of 20 nanograms per liter (ng/L). No well returned exclusively non-detects for the six substances. Seventeen of the exceedances were within 20 ng/L of the GW-1 standard. MW-213S and MW-301S both exceeded the standard with values of 158.19 and 275.63 ng/L respectively. EPA has developed risk-based RSLs for multiple PFAS compounds (see Section V.2 for further details). There have been detections above EPA RSLs of PFOA (19 wells across the site, along with 6 downgradient wells), PFOS (18 wells across the site, along with 4 downgradient wells), PFNA (MW-301S), and HFPO-DA (MW-213S).

A map showing all PFAS GW-1 exceedances by unit is presented in Appendix D.2.

OU-3/OU-4 Surface Water

Although the OU3 and OU4 RODs did not establish cleanup levels for surface water, monitoring activities are conducted for the purposes of evaluating cap/cover effectiveness in preventing contaminated stormwater runoff from reaching surface water bodies, as well as ensuring that the sediment MNR remedy will not be adversely impacted by contaminated stormwater runoff.

In June 2022, lead exceeded applicable water quality criteria (WQC) at SW-A2 and SW-A5 and chromium exceeded applicable WQC at SW-A2, SW-A4, and SW-A5. Additionally, arsenic and manganese exceeded applicable WQC at SW-A1, SW-A2 and SW-A3; and iron exceeded applicable WQC at SW-A1 and SW-A2.

In October 2022, chromium and lead exceeded applicable WQC clean up levels at SW-A4 and A-5. Additionally, iron and manganese exceeded applicable WQC levels at SW-A1, SW-A2, and SW-A3. Total dissolved solids exceeded applicable WQC levels at SW-A2 and SW-A3

These exceedances of the applicable WQC are indicative of potential dissolution of metal oxides, which may result in the mobilization of sorbed metals. Reducing conditions possibly mobilizing these metals may also affect the observed concentrations of total dissolved solids (TDS).

During the monitoring period, nitrate, total dissolved solids, iron, and manganese were detected above applicable WQC at SW-A1, SW-A2, and SW-A3. Chloride was detected above applicable WQC at SW-A2 and SW-A3.

Runoff, from facilities within and beyond the Iron Horse Park industrial complex may impact surface water at the site. Surface water locations with elevated chloride also have elevated sodium (>50,000 µg/L). Sources such as on- and off-site runoff containing road salts may impact surface water at the site. However, construction on site by MBTA may be contributing to these exceedances.

June and October maps for surface water parameters are found in Appendix D.2. Mann-Kendall trend analysis results for surface water are also presented in Appendix D.2.

OU-4 Sediment

For sediment, in 2022, Total PAH concentrations ranged from 321 micrograms per kilogram (µg/kg) to 19,816 µg/kg in the Unnamed Brook and waterways, and 1,663 µg/kg in the background sample collected from the Middlesex Canal. Concentrations of Total PAHs are depicted visually in Appendix D.2. Fifteen locations were tested for PAHs, and Total PAH concentrations at seven locations exceeded the ROD protective level (4,834 µg/kg).

Total PAH concentrations (sum of 17 individual PAHs) over time in the Unnamed Brook and waterways were assessed for locations with data in both 2017 and 2022. Total PAH concentration trends fluctuated between 2017 and 2022 by location. Overall, the maximum and average Total PAHs concentrations in the Unnamed Brook and waterways decreased from 2017 to 2022 (maximum: 49,506 µg/kg in 2017 versus 19,816 µg/kg in 2022; average: 9,086 µg/kg in 2017 versus 7,453 µg/kg in 2022). The number of locations with Total PAH concentrations exceeding the ROD protective level was also reduced, from eight locations in 2017 to seven locations in 2022.

Metals concentrations trends over time in the Unnamed Brook and waterways were assessed for locations with data in both 2017 and 2022. Metals concentrations trends between 2017 and 2022 fluctuated by location. However, collectively, the metals concentrations in the Unnamed Brook and waterways have improved, as the concentrations and numbers of locations exceeding the ROD protective levels have decreased overall between 2017 and 2022:

- The maximum chromium concentration decreased from 81 milligrams per kilogram (mg/kg) in 2017 to 55.5 mg/kg in 2022. The average chromium concentration decreased from 35 mg/kg in 2017 to 21 mg/kg in 2022. The number of locations with chromium concentrations exceeding the ROD protective level was also reduced, from 8 locations in 2017 to 5 locations in 2022.
- The maximum copper concentration increased from 775 mg/kg in 2017 to 1,020 mg/kg in 2022. This increase could be attributed to using US-SED-05A as an alternate location for UB-SED-05. The average copper concentration was similar, 168 mg/kg in 2017 to 173 mg/kg in 2022. The number of locations with copper concentrations exceeding the ROD protective level was reduced, from 10 locations in 2017 to 6 locations in 2022.
- The maximum lead concentration decreased from 4,100 mg/kg in 2017 to 3,270 mg/kg in 2022. The average lead concentration increased from 460 mg/kg in 2017 to 506 mg/kg in 2022, primarily due to use of an alternate location at UB-SED-15A. The number of locations with lead concentrations exceeding the ROD protective level was reduced, from 10 locations in 2017 to 8 locations in 2022.
- The maximum vanadium concentration decreased from 56.7 mg/kg in 2017 to 33.5 mg/kg in 2022. The average vanadium concentration decreased from 27 mg/kg in 2017 to 16 mg/kg in 2022. The number of locations with vanadium concentrations exceeding the vanadium ROD protective level was also reduced, from 7 locations in 2017 to 3 locations in 2022.
- The maximum zinc concentration decreased from 473 mg/kg in 2017 to 370 mg/kg in 2022. The average zinc concentration decreased from 166 mg/kg in 2017 to 145 mg/kg in 2022. The number of locations with zinc concentrations exceeding the zinc ROD protective level was the same, 7 locations in 2017 and 2022.

Exceedance maps for chromium, copper, lead, vanadium, and zinc are provided in Appendix D.2.

Sediment thickness monitoring and deposition/scour monitoring was conducted at each sediment sample location. A profile of depth to refusal measurements were collected in the vicinity of each sampling location to evaluate the thickness of unconsolidated sediments. The depth to the bottom of the water body (water column) at each sampling location was measured using a weighted measuring tape. A metal rod was inserted by hand to refusal in the sediment, and the water column measurement was then subtracted to calculate the sediment thickness. These measurements are summarized in Appendix D.2.

Original 2017 sampling locations were selected during a site walk with the SDs, EPA, and MassDEP and were based on areas of apparent sediment deposition. Sediment thickness monitoring was conducted in September 2021 and September 2022. Previous sediment data, core logs, and results show the beds to be predominantly sandy and thus not soft sediment. Not much deposition is occurring, and sandy beds are typically unconsolidated. In general, beds are staying consistent in thickness with some showing some indication of thinning. Unconsolidated beds, however, are difficult to probe and as such can lead to high variability in successful probing depths in recurring

events. This variability, coupled with site conditions making re-sampling consistent locations challenging, causes the interpretation of sediment thickness trends to be unreliable.

MNR evaluation results presented in the recent annual monitoring report (ERM, 2023b), noted the following conclusions:

- PCBs and 4,4'-DDD concentrations meet the required ROD protective levels.
- PAH concentrations have decreased overall, with seven of 15 locations exceeding the ROD protective level in 2022. MNR is an effective remedy for PAHs and continued monitoring of PAHs is warranted.
- Cadmium, lead, and zinc concentrations have decreased overall, with varying locations exceeding the ROD protective levels. Cadmium, lead, and zinc concentrations are anticipated to be protective of benthic invertebrates and the environment based on sediment chemistry conditions favoring low bioavailability and low toxicity. MNR is an effective remedy for cadmium, lead, and zinc, and monitoring will continue.
- Chromium concentrations have decreased overall, with five of 15 locations exceeding the chromium ROD protective level in 2022. Chromium concentrations are anticipated to be generally protective of benthic invertebrates and the environment based on sediment chemistry conditions favoring a chromium form (species) with low bioavailability and low toxicity. MNR is an effective remedy for chromium, and continued monitoring of chromium is warranted.
- Vanadium concentrations have decreased overall, with three of 15 locations exceeding the vanadium ROD protective level in 2022. MNR is an effective remedy for vanadium, and continued monitoring of vanadium is warranted.
- Sediment thickness data is largely too variable to make an interpretation of the data. Sediment grain size collected throughout the lifespan of the site shows that most of the bed is sandy, which would indicate that the bed is not soft sediment as prescribed by the ROD.

Site Inspection

The inspection of the Site was conducted on 4/12/2023. In attendance were Christopher Kelly of EPA, Remedial Project Manager for the Iron Horse Park Superfund Site, with support from AECOM, contractor to EPA Region 1, Janet Waldron, MassDEP Project Manager, and representatives of the SDs. The purpose of the inspection was to assess the protectiveness of the remedy.

OU-1

Similar to previous inspections, there is still evidence of all-terrain vehicle (ATV) use. Photos of the OU-1 area are included in Appendix A.1. A Site Inspection Checklist was not completed for OU-1, as the PAH-contaminated soils were removed, there is no risk present for unrestricted use (see Section V.1), and there is no ongoing post-construction O&M.

OU-2

Remedial activities (summarized earlier) were completed in 2003. Photos of the OU-2 area are included in Appendix A.1. During the inspection, the landfill cover, security fence, and operational systems appeared to be functioning properly and are well-maintained. A tree was observed to have fallen on the fence, but the repair had already been initiated by the SD's representative. No evidence of trespassing was observed at the time of the site walkover. There was vegetative growth in some downchutes and swales which should be reduced further; however, no evidence of standing water or other impairments due to the vegetation were observed. As the enclosed flare is no longer in operation, discussion ensued related to dismantling the flare. The SD representative noted that scrap metal dealers have been contacted, but, to date, there has been no interest in the flare. The Site Inspection Checklist associated with OU-2 is included in Appendix C.4. No issues related to the surficial solar development were observed.

OU-3

Photos of the OU-3 area are included in Appendix A.1 and show that, for some AOCs, site conditions have not changed significantly since previous investigation activities, while other AOCs have changed significantly. As

construction is now completed for all seven AOCs, a Site Inspection Checklist was utilized and is included for each of these AOCs in Appendix D.4.

The B&M Railroad Landfill (AOC1) cover appears to be operating as designed, with the exception of one area immediately upgradient of the riprap slope in the vicinity of the pond. There is evidence of settlement and/or separation from the upland cover system such that there is an uncovered earthen area between the coir log and the riprap. The exposed soil over that area is a thin veneer over the geotextile fabric that was installed as a separation layer between the riprap and underlying soil. This area needs to be repaired. As it was early in the season, limited new growth was observed. There is evidence of past vegetation, but it appears sparse. The winter rye grass was not mown, and it may be appropriate to inspect again later in the year to observe sustained growth. Photos are available in Appendix A.1.

The RSI Landfill (AOC2) cover appears to be in good condition and boundary fencing intact. The overall vegetation coverage appears to be sparse, and it may be appropriate to inspect again later in the year to observe sustained growth. The conduit recently constructed beneath the neighboring access road appears to be insufficient to direct flow beneath the access road. There are mounds of what appears to be dredge material (sediment and vegetation) along the waterway embankment. It is suspected that the material was generated during the conduit reconstruction. The mounds are not stabilized and appear subject to erosion. These items require attention.

The B&M Locomotive Shop Disposal Areas (AOC3) cover appears to be operating as designed. As it was early in the season, limited new growth was observed. Previous inspections showed significant growth on Lobe A (smaller). Lobe B showed growth as well, although the northern/western slope is not as robust. The water level in the restored wetland between Lobes A and B was unseasonably low. The possibility of an upstream beaver dam or other obstruction should be considered.

There are two pavement-capped areas associated with the Old B&M Oil/Sludge Recycling Area (AOC4). The area outside of Cooperative Reserve's (current property owner) fencing had pavement completed in the spring of 2013 and now has lumber being stored on portions of the pavement. There is one edge of the pavement which has some damage, but the design shows that the edge was constructed to be a couple of feet beyond any remaining soil contamination. Regular inspections should continue to watch this area. The area inside of Cooperative Reserve's fencing appears to be degrading further than observed during the previous FYR inspection. Previously, there were a few cracks which needed to be sealed (but were not). Two areas, one on the edge of the cover and one in the middle, show damage which should be addressed further. Photos are available in Appendix A.1.

Since construction completion at the Contaminated Soils Area (AOC5), the area has been used to store lumber. Visible pavement is generally in good shape, with a few scuffed areas. Some drain grates were missing and require replacement/repair. The sedimentation pond is overgrown with wetland vegetation and contains extensive windblown debris which made it difficult to identify the outlets (although that was eventually completed). Maintenance is recommended in order to confirm that the outlets are working properly.

The Asbestos Landfill (AOC6) cap is well-vegetated and appears to still be protective. However, some of the vegetation is getting large around the edge of the landfill and grass on the landfill does not get mowed. It may be appropriate to survey the landfill area outside the solar array to confirm if trees require removal. ATV use of the area appears to be precluded due to the solar array which covers a portion of the landfill. No ATV tracks were observed. Fencing is intact. Two small areas of potential asbestos material were observed along the roadway. These areas are currently being investigated further by the SDs.

At the Asbestos Lagoons (AOC7), the cover appears to be in good condition and boundary fencing is intact. There was a groundhog burrow observed which requires maintenance. All other areas appear to be in good condition.

V. TECHNICAL ASSESSMENT

V.1 QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

OU-1 - Yes. The review of documents, ARARs, risk assumptions, and the results of site inspections performed during the remedial action, indicate that the OU-1 remedy was performed as intended by the ROD as modified by the 1997 ESD. Since no contaminated material above cleanup levels was left at OU-1, there is no ongoing remedy to "function." The "construction" of the remedial action (which entails all cleanup activities) has been formally completed, as defined by review and approval of the Site Summary Report (ERM, 2003), which was submitted by the SD. Confirmatory sampling results from the Site Summary Report have been included in Appendix B.2. The OU-1 remedy is considered protective.

OU-2 - Yes. The review of documents, ARARs, risk assumptions, and the results of site inspections indicate that the OU-2 landfill capping component remedy has been designed and constructed as intended in the ROD, as modified by the 2000 ESD. The construction of the remedy has been formally completed, as defined by the review and approval of the Final Remedial Construction Report (GeoSyntec, 2003), which was submitted by the SD. However, Institutional Controls, as required under the ROD, have not been established yet and groundwater beyond the compliance boundary for the landfill exceeds the ROD's cleanup standards. For this reason, the OU-2 remedy is currently considered short-term protective.

Monthly O&M reports, which include review of landfill gas collection, the flare system, and leachate collection operations, have been reviewed as part of the FYR of OU-2. As noted above, based on the reduction in landfill gas production causing intermittent operation of the enclosed flare, candlestick flares have been installed at various locations on the landfill in place of the enclosed flare and appear to have been operating properly since installation.

Wetlands mitigation performance standards were achieved as documented in the Wetland Mitigation Monitoring Report, Year 4, February 2007.

As noted earlier, the reduction in groundwater concentrations outside of the existing compliance boundary (edge of landfill) is progressing slowly. This situation is being actively evaluated (see Sections II.2.B, II.2.C, IV [Data Review]).

OU-3 - Yes. The review of documents, ARARs, risk assumptions, and the results of site inspections indicate that the OU-3 caps/covers have been designed and constructed as intended in the ROD. As described above, construction is completed at all AOCs (all functioning as intended). The construction of the AOC7 remedy (capping of waste in the Asbestos Lagoons) was completed, as defined by the review and approval of the Final Remedial Construction Report (W&C, 2010), which was submitted on behalf of the OU-3 SD addressing AOC7. AOC4 and AOC5 remedy construction (capping of contaminated soil in the Old B&M Oil/Sludge Recycling Area and Contaminated Soils Area) was completed in 2013, as summarized in the Final Remedial Construction Report dated September 25, 2014 (ERM, 2014). Construction of the AOC2 remedy (capping of waste in the RSI Landfill) and the AOC6 remedy (cover erosion repair of the Asbestos Landfill) was completed in 2017, as summarized in the Final Remedial Construction Report dated September 19, 2017 (ERM, 2017). The remedy at AOC3 (capping of waste in the B&M Locomotive Shop Disposal Areas) was completed in 2019, as summarized in the Final Remedial Construction Report dated November 19, 2020 (ERM, 2020b). Monitoring of constructed wetland mitigation areas associated with this remedy is ongoing. The remedy at AOC1 (capping of waste in the B&M Railroad Landfill) was completed in 2022, as summarized in the Remedial Construction Report dated November 9, 2022 (ERM, 2022). Because ICs have not yet been finalized, the OU-3 remedy is currently considered short-term protective.

Monitoring of constructed wetland mitigation areas associated with AOCs 1 and 3 is ongoing.

OU-4 - Yes. The review of documents, ARARs, risk assumptions, and the results of site inspections indicate that the OU-4 remedy, including excavation and disposal of contaminated sediment from B&M Pond, MNR for other sediment exceeding cleanup levels, implementing storm water runoff controls, and long-term groundwater monitoring, has been designed and constructed as intended in the 2011 ROD, as modified by the 2014 ESD. The construction of the remedy has been formally completed, as defined by the review and approval of the OU-4 Remedial Action Construction Completion Report dated November 10, 2021 (ERM, 2021). However, Institutional Controls, as required under the ROD, have not been established yet.

Sediment was removed from B&M Pond and placed under the AOC1 cap (OU-3). MNR sediment monitoring is ongoing and has shown progress through reduction in some contaminant concentrations (see Section IV, Data Review). A berm was repaired to limit storm water runoff from reaching Unnamed Brook. Consistent periodic maintenance is expected to also help limit contaminated runoff from reaching site waterways. Long-term groundwater monitoring is currently performed semi-annually. Arsenic and manganese have been detected outside the GCB and this is being investigated further. Note that there are no private wells downgradient from the exceedances.

The OU-4 remedy will be protective upon completion of the MNR process and the implementation of ICs. For this reason, the OU-4 remedy is currently considered short-term protective.

V.2 QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

Overall Summaries by OU:

OU-1 - No. There have been some changes in exposure assumptions, toxicity factors, and risk assessment methods used to evaluate risk at OU-1. Even though there have been changes in toxicity values and risk assessment methods since the OU-1 risk assessment, soils and sediments have been excavated and confirmatory sampling performed.

Residual levels of PAHs (assumed to be benzo(a)pyrene) and metals (assuming the chromium exists as Cr^{+3}, as this is the typical state of chromium found in nature and the site was not known to handle Cr^{+6}) would not pose a risk or hazard above EPA's risk management guidelines to future residents, based on a comparison to residential risk-based concentrations developed by EPA (2023). Elevated levels of TPH which were present within the OU, regulated under State authority, were removed concurrently with the CERCLA cleanup.

Changes summarized above and described further below are not expected to alter the protectiveness of the remedy, as the residual contaminants left behind following cleanup would not pose a risk or hazard above EPA's risk management guidelines.

OU-2 – No. There have been changes in toxicity values, risk methodologies, and exposure assumptions since remedy selection for OU-2. However, because the landfill contents have been placed beneath an intact cap and surrounded by a security fence, there are no current exposures occurring to landfill waste. Additionally, institutional controls preventing groundwater use and restricting future land uses that would compromise the integrity of the current barriers to direct human contact will be implemented to assure remedy protectiveness in the future.

The groundwater cleanup levels established in the ROD are still valid, with the exception of arsenic. The MCL for arsenic is now 10 ppb. It should also be noted that the citation for the State groundwater standards cited in the ROD at 314 Code of Massachusetts Regulations (CMR) 6.00 no longer exist and have been repromulgated by the State at 314 CMR 5.11. For State groundwater standards to apply to the OU-2 remedy, the revised regulations will need to be incorporated into the remedy with a future CERCLA decision document.

Note also that the federal citations for the location-specific ARARs related to protection of wetlands and floodplains at 40 CFR Part 6 Appendix A has been eliminated. Current CERCLA remedies in the Region cite federal wetlands and floodplain regulations at 44 CFR Part 9 as relevant and appropriate standards and the regulations may be incorporated into the OU-2 remedy in a future decision document if wetlands or floodplain issues are found to be impacting the future protectiveness of the remedy.

Changes summarized above and described further below are not expected to alter the protectiveness of the remedy, as there is no current groundwater exposure and no impacts to the landfill cover from wetlands or floodplain issues.

OU-3 - No. There have been changes in toxicity values, risk methodologies, and exposure assumptions since remedy selection for OU-3. No soil risk or hazard above EPA risk management criteria was shown for commercial receptors except for soil lead at the B&M Locomotive Shop Disposal Areas, Old B&M Oil/Sludge Recycling Area, and Contaminated Soils Area for commercial workers. There have been changes in methods evaluating risk from lead since the original cleanup level was selected. However, as the remedy involves capping at the three AOCs associated with lead cleanup level exceedances, the changes discussed in this FYR are not expected to alter the protectiveness of the remedy.

Ecological risks were identified for cadmium in soil at the B&M Railroad Landfill and for copper and lead in soil at the B&M Locomotive Shop Disposal Areas. Since the habitat conditions at the site have not substantially changed, the exposure assumptions used in developing the cleanup levels have not changed. Cleanup levels were developed to be protective of small mammals, as the primary receptors of concern. Although these levels are higher than conservative ecological screening level values for metals in soils (EPA Ecological Soil Screening Levels), the levels were based on assumptions consistent with site-specific conditions. These assumptions remain valid based on the habitat conditions at the site. The toxicity data used in developing the soil cleanup levels and the RAOs regarding ecological risk are also still valid. Capping of the AOCs prevents contact with soils that contain cadmium, copper, and lead in excess of cleanup levels. Risk to ecological receptors exposed to contaminants in surface water and sediment was further evaluated as part of OU-4 (see Section II.4.A).

Changes summarized above and described further below are not expected to alter the protectiveness of the remedy, as the source area covers and caps are preventing direct contact with waste/contaminants.

OU-4 – No. Exposure assumptions, risk assessment methodology and toxicity values have changed since the 2011 ROD. However, the site groundwater contaminants primarily remain within the site GCB, and nearby residences do not have private wells, therefore, these changes do not impact site protectiveness. Institutional controls to restrict groundwater use and prevent disturbance of contaminated sediment will be implemented to assure remedy protectiveness in the future.

Changes summarized above and described further below are not expected to alter the protectiveness of the remedy, as there is no current groundwater exposure.

Changes in Standards and TBCs:

New standards (federal or state statutes and/or regulations), as well as new TBC guidances, should be considered during the five-year review process as part of the protectiveness determination. Under the NCP, if a new federal or state statute and/or regulation is promulgated or a new TBC guidance is issued after the ROD is signed, and, as part of the five-year review process it is determined that the standard needs to be attained or new guidance procedures followed to ensure that the remedy is protective of human health and the environment, then the five-year review should recommend that a future decision document be issued that adds the new standard as an ARAR or guidance as a TBC to the remedy.

EPA guidance states:

"Subsequent to the initiation of the remedial action new standards based on new scientific information or awareness may be developed and these standards may differ from the cleanup standards on which the remedy was based. These new … [standards] should be considered as part of the review conducted at least every five years under CERCLA §121(c) for sites where hazardous substances remain on-site. The review requires EPA to assure that human health and the environment are being protected by the remedial action. Therefore, the remedy should be examined in light of any new standards that would be applicable or relevant and appropriate to the circumstances at the site or pertinent new [standards], in order to ensure that the remedy is still protective. In certain situations, new standards, or the information on which they are based may indicate that the site presents a significant threat to health or environment. If such information comes to light at times other than at the five-year reviews, the necessity of acting to modify the remedy should be considered at such times." (See CERCLA Compliance with Other Laws Manual: Interim Final (Part 1) EPA/540/G-89/006 August 1988, p. 1-56.)

PFAS. In May 2022, EPA issued updated noncancer reference dose (RfD) values for several PFAS compounds which result in the following RSLs at HQ target 0.1:

- Perfluorooctanoic acid (PFOA) 6 ng/L
- Perfluorooctanesulfonic acid (PFOS) 4 ng/L
- Perfluorononanoic acid (PFNA) 5.9 ng/L
- Perfluorohexanesulfonic acid (PFHxS) 39 ng/L
- Hexafluoropropylene oxide-dimer acid (HFPO-DA) (Gen-X) 6 ng/L

The RfD values for PFOA, PFOS, PFNA and PFHxS are based on Agency for Toxic Substances and Disease Registry (ATSDR; 2021) Minimal Risk Levels (MRLs) for ingestion exposure.

The RfD value for HFPO-DA (Gen-X) is based on a chronic oral RfD from EPA Office of Water which is 3E-06.

In May 2021, EPA issued an updated noncancer RfD for Perfluorobutanesulfonic acid (PFBS). PFBS has a chronic oral RfD of 3E-04. This results in an RSL (HQ=0.1) of 600 ng/L.

In December 2022, EPA released a new oral RfD of 1.0E-03 mg/kg-day for Perfluorobutanoic acid (PFBA) based on a new Integrated Risk Information System (IRIS) value. Previously, no RfD was available for PFBA. This results in an RSL (HQ=0.1) of 1,800 ng/L.

In 2023, EPA released a new oral reference dose (RfD) of 5.0E-04 mg/kg-day for Perfluorohexanoic acid (PFHxA) based on a new IRIS value. Previously, no RfD was available for PFHxA. This results in an RSL (HQ=0.1) of 990 ng/L.

On October 2, 2020, the State promulgated Massachusetts Maximum Contaminant Levels (MMCLs) for drinking water for the sum of six PFAS compounds into the State's Drinking Water Regulations (310 CMR 22.00). The MMCL is 20 ng/L (ppt) for the sum of six PFAS compounds:

- PFOS
- PFOA
- PFHxS
- PFNA
- perfluoroheptanoic acid (PFHpA)
- perfluorodecanoic acid (PFDA)

At this time EPA has made no determination of whether these State standards will need to be added as an ARAR for this site. They should, however, be used as screening values for PFAS compounds, along with the RSLs.

OU-1 – Not applicable.

OU-2 - For purposes of this FYR, EPA has evaluated the PFAS data collected against EPA's RSLs and the State's PFAS MMCL. Although there are exceedances of EPA's RSLs for PFOA and PFOS and the State's PFAS MMCL in multiple wells (see Section IV, Data Review), no determination has been made that the contamination is site-related, and no one is currently drinking the groundwater in the areas where exceedances have been documented. Nearby residences are connected to a municipal water source, therefore there is not any current exposure to PFAS contamination. EPA will perform or oversee additional evaluations, including additional sampling for PFAS and a groundwater fate and transport assessment to ensure the remedy remains protective.

OU-3 – Not applicable.

OU-4 - For purposes of this FYR, EPA has evaluated the PFAS data collected against EPA's RSLs and the State's PFAS MMCL. Although there are exceedances of EPA's RSLs for PFOA, PFOS, PFNA, and HFPO-DA (maximum detections of 56.9, 71.6, 12.1, and 182 ng/L, respectively) and the State's PFAS MMCL in multiple wells (see Section IV, Data Review), this does not impact the remedy's protectiveness, as the site groundwater contaminants primarily remain within the site GCB, and nearby residences do not have private wells. ICs restricting groundwater use are also planned for implementation, which will prevent potential future exposures.

1,4-Dioxane. Using 2013 updated IRIS toxicity information and the standard Superfund risk assessment approach, EPA's carcinogenic risk range of 10^{-6} to 10^{-4} for 1,4-dioxane equates to a concentration range of 0.46 to 46 µg/L (ppb).

OU-1 – Not applicable.

OU-2 - The compound 1,4-dioxane is often found in groundwater associated with landfills and has recently (2021 and 2022) been included in the OU-2 groundwater monitoring program. There is no federal or state MCL for 1,4-dioxane. Although there is an exceedance of EPA's carcinogenic risk range noted above in one well (ENSR-11B; 82 µg/L in 2021), that location showed a reduction in concentration in 2022 (1.42 µg/L) which is within the cancer risk range (see Section IV, Data Review). This does not impact the remedy's protectiveness, because nearby residences are connected to a municipal water source. Therefore, there would not be any current exposure to 1,4 dioxane contamination. EPA will perform or oversee additional evaluations, including additional sampling for 1,4-dioxane and a groundwater fate and transport assessment to ensure the remedy remains protective.

OU-3 – Not applicable.
OU-4 – Not applicable.

Floodplain. Federal Floodplain Management: Federal regulations at 40 CFR Part 6, Appendix A identified in the OU-2 and OU-3 RODs were withdrawn. Furthermore, these regulations, and therefore the current CERCLA remedy, only addressed potential floodplain impacts up to the 100-year flood elevation. Current federal floodplain regulations at 44 CFR Part 9 require a greater assessment of potential floodplain impacts, including preventing the release of contamination from waste management units and other remedial infrastructure up to the 500-year floodplain elevation. EPA has assessed potential floodplain impacts from a 500-year flood event on the landfill covers in the floodplain. Because EPA has not identified any protectiveness issues at this time, there is no recommendation to add this requirement as an ARAR at this time.

Changes in Toxicity and Other Contaminant Characteristics:

2022 cis-1,2-Dichloroethylene non-cancer toxicity value
In October 2022, EPA released a non-cancer reference concentration (RfC) of 4.00E-02 mg/m³ for cis-1,2-dichloroethylene, based on a Provisional Peer-Reviewed Toxicity Values (PPRTV) screening value. Previously, no RfC was available for cis-1,2-dichloroethylene.

OU-1, OU-3, OU-4 - Not applicable.

OU-2 - This does not impact the remedy's protectiveness, because nearby residences are connected to a municipal water source. Although concentrations of cis-1,2-dichloroethylene are above applicable RSLs, the remedy remains protective because a direct exposure pathway to groundwater at OU-2 does not exist.

2020 trans-1,2-Dichloroethylene non-cancer toxicity value
In November 2020, EPA finalized a new reference concentration (RfC) for trans-1,2-dichloroethylene based on a new PPRTV. There previously was no RfC for trans-1,2-dichloroethylene.

OU-1, OU-3, OU-4 - Not applicable.

OU-2 - This does not impact the remedy's protectiveness, because nearby residences are connected to a municipal water source. Although concentrations of trans-1,2-dichloroethylene are above applicable RSLs, the remedy remains protective because a direct exposure pathway to groundwater at OU-2 does not exist.

2022 PFAS non-cancer toxicity values
In May 2022, EPA released updated oral reference doses (RfDs) for perfluorooctanoic acid (PFOA), Perfluorononanoic acid (PFNA), Perfluorooctanesulfonic acid (PFOS), and Perfluorohexanesulfonic acid (PFHxS), based on the ATSDR Minimal Risk Level (MRL). The new RfDs are as follows:

- PFOA 3E-06 mg/kg-day
- PFOS 2E-06 mg/kg-day
- PFNA 3E-06 mg/kg-day
- PFHxS 2.0E-05 mg/kg-day

These new values indicate that PFOA and PFOS are more toxic from non-cancer health effects and would result in an increased non-cancer risk. Values for PFNA and PFHxS were not previously available, but if detected would result in increased non-cancer risk.

The 2022 RfD value for HFPO-DA (Gen-X) is based on a chronic oral RfD from EPA Office of Water which is 3E-06.

In May 2021, EPA issued an updated noncancer RfD for PFBS. PFBS has a chronic oral RfD of 3E-04. The RSL for PFBS is 600 ng/L.

In December 2022, EPA released a new oral RfD of 1.0E-03 milligrams per kilogram per day (mg/kg-day) for perfluorobutanoic acid (PFBA) based on a new Integrated Risk Information System (IRIS) value. Previously, no RfD was available for PFBA. The RSL for PFBA is 1,800 ng/L.

In April 2023, EPA released a new oral RfD of 5.0E-04 mg/kg-day for perfluorohexanoic acid (PFHxA) based on a new IRIS value. Previously, no RFD was available for PFHxA. The RSL for PFHxA is 990 ng/L.

OU-1, OU-3 – Not applicable.

OU-2 – There have been detections of PFOA and PFOS above EPA RSLs and MMCLs; however, there is no impact to protectiveness because there is no current use of impacted groundwater.

OU-4 - There are detections of PFOA, PFOS, PFNA, and HFPO-DA exceeding the EPA RSLs. However, there is no current groundwater exposure; therefore, detections do not impact protectiveness.

Lead in Soil Cleanups
EPA continues to examine the science around lead exposure. Updated scientific information indicates that adverse health effects are associated with blood lead levels (BLLs) at less than 10 micrograms per deciliter (µg/dL). Several studies have observed "clear evidence of cognitive function decrements in young children with mean or group BLLs between 2 and 8 µg/dL."

Based on this updated scientific information, EPA is including an evaluation of potential lead risks with a goal to limit exposure to residential and commercial soil lead levels such that a typical (or hypothetical) child or group of similarly exposed children would have an estimated risk of no more than 5% of the population exceeding a 5 µg/dL BLL. This is based on evidence indicating cognitive impacts at BLLs below 10 µg/dL. A target BLL of 5 µg/dL reflects current scientific literature on lead toxicology and epidemiology that provides evidence that the adverse health effects of lead exposure do not have a threshold.

EPA's 2017 Office of Land and Emergency Management (OLEM) memorandum "Transmittal of Update to the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters" (OLEM Directive 9285.6-56; EPA, 2017) provides updates on the default baseline blood lead concentration and default geometric standard deviation input parameters for the Adult Lead Methodology (ALM). These updates are based on the analysis of the National Health and Nutrition Examination Survey (NHANES) 2009-2014 data, with recommended updated values for baseline blood lead concentration being 0.6 µg/dL and geometric standard deviation being 1.8.

Using updated default Integrated Exposure Uptake Biokinetic Model (IEUBK) and ALM parameters at a target BLL of 5 µg/dL, site-specific lead soil screening levels (SLs) of 200 ppm and 1,000 ppm are developed for residential and commercial/industrial exposures, respectively.

Given the ongoing review of information, the above SLs are considered in this Five-Year Review for informational purposes.

OU-1 - The cleanup level was developed based on previous BLL of 10 µg/dL (400 mg/kg). However, the average lead concentration in the confirmatory samples (50 mg/kg) is below the SLs.

OU-2, OU-4 - Not applicable since any lead contamination present is under the landfill cover.

OU-3 - The remediation goal developed for OU-3 of 1,107 mg/kg for lead, was based on the previous target BLL of 10 µg/dL.

Using updated default ALM parameters at a target BLL of 5 µg/dL, a new site-specific lead soil screening level of 1,000 mg/kg is developed for the Site for commercial/industrial exposures.

A review of the lead data associated with the remedial actions performed at AOCs 4 and 5 show that there were two soil locations at AOC5 which were outside of the capped area and at concentrations below the previous cleanup level (1,107 mg/kg), but above the commercial screening level (1,000 mg/kg). However, the average lead concentration of the perimeter samples outside the cap is below 1,000 mg/kg (a map showing lead concentrations outside of the cap is included in Appendix D.5). Therefore, the remedy is still considered protective.

Changes in Risk Assessment Methods:

There have been multiple changes to EPA's risk assessment methodologies since the Site's original risk assessment, as summarized in previous FYR reports. However, there are no additional changes in risk assessment methods from the previous FYR, other than routine updates to EPA's RSLs, which have been incorporated in the chemical-specific screening of the monitoring data discussed throughout this FYR Report.

Changes in Exposure Pathways:

OU-1 - The exposure assumptions used to develop the Human Health Risk Assessment included both current exposures (worker) and potential future exposures (worker and resident). Cleanup levels were developed based on assumed future commercial land use. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. When the remedy was changed from on-site

bioremediation to excavation and off-site asphalt batching, all PAHs and metals exceeding CERCLA residential risk levels were removed from the site.

OU-2, OU-3, and OU-4 – Not applicable.

Vapor Intrusion

2018 EPA Vapor Intrusion Screening Level (VISL) Calculator
In February 2018, EPA launched an online VISL calculator which can be used to obtain risk-based screening level concentrations for groundwater, sub-slab soil gas and indoor air. The VISL calculator uses the same database as the RSLs for toxicity values and physiochemical parameters and is automatically updated during the semi-annual RSL updates. The User's Guide provides further details on how to use the VISL calculator: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.

The vapor intrusion exposure pathway is only applicable to the groundwater associated with OU-2 and OU-4. The OU-2 risk assessment (referred to as an "Endangerment Assessment") did not evaluate the vapor intrusion exposure pathway. No occupied buildings have been, or are expected to be constructed above the OU-2 groundwater plume, therefore there is no current exposure pathway from vapor intrusion. If future data indicates a potential pathway, a vapor intrusion evaluation may be considered. The risk assessment associated with OU-4 concluded that the risks/hazards were below EPA's risk criteria.

Expected Progress Towards Meeting RAOs:

OU-1 - The RAOs and the risk-based cleanup levels for OU-1 are still valid for assumed commercial/industrial land use. As noted earlier, the PAHs and metals exceeding CERCLA residential risk levels were removed from the site.

Because all material with contamination above cleanup levels set in the ROD and 1997 ESD have been removed from OU-1, and subsequent evaluation showed the cleanup achieved unrestricted use standards (so the ROD's IC requirements are no longer required), there is no "operating" or "functioning" remedy. The Site Summary Report (ERM, 2003) was submitted by the SD, reviewed, and approved by EPA, thereby certifying that the performance standards related to construction have been met.

OU-2 - The RAOs for OU-2 remain valid. Note, however, that the arsenic MCL has changed to 10 ppb. In addition, an MCL has been finalized at 5 ppb for 1,1,2-trichloroethane, whereas the interim cleanup level was previously set at the MCLG (3 ppb). Note that the OU-2 ROD's 1,1,2-trichloroethane cleanup level that is based on the non-zero MCLG did not change. The ROD's cleanup level would still remain as the cleanup level for 1,1,2-trichloroethane (rather than the revised MCL). However, a future ESD would be required to incorporate the change to the arsenic MCL into the OU-2 remedy.

The ROD-established interim cleanup levels for groundwater have not been achieved outside the compliance boundary for the landfill (although it also needs to be determined to what extent the exceedances are due to Site-related contamination). The present monitoring-only remedy for groundwater beyond the compliance boundary does not meet current EPA guidance standards requiring restoration of the groundwater to drinking water standards within a reasonable time period. Under the current ROD remedy there is no estimate, following EPA guidances for monitored natural attenuation (MNA) remedies, for determining when, or if, groundwater can achieve cleanup standards within a reasonable time period compared to an active groundwater treatment alternative. Current ongoing groundwater investigations will determine if modifications of the remedy will be required through a future CERCLA decision document.

OU-3 - The RAOs for OU-3 remain valid except for the lead soil concentration specified in the human health soil RAO. As described above, a revised lead screening level based on the additional population statistics has been determined to be 1,000 mg/kg.

OU-4 - The RAOs and cleanup levels for groundwater at OU-4 remain valid (see above for discussion regarding the risk-based cleanup level for cis-1,3-dichloropropene).

For OU-4 sediment, ecological risks were identified for multiple contaminants in sediment in B&M Pond and Unnamed Brook and waterways (see Section II.4.B for list). Since the habitat conditions at the site have not substantially changed, the evaluation methods/assumptions used in developing the cleanup levels have not changed. Cleanup levels were developed to be protective of benthic invertebrates, as the primary receptors of concern. Toxicity testing was utilized to establish No Observed Effects Concentrations (NOECs) and Lowest Observed Effects Concentrations (LOECs) which were then used to generate Maximum Acceptable Toxic Concentrations (MATCs; geometric mean between the NOEC and LOEC values). These MATCs were used to generate the sediment cleanup levels (M&E, 2010). Therefore, as the habitat conditions at the site remain the same, the sediment cleanup levels and RAOs are still valid. In the 2014 ESD, additional toxicity testing results were used to better define the remedial extent of B&M Pond sediments. Those sediments were excavated and placed under the AOC1 cap in OU-3. Sediments in the Unnamed Brook and other site waterways are being monitored as part of an MNR program.

V.3 QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

OU-1 - No. No other information has come to light that could call into question the protectiveness of the remedy at OU-1.

OU-2 - No. No other information has come to light that could call into question the protectiveness of the remedy.

The expected impacts of climate change in New England pose increasing risks to contaminated sites. Increases in air and water temperature, precipitation, flooding, and periods of drought may result in altered fate and transport pathways and exposure assumptions, impaired aquatic habitats, dispersal of contaminants, damage to remediation related structures, and ultimately ineffective remedies. Increased frequency of extreme weather events may cause damage or releases at sites, impairing remedial efforts where remedies have not been adequately designed to protect against these risks.

The landfill is in a floodplain, and it is possible that there could be future impacts due to flooding.

OU-3 - No. No other information has come to light that could call into question the protectiveness of the remedy.

The expected impacts of climate change in New England pose increasing risks to contaminated sites. Increases in air and water temperature, precipitation, flooding, and periods of drought may result in altered fate and transport pathways and exposure assumptions, impaired aquatic habitats, dispersal of contaminants, damage to remediation related structures, and ultimately ineffective remedies. Increased frequency of extreme weather events may cause damage or releases at sites, impairing remedial efforts where remedies have not been adequately designed to protect against these risks.

Some of the AOCs are in the floodplain and it is possible that there could be future impacts due to flooding.

OU-4 - No. No other information has come to light that could call into question the protectiveness of the remedy.

The expected impacts of climate change in New England pose increasing risks to contaminated sites. Increases in air and water temperature, precipitation, flooding, and periods of drought may result in altered fate and transport pathways and exposure assumptions, impaired aquatic habitats, dispersal of contaminants, damage to remediation related structures, and ultimately ineffective remedies. Increased frequency of extreme weather events may cause damage or releases at sites, impairing remedial efforts where remedies have not been adequately designed to protect against these risks.

The risks posed by climate change in New England are not expected to alter the protectiveness of the groundwater remedy associated with OU-4. However, the sediment remedy (MNR) could be impacted if increased flow rates occur in Unnamed Brook and contaminants are transported to other locations. This potential transport mechanism will be evaluated if changes are observed at the site.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU-1

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU-2	**Issue Category: Institutional Controls**			
	Issue: Institutional controls restricting inappropriate land uses and protecting the landfill cap and other components of the remedy need to be established.			
	Recommendation: Discussions between EPA, MassDEP, and the property owners are ongoing. Upon completion of discussions between the parties, institutional controls should be established at OU-2 by the end of 2024.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA, PRP	EPA	12/31/2024

OU(s): OU-2	**Issue Category: Remedy Performance**			
	Issue: Exceedances of groundwater standards have been observed outside of the landfill compliance boundary. It is unclear if PFAS and 1,4-dioxane are chemicals of concern in groundwater at OU-2.			
	Recommendation: Perform an assessment to determine if unacceptable human health risks are posed by site-related contamination in groundwater. While groundwater monitoring has recently included analysis of PFAS and 1,4-dioxane, additional monitoring for PFAS and 1,4-dioxane should be performed in future groundwater monitoring rounds to determine if these chemicals are of concern at OU-2. A decision document may be needed to expand the boundary of the Operable Unit and incorporate remedial measures to address unacceptable risks, if identified.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	9/30/2027

OU(s): OU-2	Issue Category: Remedy Performance			
	Issue: The extent of ICL exceedances in groundwater is not fully defined and the reduction in groundwater concentrations outside of the existing compliance boundary (edge of landfill) is progressing slowly.			
	Recommendation: Define the extent of ICL exceedances in groundwater and evaluate response options. Additional assessments to determine if groundwater beyond the compliance boundary can achieve groundwater cleanup standards within a reasonable time period are necessary.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State/PRP	EPA	9/30/2027

OU(s): OU-3	Issue Category: Institutional Controls			
	Issue: Institutional controls restricting inappropriate land uses and protecting landfill caps/covers and other components of the remedy need to be established.			
	Recommendation: Discussions between EPA, MassDEP, and the property owners are ongoing. Upon completion of discussions between the parties, institutional controls should be established at OU-3 by the end of 2024.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	12/31/2024

OU(s): OU-4	Issue Category: Institutional Controls			
	Issue: Institutional controls restricting inappropriate land uses need to be established.			
	Recommendation: Discussions between EPA, MassDEP, and the property owners are ongoing. Upon completion of discussions between the parties, institutional controls should be established at OU-4 by the end of 2024.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	12/31/2024

OU(s): OU-4	Issue Category: Remedy Performance			
	Issue: Exceedances of groundwater cleanup levels outside of groundwater compliance boundary.			
	Recommendation: Evaluate groundwater direction further and continue sampling to determine if downward trends exist prior to next five-year review.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	9/30/2027

OU(s): OU-4	Issue Category: Monitoring			
	Issue: The nature and extent of PFAS impacts to OU-4 groundwater are not fully defined. It is unclear if PFAS are chemicals of concern in groundwater at OU-4.			
	Recommendation: Additional monitoring for PFAS should be performed in future groundwater monitoring rounds to better define the nature and extent of these contaminants at OU-4. While groundwater monitoring has recently included analysis of PFAS, additional monitoring for PFAS should be performed in future groundwater monitoring rounds to determine if these chemicals are of concern at OU-4.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	9/30/2027

Other Findings

In addition, the following are recommendations that were identified during the FYR, but do not affect current or future protectiveness:

- OU-2 – Any future CERCLA decision document for OU-2, if deemed necessary, should incorporate the change to the arsenic MCL, changes to State Groundwater Quality Standards, and updates to federal floodplain protection requirements.
- OU-2 – Reduce vegetative growth in downchutes and swales during normal maintenance.
- OU-3 – AOC2 – Remove dredge material along water way embankment so that material will not erode and be transported into the neighboring water body.
- OU3 – AOC3 – To maintain adequate hydrologic conditions within the restored wetland areas, ensure that surface water obstructions, including beaver dams, are removed.
- OU3 – AOC4 – Address cracks in asphalt and other asphalt damage to maintain protectiveness.
- OU3 – AOC5 – Maintain the sedimentation pond by reducing vegetative overgrowth and removing windblown debris; ensure that missing drain covers are replaced.
- OU3 – AOC6 – Continue visual observations of cover system to ensure that possible asbestos-containing material is not exposed.
- OU3 – AOC7 – Identify, correct, and prevent animal burrowing within the landfill cover system.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: OU-1	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:*

Protectiveness Statement:
The remedy at OU-1 is protective of human health and the environment. Confirmatory soil samples were collected and showed that soils with contaminants above applicable commercial/industrial cleanup requirements were removed from the site. Additionally, further sampling indicated residual soil contamination met residential cleanup levels. Therefore, no statutorily-mandated future Five Year Reviews for OU-1 are required.

Protectiveness Statement(s)		
Operable Unit: OU-2	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*

Protectiveness Statement:
The remedy at OU-2 currently protects human health and the environment, as exposure pathways that could result in unacceptable risks are being controlled. The landfill is fenced to prevent access and there is no current use of groundwater. However, in order for the remedy to be protective in the long-term, institutional controls will be created and recorded to restrict inappropriate land uses (including use of groundwater) and protect the landfill cap and other components of the remedy. Operation and Maintenance activities have been initiated and will ensure that the landfill and associated components of the remedy remain in good condition. In addition, monitoring of groundwater and surface water will continue to assess the continued protectiveness of the capping remedy and progress towards attainment of groundwater cleanup levels beyond the landfill compliance boundary. This includes further evaluation of emerging contaminants, including PFAS and 1,4-dioxane. Potential evaluations could include: expansion of the boundary of the Operable Unit; incorporation of other groundwater response options; groundwater reclassification; or determine whether groundwater beyond the compliance boundary can achieve groundwater cleanup standards within a reasonable time period.

Protectiveness Statement(s)		
Operable Unit: OU-3	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*

Protectiveness Statement:
The remedy at OU-3 currently protects human health and the environment, as exposure pathways that could result in unacceptable risks are being controlled through the use of covers/caps. Institutional controls will be created and recorded to protect the caps/covers and other components of the remedy. Operation and Maintenance activities have been initiated and will ensure that the source area caps/covers, and associated components of the remedy remain in good condition. In addition, monitoring of groundwater and surface water will continue to assess the continued protectiveness of the capping remedy.

Protectiveness Statement(s)		
Operable Unit: OU-4	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*

Protectiveness Statement:
The remedy at OU-4 currently protects human health and the environment. Sediments in B&M Pond have been removed and covered on-site. The long-term monitoring is ongoing and will continue to evaluate contaminant stability relative to the groundwater compliance boundary. Sediments in Unnamed Brook are undergoing MNR and are expected to achieve RAOs over time. Institutional controls will be created and recorded to protect components of the remedy. Evaluations are recommended to further determine groundwater flow direction, and if contaminant concentration trends are decreasing. Additional monitoring for PFAS should be performed to determine if these chemicals are of concern.

Sitewide Protectiveness Statement	
Protectiveness Determination: Short-term Protective	*Planned Addendum Completion Date:* Click here to enter a date

Protectiveness Statement: The sitewide remedies currently protect human health and the environment by limiting or eliminating exposure pathways to impacted environmental media associated with Operable Units 1, 2, 3, and 4. However, in order for the remedies to be protective in the long-term, the following actions need to be taken to ensure protectiveness:

- OU-2: Institutional controls will be created and recorded to restrict inappropriate land uses (including use of groundwater) and protect the landfill cap and other components of the remedy. Operation and Maintenance activities have been initiated and will ensure that the landfill and associated components of the remedy remain in good condition. In addition, monitoring of groundwater and surface water will continue to assess the continued protectiveness of the capping remedy and progress towards attainment of groundwater cleanup levels beyond the landfill compliance boundary. This includes further evaluation of emerging contaminants, including PFAS and 1,4-dioxane.

- OU-3: Institutional controls will be created and recorded to protect the caps/covers and other components of the remedy.

- OU-4: The long-term monitoring is ongoing and will continue to evaluate contaminant stability relative to the groundwater compliance boundary. Sediments in Unnamed Brook are undergoing MNR and are expected to achieve RAOs over time. Institutional controls will be created and recorded to protect components of the remedy.

VIII. NEXT REVIEW

The next FYR report for the Iron Horse Park Superfund Site is required five years from the completion date of this review.

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FIGURES

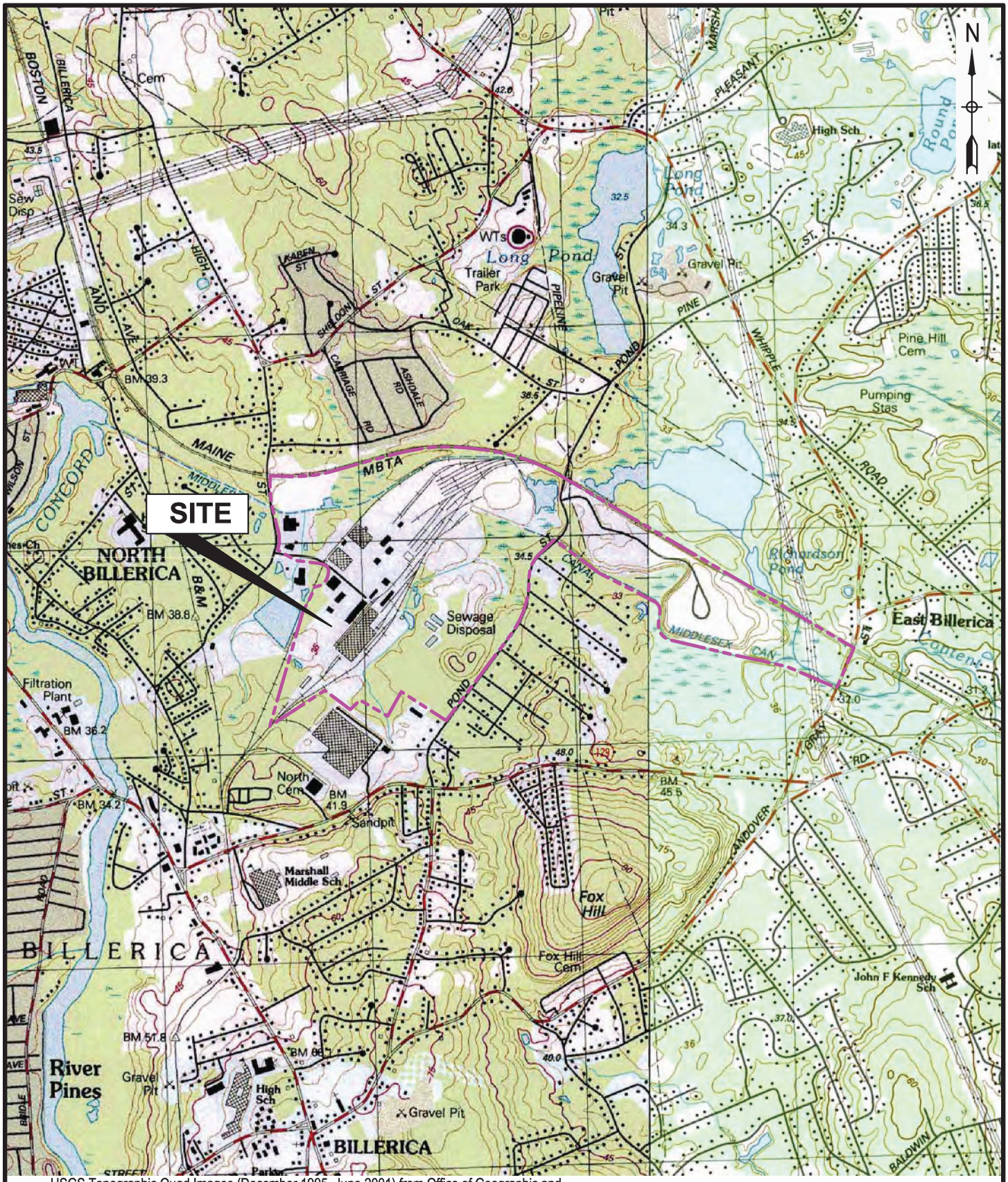

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Figure 1 - Site Location Map
Iron Horse Park Superfund Site
Operable Unit 3
Billerica, Massachusetts

ERM

G:\Graphics\Clients\B_M\Iron Horse Park\CAD\AOC-4\AOC-4-Site Locus Map-2007.dwg (08/25/2009 - 9:53am Boston)

Source: Color Ortho Imagery April 2005) provided by The Office of Geographic and Environmental Information MassGIS , Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.

Legend

- Iron Horse Park Site Boundary
- AOC Boundary RD/RA, 2012)
- AOC Boundary 2004

Areas of Concern

AOC 1	B M Railroad Landfill	AOC 4	Old B M Oil/Sludge Recycling Area
AOC 2	RSI Landfill	AOC 5	Contaminated Soils Area
AOC 3	B M Locomotive Shop Disposal Areas (Areas A & B)	AOC 6	Asbestos Landfill
		AOC 7	Asbestos Lagoons

0 350 700 1,050 1,400 Feet

1:8,400

Figure 2 - Site Layout Map
Iron Horse Park Superfund Site
Operable Unit 3
Billerica, Massachusetts

ERM

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Appendix A
Interview Summary and Site Walkover Photos

A.1 – Site Walkover Photos

OU-1: Evidence of Recent ATV Use

OU-1: ATV Pathways

OU-2: Detention Basin

OU-2: Fence Damage along Residential Landfill

OU-2: Groundhog hole; Commercial Landfill; Railroad Track Side Swale

OU-3: AOC1 – Wetland Restoration Area

OU-3: AOC1 – Earthen Area Needing Repair

OU-3: AOC1 – Sparse Vegetation

OU-3: AOC2 – Dredge Material on Bank of Unnamed Brook

OU-3: AOC2 – Conduit Insufficient to Manage Waterway Flow

OU-3: AOC3 – Low Water Level in Area

OU-3: AOC3 – Pallets on Edge of Landfill

OU-3: AOC4 – Areas of Edge of Cover in CRSI which Need Attention

OU-3: AOC4 – Patched Area in CRSI

OU-3: AOC5 – Fence and Vegetated Swale

OU-3: AOC5 – Wet Basin

OU-3: AOC6 – Tree Growth

OU-3: AOC6 – Tree Growth

OU-3: AOC7 – Groundhog Hole along Drainage Swale, Railroad Track Side

A.2 – Interview Summary

IRON HORSE PARK SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Iron Horse Park	
EPA ID: MAD051787323	
Interviewer name: Aaron Shaheen	**Interviewer affiliation: EPA Community Involvement Coordinator**
Subject name: Jeremiah Breen	**Subject affiliation: President of Middlesex Canal Association**
Subject contact information: jbreen5@verizon.net	
Interview date: 2/15/23	**Interview time: N/A**
Interview location: N/A	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

Detail from the June 2010 Google Earth photo appended at the end. The red line is the towpath of the Middlesex Canal plotted from am 1829 survey, passing through the asbestos lagoons, Area of Concern 7. Note the dirt track to the towpath.

The canal was first placed on the National Register of Historic Places on Sep 1, 1972, number 72000117, and the Middlesex Canal Heritage Park was authorized by Mass. Acts of 1977, Ch. 403. The canal through the lagoons was not reviewed by EPA under Sec. 106 of the National Historic Preservation Act. Overall impression of the project with regard to Section 106 is that EPA started badly and still has not accepted the historical significance of the canal, the location of the Middlesex Canal Heritage Park and mitigation of it exclusionary zones.

"The Middlesex canal, uniting the waters of [the Merrimack River] with the harbor of Boston, is however the greatest work of the kind which has been completed in the United States." *Report on Public Roads and Canals* by the US Secretary of the

Treasury to Congress, April 4, 1808. http://oll.libertyfund.org/titles/2046.

3. What have been the effects of this Site on the surrounding community, if any

   Negative with regard to Section 106 and the Middlesex Canal Heritage Park, for example, the asbestos lagoons where the remnant canal is disturbed and the route is blocked by fencing of an exclusionary zone.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   Not applicable to section 106.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   Email.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   Not applicable.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   A one-mile trail easement between Gray and Pond Streets on the Shaffer 106 acres.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

IRON HORSE PARK SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Iron Horse Park	
EPA ID: MAD051787323	
Interviewer name: Aaron Shaheen	**Interviewer affiliation: EPA Community Involvement Coordinator**
Subject name: Marlies Henderson	**Subject affiliation: Community Member**
Subject contact information: marlies.henderson@gmail.com	
Interview date: 2/14/23	**Interview time: N/A**
Interview location: N/A	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   I am aware of the Iron Horse Superfund issues and that EPA managed the site as such, remediating the issues to the best of their abilities.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   As far as I can tell, I assume cleanup and maintenance are under control, as is the reuse as a solar farm. Attempts to obtain a public trail easement along the Middlesex Canal towpath have not yet gained traction, despite its monitoring merits: Public access, south of the eastern lobe, rather than 'no trespassing' signs warrant the safety sought relative to the operation & management of the remediated superfund site.

3. What have been the effects of this Site on the surrounding community, if any

   The change from dump to Superfund site, to remediated solar farm is an improvement. If continued unchecked, unmonitored ATV activity along the southern side of the eastern lobe could threaten the stability of the remediation.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   While currently outside the security fencing (as far as I can tell), there is definitely ATV activity. If swamp mats parked off Gray Street will cover the powerlines by Content Brook again, increased activity out of Tewksbury can be expected.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   As for me, I have always shown the initiative to reach out to the EPA. This survey is the first time I have been asked to engage.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   I do not.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   It would be my recommendation to secure a 75 ft wide, roughly 1 mile public easement (the Middlesex Canal cross section, including the towpath and berm side). The easement could be held by the Middlesex Canal Association (the Association owns multiple deeds to parcels of land, as recorded with the Registry of Deeds). The purpose of the easement would be to protect and maintain the towpath and/or berm as a recreational trail. Once it is a public trail for non-motorized uses, the Billerica Police Department can monitor the trail for non-compliant uses. Additionally, once it is known and used as a public trail, proper uses will deter improper uses (only non-trespassing signs welcome improper uses).

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

IRON HORSE PARK SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Iron Horse Park	
EPA ID: MAD051787323	
Interviewer name: Aaron Shaheen	**Interviewer affiliation: EPA Community Involvement Coordinator**
Subject name: Janet Waldron	**Subject affiliation: MassDEP Project Manager**
Subject contact information: janet.waldron@state.ma.us	
Interview date: 2/14/23	**Interview time: N/A**
Interview location: N/A	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: State Agency	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   It has taken much too long to address all of the Operable Units at the Site. The first, OU1, had a ROD in 1988, the last ROD was signed in 2011. The construction of the remedy for the final source area in OU3 was not completed until 2022. 34 years is much too long to complete the remedies, even for a Superfund site.

   Maintenance of several of the source area caps appears to be insufficient. The vegetation is not mowed frequently enough to along a thorough inspection of the cap (grass is too long to see), and vegetation along fences is not cut back (trees/vines growing through fence, which over time, could cause the fence to be compromised).

   Several solar arrays have been installed at the Site, which is an appropriate reuse for this type of site (source areas remain, site cleaned up to industrial/commercial reuse standards).

2. What is your assessment of the current performance of the remedy in place at the Site?

   The remedies appear to be functioning as designed and constructed for the various OUs (except cap maintenance as mentioned above).

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

   No.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

   Question is not clear. Not sure if this is about community involvement activities, or activities in general. If the former, DEP has not conducted any community outreach/communication. If the latter, DEP has been conducting some O&M activities at OU2, including surface and ground water monitoring, and gas migration monitoring.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

   An MCL for PFAS has been established. In general, this should not affect the remedy as the groundwater in the area is not considered a source of drinking water, however, there are no restrictions for the drilling and use of private wells in the area.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

   ICs have not yet been implemented but are in the process of being developed. One concern is the potential lack of an owner for OU2, which could make the establishment of enforceable ICs difficult if not possible.

7. Are you aware of any changes in projected land use(s) at the Site?

   Yes. One of the property owners (MBTA) has discussed the possibility of erecting a transportation-related facility (train maintenance) at the Site in a currently undeveloped area. However, this proposed use is not incompatible with the proposed ICs for the property, so there should not be any major issues. The main concern is related to excavation of soils and contact with groundwater, both of which could potentially be contaminated. As the property was not addressed under any ROD for the Site, if contamination is discovered, it is not clear which program (federal Superfund or State cleanup) would have jurisdiction.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   Monitoring frequencies for some of the OUs and/or source areas could be reduced in light of many years of data indicating that while contamination is present, concentrations are declining or remaining constant (no large increases in concentrations of any contaminant).

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

Appendix B
Information Related to the OU-1 Review

B.1 – Documents Reviewed

Camp Dresser and McKee (CDM). July, 1987. *Draft Phase 1a Remedial Investigation for the Iron Horse site, Billerica, MA.* Report prepared for the U.S. Environmental Protection Agency.

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United States Environmental Protection Agency. September, 2013. *Fourth Five-Year Review Report for Iron Horse Park Superfund Site, Operable Units 1, 2, 3, and 4, North Billerica, Massachusetts*.

United States Environmental Protection Agency. September, 2018. *Fifth Five-Year Review Report for Iron Horse Park Superfund Site, Operable Units 1, 2, 3, and 4, North Billerica, Massachusetts*.

B.2 – Confirmatory Soil Sample Results

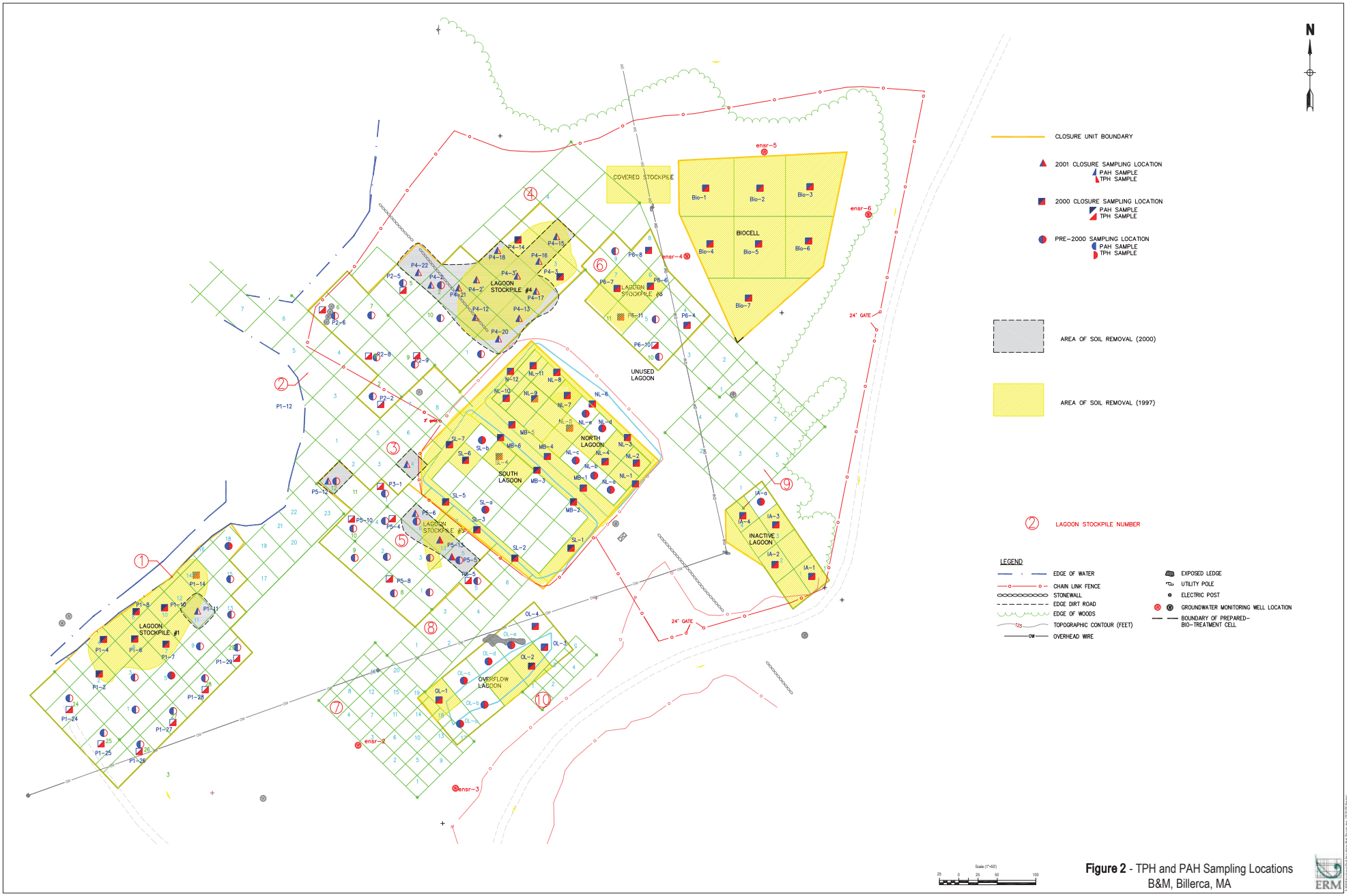


Figure 2 - TPH and PAH Sampling Locations
B&M, Billerica, MA

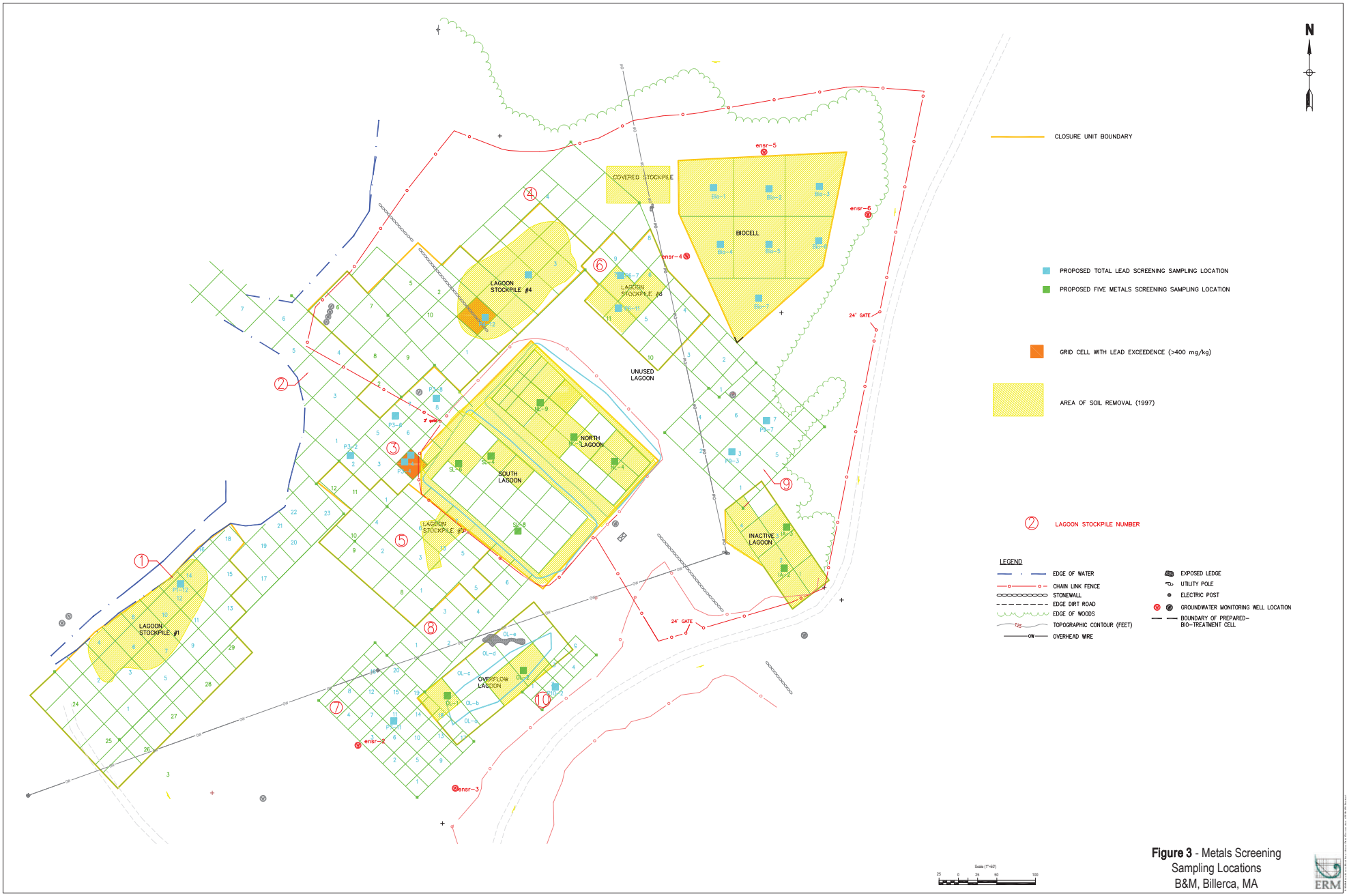


Figure 3 - Metals Screening Sampling Locations
B&M, Billerica, MA

Table 1
Fall 2000 TPH and PAH Soil Sampling Locations
Iron Horse Park Superfund Site
Billerica, Massachusetts

	October 2000 Sampling Locations			
Closure Unit	**Sampling Location**	**Depth (feet bgs)**	**Total TPH Samples**	**Total PAH Samples**
Lagoon Stockpile #1	P1-2	0-1	1	1
	P1-4	0-1 & 1-3	2	2
	P1-6	0-1 & 1-3	2	2
	P1-7	0-1	1	1
	P1-8	0-1	1	1
	P1-10	0-1 & 1-3	2	2
	P1-11	0-1	1	1
	P1-14	0-1 & 1-3	2	2
	P1-24	0-1	1	0
	P1-25	0-1	1	0
	P1-26	0-1	1	0
	P1-27	0-1	1	0
	P1-28	0-1	1	0
	P1-29	0-1	1	0
	Total TPH Samples		**18**	
	Total PAH Samples			**12**
Lagoon Stockpile #4	P4-2	0-1	1	0
	P4-3	0-1	1	1
	P4-3'	0-1 & 1-3	2	2
	P4-12	0-1 & 1-3	2	2
	P4-2'	0-1 & 1-3	2	2
	P4-13	0-1	1	1
	P4-14	0-1	1	1
	P4-15	0-1 & 1-3	2	2
	P2-2	0-1	1	0
	P2-5	0-1	1	0
	P2-6	0-1	1	0
	P2-8	0-1	1	0
	P2-9	0-1	1	0
	Total TPH Samples		**17**	
	Total PAH Samples			**11**
Lagoon Stockpile #5	P3-1	0-1 & 1-3	2	0
	P5-4	0-1 & 1-3	2	0
	P5-6	0-1	1	0
	P5-8	0-1	1	0
	P5-10	0-1	1	0
	P5-12	0-1 & 1-3	2	0
	P5-13	0-1 & 1-3	2	2
	P8-5	0-1 & 1-3	2	0
	Total TPH Samples		**13**	
	Total PAH Samples			**2**

Table 1
Existing and Proposed TPH and PAH Sampling Locations
Iron Horse Park Superfund Site
Billerica, Massachusetts

	October 2000 Sampling Locations			
Closure Unit	**Sampling Location**	**Depth (feet bgs)**	**Total TPH Samples**	**Total PAH Samples**
Lagoon Stockpile #6 /Biocell				
Lagoon Stockpile #6	P6-4	0-1 & 1-3	2	2
	P6-6	0-1 & 1-3	2	2
	P6-7	0-1 & 1-3	2	2
	P6-8	0-1 & 1-3	2	2
	P6-10	0-1	1	1
	P6-11	0-1 & 1-3	2	2
Biocell	BIO-1	0-1	1	1
	BIO-2	0-1	1	1
	BIO-3	0-1	1	1
	BIO-4	0-1	1	1
	BIO-5	0-1	1	1
	BIO-6	0-1	1	1
	BIO-7	0-1	1	1
	Total TPH Samples		**18**	
	Total PAH Samples			**18**
North & South Lagoons/Berms				
North Lagoon	NL-1	0-1	1	1
	NL-2	0-1	1	1
	NL-3	0-1	1	1
	NL-4	0-1	1	1
	NL-5	0-1 & 1-3	2	2
	NL-6	0-1	1	1
	NL-7	0-1	1	1
	NL-8	0-1 & 1-3	2	2
	NL-9	0-1	1	1
	NL-10	0-1	1	1
	NL-11	0-1	1	1
	NL-12	0-1 & 1-3	2	2
Middle Berm (Berm between North & South Lagoon)	MB-1	0-1 & 1-3	2	2
	MB-2	0-1 & 1-3	2	2
	MB-3	0-1 & 1-3	2	2
	MB-4	0-1 & 1-3	2	2
	MB-5	0-1 & 1-3	2	2
	MB-6	0-1 & 1-3	2	2
South Lagoon	SL-1	0-1	1	1
	SL-2	0-1 & 1-3	2	2
	SL-3	0-1 & 1-3	2	2
	SL-4	0-1 & 1-3	2	2
	SL-5	0-1 & 1-3	2	2
	SL-6	0-1	1	1
	SL-7	0-1 & 1-3	2	2
	Total TPH Samples		**39**	
	Total PAH Samples			**39**

Table 1
Existing and Proposed TPH and PAH Sampling Locations
Iron Horse Park Superfund Site
Billerica, Massachusetts

	October 2000 Sampling Locations			
Closure Unit	**Sampling Location**	**Depth (feet bgs)**	**Total TPH Samples**	**Total PAH Samples**
Overflow and Inactive Lagoons				
Overflow Lagoon	OL-1	0-1	1	1
	OL-2	0-1 & 1-3	2	2
	OL-3	0-1	1	1
	OL-4	0-1	1	1
Inactive Lagoon	IA-1	0-1	1	1
	IA-2	0-1	1	1
	IA-3	0-1 & 1-3	2	2
	IA-4	0-1	1	1
	Total TPH Samples		**10**	
	Total PAH Samples			**10**

Table 2
Fall 2000 Metals Screening Locations
Iron Horse Park Superfund Site
Billerica, Massachusetts

	October 2000 Sampling Locations		
Closure Unit	**Sampling Location**	**Depth (feet bgs)**	**Total Lead Samples**
Lagoon Stockpile #1			
	P1-12	0-1	1
	Total Lead Samples		**1**
Lagoon Stockpile # 3	P3-4	0-1 & 1-3	2
	P3-6	0-1 & 1-3	2
	P3-8	0-1 & 1-3	2
	P3-2	0-1 & 1-3	2
	Total Lead Samples		**8**
Lagoon Stockpile #4			
	P4-12	0 - 1	1
	Total Lead Samples		**1**
Lagoon Stockpile #6/Biocell			
Lagoon Stockpile # 6	P6-7	0-1	1
	P6-11	0-1	1
Biocell	Bio-1	0 - 1	1
	Bio-2	0 - 1	1
	Bio-3	0 - 1	1
	Bio-4	0 - 1	1
	Bio-5	0 - 1	1
	Bio-6	0 - 1	1
	Bio-7	0 - 1	1
	Total Lead Samples		**9**
Lagoon Stockpile # 7	P7-11	0-1	1
	Total Lead Samples		**1**
Lagoon Stockpile # 9	P9-3	0-1 & 1-3	2
	P9-7	0-1 & 1-3	2
	Total Lead Samples		**4**
Lagoon Stockpile # 10	P10-2	0-1 & 1-3	2
	Total Lead Samples		**2**

Table 2
Proposed Metals Screening Locations
Iron Horse Park Superfund Site
Billerica, Massachusetts

	October 2000 Sampling Location		
Closure Unit	**Sampling Location**	**Depth (feet bgs)**	**Total 5 Metals Samples**
North & South Lagoons			
North Lagoon	NL-4	0-1	1
	NL-5	0-1	1
	NL-9	0-1	1
South Lagoon	SL-4	0-1	1
	SL-6	0-1	1
	SL-8	0-1	1
	Total Five Metals		**6**
Overflow and Inactive Lagoons			
Overflow Lagoon	OL-1	0-1	1
	OL-2	0-1	1
Inactive Lagoon	IA-2	0-1	1
	IA-3	0-1	1
	Total Five Metals		**4**

Table 3
Summary of Closure Unit Statistics
Iron Horse Park Superfund Site
North Billerica, Massachusetts

	Statistics Summary							
	Polycyclic Aromatic Hydrocarbons (PAHs)				Total Petroleum Hydrocarbons (TPH)			
Closure Unit	Arithmetic Avg	95% UCL	Maximum	Data Distribution	Arithmetic Avg	95% UCL	Maximum	Data Distribution
Biocell	0.3	0.4	0.64		206	449	570	
Inactive Lagoon	0.21	0.74	0.31		144	3494	550	
Overflow Lagoon	0.54	0.684	0.79		460	1996	1300	
Stockpile #1	0.57	0.72	1.7	Use Normal	46	57	110	Use Normal
Stockpile # 4	0.47	0.91	2.00	Use Lognormal	804	1340	3200	
Stockpile #5	0.59	0.75	1.30	Normal	1779	3131	5200	Normal
Stockpile #6	0.28	0.5	0.5		92	130	310	
North & South Lagoons and Berms	0.37	0.59	0.98		531	814	2800	

Notes:
All values presented in milligrams per kilogram (mg/kg)
Total PAH Cleanup Goal = 1 mg/kg
TPH Cleanup Goal = 5,000 mg/kg
Data distribution analysis was not required or performed on Closure Units that do not contain samples exceeding cleanup goals

Table 4A
Summary of Organics in Soil
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID							L0008962-17		L0008962-18		L0009079-04		L0008882-13		L0008882-19		L0008882-20		L0009079-02		L0009079-05	
Sampling Date		NL-a	NL-b	NL-c	NL-d	NL-e	**10/05/00**		**10/05/00**		**10/05/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/05/00**		**10/05/00**	
Location ID	**Units**						**NL-1-1-1-1**	**Q**	**NL-2-1-1**	**Q**	**NL-3-1-1**	**Q**	**NL-4-1-1**	**Q**	**NL-5-1-1**	**Q**	**NL-5-2-1**	**Q**	**NL-6-1-1**	**Q**	**NL-7-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	1000	197	121	236	260	380		590		230		75		100		76		66		93	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																						
Acenaphthene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Fluoranthene	mg/kg						0.042	U	0.042	U	0.032		0.018	J	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Naphthalene	mg/kg						0.042	U	0.042	U	R			UJ	0.021	UJ	0.018	UJ	R		R	
Benzo(a)anthracene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Benzo(a)pyrene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Benzo(b)fluoranthene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Benzo(k)fluoranthene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Chrysene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Acenaphthylene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Anthracene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Benzo(ghi)perylene	mg/kg						0.042	U	0.042	U	0.026			UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Fluorene	mg/kg						0.042	U	0.042	U	R			UJ	0.021	UJ	0.018	UJ	R		R	
Phenanthrene	mg/kg						0.042	U	0.042	U	0.031			UJ	0.021	UJ	0.018	UJ	R		R	
Dibenzo(a,h)anthracene	mg/kg						0.042	U	0.042	U		U		UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Indeno(1,2,3-cd)pyrene	mg/kg						0.042	U	0.042	U	0.021			UJ	0.021	UJ	0.018	UJ	0.021	U	0.021	U
Pyrene	mg/kg						0.042	U	0.042	U	0.028			UJ	0.021	UJ	0.018	UJ	R		R	
Total PAH Constituent Concentrations =		0.55	0.14	0.5	0.55	0.92	0.336		0.336		0.138		0.018		0.168		0.144		0.126		0.126	

Notes:

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
mg/kg = milligrams per kilogram
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection
FD-5 duplicate of MB-3
FD 6/7 are field duplicates for Sample NL-8.

Table 4A
Summary of Organics in Soil
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008882-11		L0008882-12		L0008882-16		L0009079-08		L0009079-06		L0008882-14		L0008882-15		L0008835-01		L0008835-02		L0008835-03
Sampling Date		**10/03/00**		**10/03/00**		**10/03/00**		**10/05/00**		**10/05/00**		**10/03/00**		**10/03/00**		**10/02/00**		**10/02/00**		**10/02/00**
Location ID	**Units**	**NL-8-1-1**	**Q**	**NL-8-2-1**	**Q**	**NL-9-1-1**	**Q**	**NL-10-1-1**	**Q**	**NL-11-1-1**	**Q**	**NL-12-1-1**	**Q**	**NL-12-2-1**	**Q**	**MB-1-1-1**	**Q**	**MB-1-2-1**	**Q**	**MB-2-1-1**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	310		68		73		300		240		510		67		1600		950		2600
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																				
Acenaphthene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ		U	0.021	U		UJ	0.021	UJ		U		U	
Fluoranthene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.089		0.021	U	0.078	J	0.021	UJ	0.15			U	0.065
Naphthalene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	R		R		0.022	J	0.021	UJ	0.086			U	0.097
Benzo(a)anthracene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.052		0.021	U	0.041	J	0.021	UJ	0.083			U	
Benzo(a)pyrene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.047		0.021	U	0.034	J	0.021	UJ	0.067			U	
Benzo(b)fluoranthene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.043		0.021	U	0.04	J	0.021	UJ	0.072			U	
Benzo(k)fluoranthene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.04		0.021	U	0.035	J	0.021	UJ	0.066			U	
Chrysene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.054		0.021	U	0.049	J	0.021	UJ	0.1			U	0.062
Acenaphthylene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ		U	0.021	U		UJ	0.021	UJ		U		U	
Anthracene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.022		0.021	U		UJ	0.021	UJ	0.067		0.055		0.054
Benzo(ghi)perylene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.056		0.021	U	0.038	J	0.021	UJ	0.087		0.027		0.061
Fluorene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	R		R			UJ	0.021	UJ		U		U	
Phenanthrene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.06		R		0.067	J	0.021	UJ	0.16		0.021		0.12
Dibenzo(a,h)anthracene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ		U	0.021	U		UJ	0.021	UJ		U		U	
Indeno(1,2,3-cd)pyrene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.046		0.021	U	0.034	J	0.021	UJ	0.073			U	
Pyrene	mg/kg	0.02	UJ	0.02	UJ	0.019	UJ	0.079		R		0.069	J	0.021	UJ	0.14			U	0.062
Total PAH Constituent Concentrations =		0.16		0.16		0.152		0.588		0.126		0.507		0.168		1.151		0.103		0.521

Notes:

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
mg/kg = milligrams per kilogram
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection
FD-5 duplicate of MB-3
FD 6/7 are field duplicates for Sample NL-8.

Table 4A
Summary of Organics in Soil
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID			L0008835-04		L0008835-05		L0008835-06		L0008835-14		L0008835-15		L0008835-10		L0008835-11		L0008835-12		L0008835-13			
Sampling Date			**10/02/00**		**10/02/00**		**10/02/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/03/00**		SL-a	SL-b
Location ID	**Units**	**Q**	**MB-2-2-1**	**Q**	**MB-3-1-1**	**Q**	**MB-3-2-1**	**Q**	**MB-4-1-1**	**Q**	**MB-4-2-1**	**Q**	**MB-5-1-1**	**Q**	**MB-5-2-1**	**Q**	**MB-6-2-1**	**Q**	**MB-6-1-1**	**Q**		
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg		570		1300		760		1000		300		910		1100		740		2200		275	141
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																						
Acenaphthene	mg/kg	U		U		U		U		U		U		U		U		U		U		
Fluoranthene	mg/kg			U	0.11		0.023		0.099			U	0.066		0.043		0.079		0.14			
Naphthalene	mg/kg			U	0.068		0.031		0.076			U	0.072		0.043		0.056		0.14			
Benzo(a)anthracene	mg/kg	U		U	0.059			U	0.062			U	0.039		0.024		0.046		0.077			
Benzo(a)pyrene	mg/kg	U		U	0.056			U	0.058			U	0.032			U	0.045		0.063			
Benzo(b)fluoranthene	mg/kg	U		U	0.058			U	0.063			U	0.037		0.024		0.05		0.08			
Benzo(k)fluoranthene	mg/kg	U		U	0.046			U	0.06			U	0.034			U	0.048		0.075			
Chrysene	mg/kg			U	0.076		0.022		0.08			U	0.055		0.035		0.063		0.11			
Acenaphthylene	mg/kg	U		U		U		U		U		U		U		U		U		U		
Anthracene	mg/kg		0.024		0.037		0.044		0.064			U	0.053		0.051		0.031		0.11			
Benzo(ghi)perylene	mg/kg		0.023		0.081		0.043		0.1		0.042		0.053		0.045		0.059		0.11			
Fluorene	mg/kg	U		U		U		U		U		U		U		U		U		U		
Phenanthrene	mg/kg		0.025		0.09		0.036		0.1		0.022		0.086		0.058		0.083		0.16			
Dibenzo(a,h)anthracene	mg/kg	U		U		U		U		U		U		U		U		U		U		
Indeno(1,2,3-cd)pyrene	mg/kg	U		U	0.07		0.029		0.078		0.03		0.04		0.028		0.049		0.083			
Pyrene	mg/kg			U	0.1		0.022		0.095			U	0.06		0.039		0.072		0.13			
Total PAH Constituent Concentrations =			0.072		0.851		0.25		0.935		0.094		0.627		0.39		0.681		1.278		0.935	0.415

Notes:

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
mg/kg = milligrams per kilogram
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection
FD-5 duplicate of MB-3
FD 6/7 are field duplicates for Sample NL-8.

Table 4A
Summary of Organics in Soil
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0009079-03		L0008885-15		L0008885-16		L0008882-09		L0008882-10		L0009077-03		L0008885-12		L0008885-14		L0008885-10		L0008885-11	
Sampling Date		**10/05/00**		**10/04/00**		**10/04/00**		**10/03/00**		**10/03/00**		**10/06/00**		**10/04/00**		**10/04/00**		**10/03/00**		**10/04/00**	
Location ID	**Units**	**SL-1-1-1**	**Q**	**SL-2-1-1**	**Q**	**SL-2-2-1**	**Q**	**SL-3-1-1**	**Q**	**SL-3-2-1**	**Q**	**SL-4-1-1**	**Q**	**SL-5-1-1**	**Q**	**SL-5-2-1**	**Q**	**SL-6-1-1**	**Q**	**SL-7-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	850		150		420		430		300		2800		350		340		230		240	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																					
Acenaphthene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ		U		U		U	0.021	U		U
Fluoranthene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.044		0.22		0.069		0.021	U	0.031	
Naphthalene	mg/kg	R		0.021	U	0.022	U	0.021	UJ	0.021	UJ		U		U		U	0.021	U		U
Benzo(a)anthracene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.024		0.1		0.035		0.021	U		U
Benzo(a)pyrene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ		U	0.077		0.024		0.021	U		U
Benzo(b)fluoranthene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.032		0.056		0.023		0.021	U		U
Benzo(k)fluoranthene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.025		0.076		0.024		0.021	U		U
Chrysene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.035	J	0.097		0.032		0.021	U		U
Acenaphthylene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ		U		U		U	0.021	U		U
Anthracene	mg/kg	0.042		0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.047		0.057		0.027		0.021	U		U
Benzo(ghi)perylene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.036		0.051			U	0.021	U	0.024	
Fluorene	mg/kg	R		0.021	U	0.022	U	0.021	UJ	0.021	UJ		U		U		U	0.021	U		U
Phenanthrene	mg/kg	R		0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.039		0.19		0.043		0.021	U		U
Dibenzo(a,h)anthracene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ		U		U		U	0.021	U		U
Indeno(1,2,3-cd)pyrene	mg/kg		U	0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.031		0.056			U	0.021	U		U
Pyrene	mg/kg	R		0.021	U	0.022	U	0.021	UJ	0.021	UJ	0.063		0.18		0.057		0.021	U	0.029	
Total PAH Constituent Concentrations =		0.042		0.168		0.176		0.168		0.168		0.376		1.16		0.334		0.168		0.084	

Notes:

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
mg/kg = milligrams per kilogram
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection
FD-5 duplicate of MB-3
FD 6/7 are field duplicates for Sample NL-8.

Table 4A
Summary of Organics in Soil
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008885-13		L0008835-07		L0008882-23		L0008882-24	
Sampling Date		**10/04/00**		**10/02/00**		**10/03/00**		**10/03/00**	
Location ID	**Units**	**SL-7-2-1**	**Q**	**FD-5**	**Q**	**FD-6**	**Q**	**FD-7**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	120				340			
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)									
Acenaphthene	mg/kg	0.022	U		U			0.022	UJ
Fluoranthene	mg/kg	0.022	U	0.043				0.022	UJ
Naphthalene	mg/kg	0.022	U	0.032				0.022	UJ
Benzo(a)anthracene	mg/kg	0.022	U	0.029				0.022	UJ
Benzo(a)pyrene	mg/kg	0.022	U	0.026				0.022	UJ
Benzo(b)fluoranthene	mg/kg	0.022	U	0.023				0.022	UJ
Benzo(k)fluoranthene	mg/kg	0.022	U		U			0.022	UJ
Chrysene	mg/kg	0.022	U	0.035				0.022	UJ
Acenaphthylene	mg/kg	0.022	U		U			0.022	UJ
Anthracene	mg/kg	0.022	U	0.04				0.022	UJ
Benzo(ghi)perylene	mg/kg	0.022	U	0.039				0.022	UJ
Fluorene	mg/kg	0.022	U	0.022	U			0.022	UJ
Phenanthrene	mg/kg	0.022	U	0.045				0.022	UJ
Dibenzo(a,h)anthracene	mg/kg	0.022	U		U			0.022	UJ
Indeno(1,2,3-cd)pyrene	mg/kg	0.022	U	0.03				0.022	UJ
Pyrene	mg/kg	0.022	U	0.042				0.022	UJ
Total PAH Constituent Concentrations =		0.176		0.406				0.176	

Notes:

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
mg/kg = milligrams per kilogram
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection
FD-5 duplicate of MB-3
FD 6/7 are field duplicates for Sample NL-8.

Table 4B
Statistical Analysis
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	NL-a	NL-b	NL-c	NL-d	NL-e	NL-1	NL-2	NL-3	NL-4	NL-5 (NL-5-1/NL-5-2)	NL-6	NL-7	NL-8 (NL-8-1/NL-8-2/FD-6/7)	NL-9	NL-10	NL-11
PAH (mg/kg)	0.55	0.14	0.5	0.55	0.92	0.336	0.336	0.138	0.018	0.1560	0.126	0.126	0.165	0.152	0.588	0.126
TPH (mg/kg)	1000	197	121	236	260	380	590	230	75	88	66	93	265.0	73.0	300.0	240.0

Values in red represent 1/2 the MDL

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	NL-a	NL-b	NL-c	NL-d	NL-e	NL-1	NL-2	NL-3	NL-4	NL-5 (NL-5-1/NL-5-2)	NL-6	NL-7	NL-8 (NL-8-1/NL-8-2)	NL-9	NL-10	NL-11
PAH (mg/kg)	-0.5978	-1.9661	-0.6931	-0.5978	-0.0834	-1.0906	-1.0906	-1.9805	-4.0174	-1.8579	-2.0715	-2.0715	-1.7998	-1.8839	-0.5310	-2.0715
TPH (mg/kg)	6.9078	5.2832	4.7958	5.4638	5.5607	5.9402	6.3801	5.4381	4.3175	4.4773	4.1897	4.5326	5.5797	4.2905	5.7038	5.4806

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	NL-a	NL-b	NL-c	NL-d	NL-e	NL-1	NL-2	NL-3	NL-4	NL-5 (NL-5-1/NL-5-2)	NL-6	NL-7	NL-8 (NL-8-1/NL-8-2)	NL-9	NL-10	NL-11
PAH (mg/kg)	0.55	0.14	0.5	0.55	0.92	0.336	0.336	0.138	0.018	0.156	0.126	0.126	0.165	0.152	0.588	0.126
TPH (mg/kg)	1000	197	121	236	260	380	590	230	75	88	66	93	265	73	300	240

Values in red represent 1/2 the MDL

Table 4B
Statistical Analysis
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	NL-12 (NL-12-1/NL-12-2)	MB-1 (MB-1-1/MB-1-2)	MB-2 (MB-2-1/MB-2-2)	MB-3 (MB-3-1/MB-3-2/FD-5)	MB-4 (MB-4-1/MB-4-2)	MB-5 (MB-5-1/MB-5-2)	MB-6 (MB-6-1/MB-6-2)	SL-a	SL-b	SL-1	SL-2 (SL-2-1/SL-2-2)
PAH (mg/kg)	0.3375	0.627	0.2965	0.50	0.5145	0.5085	0.9795	0.935	0.415	0.042	0.172
TPH (mg/kg)	288.5	1275	1585	1030	650	1005.0	1470.0	275	141	850	285

Values in red represent 1/2 the MDL

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	NL-12 (NL-12-1/NL-12-2)	MB-1 (MB-1-1/MB-1-2)	MB-2 (MB-2-1/MB-2-2)	MB-3 (MB-3-1/MB-3-2)	MB-4 (MB-4-1/MB-4-2)	MB-5 (MB-5-1/MB-5-2)	MB-6	SL-a	SL-b	SL-1	SL-2 (SL-2-1/SL-2-2)
PAH (mg/kg)	-1.0862	-0.4668	-1.2157	-0.6885	-0.6646	-0.6763	-0.0207	-0.0672	-0.8795	-3.1701	-1.7603
TPH (mg/kg)	5.6647	7.1507	7.3683	6.9373	6.4770	6.9127	7.2930	5.6168	4.9488	6.7452	5.6525

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	NL-12 (NL-12-1/NL-12-2)	MB-1 (MB-1-1/MB-1-2)	MB-2 (MB-2-1/MB-2-2)	MB-3 (MB-3-1/MB-3-2)	MB-4 (MB-4-1/MB-4-2)	MB-5 (MB-5-1/MB-5-2)	MB-6	SL-a	SL-b	SL-1	SL-2 (SL-2-1/SL-2-2)
PAH (mg/kg)	0.3375	0.627	0.2965	0.502333333	0.5145	0.5085	0.9795	0.935	0.415	0.042	0.172
TPH (mg/kg)	288.5	1275	1585	1030	650	1005	1470	275	141	850	285

Values in red represent 1/2 the MDL

Table 4B
Statistical Analysis
North and South Lagoons and Berms
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	SL-3 (SL-3-1/SL-3-2)	SL-4	SL-5 (SL-5-1/SL-5-2)	SL-6	SL-7 (SL-7-1/SL-7-2)
PAH (mg/kg)	0.168	0.376	0.75	0.168	0.13
TPH (mg/kg)	365	2800	345	230	180

Values in red represent 1/2 the MDL

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	SL-3 (SL-3-1/SL-3-2)	SL-4	SL-5 (SL-5-1/SL-5-2)	SL-6	SL-7 (SL-7-1/SL-7-2)	MEAN	STDEV	N	N-1	H Statistic	95% UCLt	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	-1.7838	-0.9782	-0.2917	-1.7838	-2.0402	-1.31	0.91	32	31	2.314	0.594	0.98	0.6	Use Lognormal UCL
TPH (mg/kg)	5.8999	7.9374	5.8435	5.4381	5.1930	5.79	0.98	32	31	2.393	813.625	2800	813.6	Use Lognormal UCL

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	SL-3 (SL-3-1/SL-3-2)	SL-4	SL-5 (SL-5-1/SL-5-2)	SL-6	SL-7 (SL-7-1/SL-7-2)	MEAN	STDEV	N	N-1	t Statistic	95% UCL	Maximum Concentration	Lower of UCL and Max Conc.
PAH (mg/kg)	0.168	0.376	0.747	0.168	0.13	0.37	0.27	32	31	1.6939	0.450	0.98	0.5
TPH (mg/kg)	365	2800	345	230	180	530.89	593.10	32	31	1.6939	708.49	2800	708.5

Values in red represent 1/2 the MDL

Table 5A
Summary of Organics in Soil - Lagoon Stockpile # 6
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID					L0008882-01		L0008882-02		L0008885-01		L0008885-02		L0008882-03		L0008882-04		L0008885-03
Sampling Date		**9**	**5**	**10**	**10/03/00**		**10/03/00**		**10/04/00**		**10/04/00**		**10/03/00**		**10/03/00**		**10/04/00**
Location ID	**Units**			**(P-90)**	**P6-4-1-1**	**Qual**	**P6-4-2-1**	**Qual**	**P6-6-1-1**	**Qual**	**P6-6-2-1**	**Qual**	**P6-7-1-1**	**Qual**	**P6-7-2-1**	**Qual**	**P6-8-1-1**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg				130		97		87		42	U	210		41	U	310
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																	
Acenaphthene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Fluoranthene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.04	J	0.018	UJ	0.038
Naphthalene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Benzo(a)anthracene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.022	J	0.018	UJ	
Benzo(a)pyrene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Benzo(b)fluoranthene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.021	J	0.018	UJ	0.022
Benzo(k)fluoranthene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.021	J	0.018	UJ	
Chrysene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.026	J	0.018	UJ	0.025
Acenaphthylene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Anthracene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.024	J	0.018	UJ	
Benzo(ghi)perylene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	0.022
Fluorene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Phenanthrene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.024	J	0.018	UJ	0.022
Dibenzo(a,h)anthracene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Indeno(1,2,3-cd)pyrene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U		UJ	0.018	UJ	
Pyrene	mg/kg				0.022	UJ	0.021	UJ	0.021	U	0.021	U	0.036	J	0.018	UJ	0.034
Total PAH Constituent Concentrations =		0.5	0.5	0.5	0.176		0.168		0.168		0.168		0.214		0.144		0.163

Notes:
mg/kg = milligrams per kilogram
FD = Field duplicate; FD-8/9 is field duplicate for Sample P6-6.

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection

Table 5A
Summary of Organics in Soil - Lagoon Stockpile # 6
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID			L0008885-04		L0009079-16		L0008882-05		L0008882-06		L0008885-20		L0008885-21	
Sampling Date			**10/04/00**		**10/06/00**		**10/03/00**		**10/03/00**		**10/04/00**		**10/04/00**	
Location ID	**Units**	**Qual**	**P6-8-2-1**	**Qual**	**P6-10-1-1**	**Qual**	**P6-11-1-1**	**Qual**	**P6-11-2-1**	**Qual**	**FD-8**	**Qual**	**FD-9**	**Qual**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg		42	U	73		60		42	U			42	U
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)														
Acenaphthene	mg/kg	U	0.021	U	0.021	U		UJ		UJ	0.021	U		
Fluoranthene	mg/kg		0.021	U	0.021	U	0.021	J	0.07	J	0.021	U		
Naphthalene	mg/kg	U	0.021	U	R			UJ		UJ	0.021	U		
Benzo(a)anthracene	mg/kg	U	0.021	U	0.021	U		UJ	0.049	J	0.021	U		
Benzo(a)pyrene	mg/kg	U	0.021	U	0.021	U		UJ	0.043	J	0.021	U		
Benzo(b)fluoranthene	mg/kg		0.021	U	0.021	U		UJ	0.038	J	0.021	U		
Benzo(k)fluoranthene	mg/kg	U	0.021	U	0.021	U		UJ	0.036	J	0.021	U		
Chrysene	mg/kg		0.021	U	0.021	U		UJ	0.045	J	0.021	U		
Acenaphthylene	mg/kg	U	0.021	U	0.021	U		UJ		UJ	0.021	U		
Anthracene	mg/kg	U	0.021	U	0.021	U		UJ		UJ	0.021	U		
Benzo(ghi)perylene	mg/kg		0.021	U	0.021	U		UJ	0.025	J	0.021	U		
Fluorene	mg/kg	U	0.021	U	R			UJ		UJ	0.021	U		
Phenanthrene	mg/kg		0.021	U	R			UJ	0.054	J	0.021	U		
Dibenzo(a,h)anthracene	mg/kg	U	0.021	U	0.021	U		UJ		UJ	0.021	U		
Indeno(1,2,3-cd)pyrene	mg/kg	U	0.021	U	0.021	U		UJ	0.027	J	0.021	U		
Pyrene	mg/kg		0.021	U	R			UJ	0.06	J	0.021	U		
Total PAH Constituent Concentrations =			0.168		0.126		0.021		0.447		0.168			

Notes:
mg/kg = milligrams per kilogram
FD = Field duplicate; FD-8/9 is field duplicate for Sample P6-6

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive therepresentative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
[illegible] value in red represents one-half of the specified detection limit.
J-indicates an estimated detection

Table 5B
Organics in Soil - Statistical Analyses for Lagoon Stockpile #6
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Nu	9	5	10 (P-90)	P6-4 (P6-4-1/P6-4-2)	P6-6 (P6-6-1/P6-6-2/FD-8/9))	P6-7 (P6-7-1/P6-7-2)	P6-8 (P6-8-1/P6-8-2)	P6-10	P6-11 (P6-11-1/P6-11-2)
PAH (mg/kg)	0.5	0.5	0.5	0.172	0.168	0.179	0.166	0.126	0.234
TPH (mg/kg)	-	-	-	113.5	43	115.25	165.5	73	40.5

Constituent concentrations were averaged if more than one sample was collected from within a grid cell. Data from samples and their field duplicates were averaged.
Values shown in red represent one half of the analytical detection limit.

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Nu	9	5	10 (P-90)	P6-4 (P6-4-1/P6-4-2)	P6-6 (P6-6-1/P6-6-2)	P6-7 (P6-7-1/P6-7-2)	P6-8 (P6-8-1/P6-8-2)	P6-10	P6-11 (P6-11-1/P6-11-2)	MEAN	STDEV	N	N-1	H Statistic		Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	-0.6931	-0.6931	-0.6931	-1.7603	-1.7838	-1.7204	-1.7988	-2.0715	-1.4524	-1.41	0.56	9	8	2.309		0.5	0.5	Use Lognormal Distri
TPH (mg/kg)	-	-	-	4.7318	3.7612	4.7471	5.1090	4.2905	3.7013	4.39	0.57	6	5	2.892	199.4	165.5	165.5	

NORMAL DISTRIBUTION

Grid / Perimeter Sample Nu	9	5	10 (P-90)	P6-4 (P6-4-1/P6-4-2)	P6-6 (P6-6-1/P6-6-2/FD-8/9))	P6-7 (P6-7-1/P6-7-2)	P6-8 (P6-8-1/P6-8-2)	P6-10	P6-11 (P6-11-1/P6-11-2)	MEAN	STDEV	N	N-1	t Statistic	95% UCL	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	0.5	0.5	0.5	0.172	0.168	0.179	0.1655	0.126	0.234	0.28	0.17	9	8	1.8331	0.4	0.5	0.4	
TPH (mg/kg)	-	-	-	113.5	43	115.25	165.5	73	40.5	91.79	48.62	6	5	1.9432	130.4	165.5	130.4	Use Normal Distribut

Table 6
Summary of Organics in Soil - Overflow Lagoon
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID							L0008962-12		L0008885-17		L0008962-13		L0008962-11		L0008962-14	
Sampling Date		a	b	c	d	e	**10/05/00**		**10/04/00**		**10/05/00**		**10/05/00**		**10/05/00**	
Location ID	**Units**						**OL-1-1-1**	**Qual**	**OL-2-1-1**	**Qual**	**OL-2-2-1**	**Qual**	**OL-3-1-1**	**Qual**	**OL-4-1-1**	**Qual**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	172	223	119	62	85	530		650		250		1300		1200	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																
Acenaphthene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Fluoranthene	mg/kg						0.042	U	0.051		0.021	U	0.044		0.041	U
Naphthalene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Benzo(a)anthracene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Benzo(a)pyrene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Benzo(b)fluoranthene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Benzo(k)fluoranthene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Chrysene	mg/kg						0.042	U	0.041		0.021	U	0.042	J	0.041	U
Acenaphthylene	mg/kg						0.042	U		U	0.021	U	0.041		0.041	U
Anthracene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Benzo(ghi)perylene	mg/kg						0.042	U		U	0.021	U	0.054		0.041	U
Fluorene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Phenanthrene	mg/kg						0.042	U		U	0.021	U	0.042		0.041	U
Dibenzo(a,h)anthracene	mg/kg						0.042	U		U	0.021	U		U	0.041	U
Indeno(1,2,3-cd)pyrene	mg/kg						0.042	U	0.041		0.021	U	0.05		0.041	U
Pyrene	mg/kg						0.042	U	0.05		0.021	U	0.049		0.041	U
Total Constituent Concentrations =		0.78	0.79	0.7	0.69	0.71	0.336		0.183		0.168		0.322		0.328	

Notes:
mg/kg = milligrams per kilogram

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derive the PAH concentration.
U-parameter not detected above specified detection limit.

Table 7
Summary of Organics in Soil - Inactive Lagoon
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID			L0009079-07		L0008885-09		L0008835-16		L0008835-17		L0009079-01	
Sampling Date			**10/05/00**		**10/04/00**		**10/03/00**		**10/03/00**		**10/05/00**	
Location ID	**Units**	a	**IA-1-1-1**	**Qual**	**IA-2-1-1**	**Qual**	**IA-3-1-1**	**Qual**	**IA-3-2-1**	**Qual**	**IA-4-1-1**	**Qual**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	40	44		50		50		44	U	550	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)												
Acenaphthene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Fluoranthene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U	0.078	
Naphthalene	mg/kg		R		0.021	U	0.021	U	0.022	U	R	
Benzo(a)anthracene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U	0.042	
Benzo(a)pyrene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Benzo(b)fluoranthene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Benzo(k)fluoranthene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Chrysene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U	0.051	
Acenaphthylene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Anthracene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Benzo(ghi)perylene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Fluorene	mg/kg		R		0.021	U	0.021	U	0.022	U	R	
Phenanthrene	mg/kg		R		0.021	U	0.021	U	0.022	U	0.049	
Dibenzo(a,h)anthracene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Indeno(1,2,3-cd)pyrene	mg/kg		0.022	U	0.021	U	0.021	U	0.022	U		U
Pyrene	mg/kg		R		0.021	U	0.021	U	0.022	U	0.071	
Total PAH Constituent Concentrations =		0.31	0.132		0.168		0.168		0.176		0.291	

Notes:
mg/kg = milligrams per kilogram

For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U-parameter not detected above specified detection limit.
J-indicates an estimated detection

Table 8
Summary of Organics in Soil - Biocell
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0009079-09		L0009079-10		L0009079-11		L0009079-12		L0009079-13		L0009079-14		L0009079-15	
Sampling Date		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**	
Location ID	**Units**	**BIO-1-1-1**	**Qual**	**BIO-2-1-1**	**Qual**	**BIO-3-1-1**	**Qual**	**BIO-4-1-1**	**Qual**	**BIO-5-1-1**	**Qual**	**BIO-6-1-1**	**Qual**	**BIO-7-1-1**	**Qual**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	96		79		230		570		130		160		180	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)															
Acenaphthene	mg/kg	0.011	U	0.011	U	0.0225	U	0.0225	U	0.011	U	0.0115	U	0.011	U
Fluoranthene	mg/kg	0.03		0.026		0.0225	U	0.096		0.044		0.043		0.073	
Naphthalene	mg/kg	R		R		R		R		R		R		R	
Benzo(a)anthracene	mg/kg	0.011	U	0.011	U	0.0225	U	0.053		0.024		0.024		0.035	
Benzo(a)pyrene	mg/kg	0.011	U	0.011	U	0.0225	U	0.052		0.022		0.023		0.033	
Benzo(b)fluoranthene	mg/kg	0.011	U	0.011	U	0.0225	U	0.046		0.026		0.031		0.036	
Benzo(k)fluoranthene	mg/kg	0.011	U	0.011	U	0.0225	U	0.057		0.022		0.0115	U	0.028	
Chrysene	mg/kg	0.011	U	0.011	U	0.0225	U	0.064		0.029		0.03		0.043	
Acenaphthylene	mg/kg	0.011	U	0.011	U	0.0225	U	0.0225	U	0.011	U	0.0115	U	0.011	U
Anthracene	mg/kg	0.011	U	0.011	U	0.0225	U	0.0225	U	0.011	U	0.0115	U	0.011	U
Benzo(ghi)perylene	mg/kg	0.011	U	0.011	U	0.0225	U	0.065		0.011	U	0.0115	U	0.029	
Fluorene	mg/kg	R		R		R		R		R		R		R	
Phenanthrene	mg/kg	R		R		R		0.067		0.026		R		0.045	
Dibenzo(a,h)anthracene	mg/kg	0.011	U	0.011	U	0.0225	U	0.0225	U	0.011	U	0.0115	U	0.011	U
Indeno(1,2,3-cd)pyrene	mg/kg	0.011	U	0.011	U	0.0225	U	0.053		0.011	U	0.0115	U	0.029	
Pyrene	mg/kg	0.027		0.024		R		0.088		0.041		0.042		0.065	
Total PAH Constituent Concentrations =		0.178		0.171		0.0225		0.731		0.3		0.2735		0.46	

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.

Blank spaces indicate that parameters was not analyzed
U-parameter not detected above specified detection limit; value in red represents one-half of the specified detection limit.
J-indicates an estimated detection

Table 9A
Summary of Organics in Soil - Lagoon Stockpile #1
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID															L0008776-01		L0008776-02		L0008776-03		L0008776-04	
Sampling Date		P1-18	P1-15	P1-13	P1-29	P1-9	P1-28	P1-5	P1-27	P1-3	P1-1	P1-26	P1-25	P1-24	**10/02/00**		**10/02/00**		**10/02/00**		**10/02/00**	
Location ID	**Units**														**P1-4-1-1**	**Q**	**P1-4-2-1**	**Q**	**P1-6-1-1**	**Q**	**P1-6-2-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	25	-	-	-	-	-	44	-	-	-		-		63	J	42	UJ	140	J	57	J
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																						
Acenaphthene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Fluoranthene	mg/kg														0.022	UJ	0.021	UJ	0.06	J	0.021	UJ
Naphthalene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Benzo(a)anthracene	mg/kg														0.022	UJ	0.021	UJ	0.031	J	0.021	UJ
Benzo(a)pyrene	mg/kg														0.022	UJ	0.021	UJ	0.026	J	0.021	UJ
Benzo(b)fluoranthene	mg/kg														0.022	UJ	0.021	UJ	0.035	J	0.021	UJ
Benzo(k)fluoranthene	mg/kg														0.022	UJ	0.021	UJ	0.036	J	0.021	UJ
Chrysene	mg/kg														0.022	UJ	0.021	UJ	0.039	J	0.021	UJ
Acenaphthylene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Anthracene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Benzo(ghi)perylene	mg/kg														0.022	UJ	0.021	UJ	0.025	J	0.021	UJ
Fluorene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Phenanthrene	mg/kg														0.022	UJ	0.021	UJ	0.028	J	0.021	UJ
Dibenzo(a,h)anthracene	mg/kg														0.022	UJ	0.021	UJ		UJ	0.021	UJ
Indeno(1,2,3-cd)pyrene	mg/kg														0.022	UJ	0.021	UJ	0.025	J	0.021	UJ
Pyrene	mg/kg														0.022	UJ	0.021	UJ	0.054	J	0.021	UJ
Total PAH Constituent Concentrations =		1.7	0.5	0.5	0.73	0.5	0.77	1.1	0.7	0.5	0.5	0.5	1.28	0.75	0.176		0.168		0.359		0.168	

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit.
J = indicates an estimated detection
Q = Qualifier

Table 9A
Summary of Organics in Soil - Lagoon Stockpile #1
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008776-05		L0008776-06		L0008776-07		L0008776-08		L0008962-01		L0008962-02		L0111678-05		L0008962-04		L0008962-05	
Sampling Date		**10/02/00**		**10/02/00**		**10/02/00**		**10/02/00**		**10/05/00**		**10/05/00**		**12/10/01**		**10/05/00**		**10/05/00**	
Location ID	**Units**	**P1-10-1-1**	**Q**	**P1-10-2-1**	**Q**	**P1-14-1-1**	**Q**	**P1-14-2-1**	**Q**	**P1-2-1-1**	**Q**	**P1-27-1-1**	**Q**	**P1-11-1-2**	**Q**	**P1-29-1-1**	**Q**	**P1-25-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	89	J	60	J	79	J	44	UJ	42	U	43	UJ	44	U	43	U	110	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																			
Acenaphthene	mg/kg		UJ	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Fluoranthene	mg/kg	0.13	J	0.021	UJ	0.16	J	0.022	UJ	0.022				0.023	U				
Naphthalene	mg/kg		UJ	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Benzo(a)anthracene	mg/kg	0.064	J	0.021	UJ	0.073	J	0.022	UJ		U			0.023	U				
Benzo(a)pyrene	mg/kg	0.057	J	0.021	UJ	0.056	J	0.022	UJ		U			0.023	U				
Benzo(b)fluoranthene	mg/kg	0.061	J	0.021	UJ	0.094	J	0.022	UJ		U			0.023	U				
Benzo(k)fluoranthene	mg/kg	0.059	J	0.021	UJ	0.081	J	0.022	UJ		U			0.023	U				
Chrysene	mg/kg	0.072	J	0.021	UJ	0.094	J	0.022	UJ		U			0.023	U				
Acenaphthylene	mg/kg		UJ	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Anthracene	mg/kg	0.05	J	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Benzo(ghi)perylene	mg/kg		UJ	0.021	UJ	0.033	J	0.022	UJ		U			0.023	U				
Fluorene	mg/kg		UJ	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Phenanthrene	mg/kg	0.082	J	0.021	UJ	0.035	J	0.022	UJ		U			0.023	U				
Dibenzo(a,h)anthracene	mg/kg		UJ	0.021	UJ		UJ	0.022	UJ		U			0.023	U				
Indeno(1,2,3-cd)pyrene	mg/kg	0.0215	UJ	0.021	UJ	0.045	J	0.022	UJ		U			0.023	U				
Pyrene	mg/kg	0.11	J	0.021	UJ	0.14	J	0.022	UJ		U			0.023	U				
Total PAH Constituent Concentrations =		0.7065		0.168		0.811		0.176		0.022				0.184					

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit.
J = indicates an estimated detection
Q = Qualifier

Table 9A
Summary of Organics in Soil - Lagoon Stockpile #1
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008962-06		L0008962-07		L0008962-08		L0008962-09		L0008962-10		L0008776-09		L0008962-21		L0008962-22	
Sampling Date		**10/05/00**		**10/05/00**		**10/05/00**		**10/05/00**		**10/05/00**		**10/02/00**		**10/05/00**		**10/05/00**	
Location ID	**Units**	**P1-28-1-1**	**Q**	**P1-26-1-1**	**Q**	**P1-8-1-1**	**Q**	**P1-7-1-1**	**Q**	**P1-24-1-1**	**Q**	**FD-1-2**	**Q**	**FD-11**	**Q**	**FD-12**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	42	U	46		43	U	43	U	77		48	J	56	J		
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																	
Acenaphthene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Fluoranthene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Naphthalene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Benzo(a)anthracene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Benzo(a)pyrene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Benzo(b)fluoranthene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Benzo(k)fluoranthene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Chrysene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Acenaphthylene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Anthracene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Benzo(ghi)perylene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Fluorene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Phenanthrene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Dibenzo(a,h)anthracene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Indeno(1,2,3-cd)pyrene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Pyrene	mg/kg					0.022	U	0.022	U			0.022	UJ			0.022	U
Total PAH Constituent Concentrations =						0.176		0.176				0.176				0.176	

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit.
J = indicates an estimated detection
Q = Qualifier

Table 9B
Statistical Analyses for Lagoon Stockpile #1
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	P1-18	P1-15	P1-13	P1-29	P1-9	P1-28	P1-5	P1-27	P1-3	P1-1	P1-26	P1-25	P1-24	P1-4 (P1-4-1/P1-4-2)	P1-6 (P1-6-1/P1-6-2)	P1-10 (P1-10-1/P1-10-2)	P1-14 P1-14-1/P1-14-2/FD-1)	P1-2	P1-27 (P1-27/FD-11)	P1-11	P1-29
PAH (mg/kg)	1.7	0.5	0.5	0.73	0.5	0.77	1.1	0.7	0.5	0.5	0.5	1.28	0.75	0.172	0.2635	0.43725	0.4935	0.022	-	0.184	-
TPH (mg/kg)	25	-	-	-	-	-	44	-	-	-	-	-	-	42	99	75	51	21.0	38.8	22.0	21.5

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P1-18	P1-15	P1-13	P1-29	P1-9	P1-28	P1-5	P1-27	P1-3	P1-1	P1-26	P1-25	P1-24	P1-4	P1-6	P1-10	P1-14	P1-2	P1-27	P1-11	P1-29
PAH (mg/kg)	0.5306	-0.6931	-0.6931	-0.3102	-0.6931	-0.2657	0.0953	-0.3567	-0.6931	-0.6931	-0.6931	0.2429	-0.2877	-1.7603	-1.3337	-0.8273	-0.7062	-3.8167	-	-1.6928	-
TPH (mg/kg)	3.2189	-	-	-	-	-	3.7842	-	-	-	-	-	-	3.7377	4.5901	4.3108	3.9220	3.0445	3.6584	3.0910	3.0681

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P1-18	P1-15	P1-13	P1-29	P1-9	P1-28	P1-5	P1-27	P1-3	P1-1	P1-26	P1-25	P1-24	P1-4	P1-6	P1-10	P1-14	P1-2	P1-27	P1-11	P1-29
PAH (mg/kg)	1.7	0.5	0.5	0.73	0.5	0.77	1.1	0.7	0.5	0.5	0.5	1.275	0.75	0.172	0.2635	0.43725	0.4935	0.022	-	0.184	-
TPH (mg/kg)	25	-	-	-	-	-	44	-	-	-	-	-	-	42	98.5	74.5	50.5	21	38.8	22	21.5

Table 9B
Statistical Analyses for Lagoon Stockpile #1
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	P1-25	P1-28	P1-26	P1-8 (P1-8/FD-12)	P1-7	P1-24
PAH (mg/kg)	-	-	-	0.176	0.176	-
TPH (mg/kg)	110	21.0	46	21.5	21.5	77.0

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P1-25	P1-28	P1-26	P1-8	P1-7	P1-24	MEAN	STDEV	N	N-1	H Statistic	95% UCLt	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	-	-	-	-1.7373	-1.7373	-	-0.86	0.94	21	20	2.607	1.1	1.7	1.1	
TPH (mg/kg)	4.7005	3.0445	3.8286	3.0681	3.0681	4.3438	3.65	0.59	16	15	2.149		110	64.1	

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P1-25	P1-28	P1-26	P1-8	P1-7	P1-24	MEAN	STDEV	N	N-1	t Statistic	95% UCL	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	-	-	-	0.176	0.176	-	0.57	0.40	21	20	1.7207	0.720	1.7	0.72	Use Normal UCL
TPH (mg/kg)	110	21	46	21.5	21.5	77	45.93	29.20	16	15	1.7459	58.668	110	58.7	

Table 10A
Summary of Organics in Soil - Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID											L0111678-18		L0111678-17	
Sampling Date		P4-1	P4-2	P4-9	P4-8	P4-6	P4-7	P4-5	P4-10	P4-11	**12/11/01**		**12/11/01**	
Location ID	**Units**			(P-139/P-147)	(P-142/P-141)	(P-146)	(P-136)	(P-133)	(P-149/P-150)	(P-152/P-151)	**P4-2'-1-2**	**Q**	**P4-3'-1-2**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg										890		3200	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)														
Acenaphthene	mg/kg										0.022	U	0.021	U
Fluoranthene	mg/kg										0.022	U	0.021	U
Naphthalene	mg/kg										0.022	U	0.021	U
Benzo(a)anthracene	mg/kg										0.022	U	0.021	U
Benzo(a)pyrene	mg/kg										0.022	U	0.021	U
Benzo(b)fluoranthene	mg/kg										0.022	U	0.021	U
Benzo(k)fluoranthene	mg/kg										0.022	U	0.021	U
Chrysene	mg/kg										0.022	U	0.021	U
Acenaphthylene	mg/kg										0.022	U	0.021	U
Anthracene	mg/kg										0.022	U	0.021	U
Benzo(ghi)perylene	mg/kg										0.022	U	0.021	U
Fluorene	mg/kg										0.022	U	0.021	U
Phenanthrene	mg/kg										0.022	U	0.021	U
Dibenzo(a,h)anthracene	mg/kg										0.022	U	0.021	U
Indeno(1,2,3-cd)pyrene	mg/kg										0.022	U	0.021	U
Pyrene	mg/kg										0.022	U	0.021	U
Total PAH Constituent Concentrations =		0.5	1.1	1.3	1	1.25	0.5	0.5	0.5	2	0.176		0.168	
											TPH data P4-2'-1-1 (L0008885-07 on 10/04/00)		TPH data P4-3'-1-1 L0008882-07 on 10/03/00	

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 10A
Summary of Organics in Soil - Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0009079-18		L0111678-13		L0111678-12		L0009079-17		L0111678-19		L0008885-06		L0009077-07	
Sampling Date		**10/06/00**		**12/10/01**		**12/10/01**		**10/06/00**		**12/11/01**		**10/04/00**		**10/06/00**	
Location ID	**Units**	**P4-3-1-1**	**Q**	**P4-12-1-2**	**Q**	**P4-13-1-2**	**Q**	**P4-14-1-1**	**Q**	**P4-15-1-2**	**Q**	**P4-15-2-1**	**Q**	**P2-2-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	140		2000		2400		81		1500		240		98	U
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)															
Acenaphthene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Fluoranthene	mg/kg	0.022	U	0.021	U	0.021	U	0.023		0.021	U	0.051			
Naphthalene	mg/kg	R		0.021	U	0.021	U	R		0.021	U		U		
Benzo(a)anthracene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U	0.024			
Benzo(a)pyrene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Benzo(b)fluoranthene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U	0.022			
Benzo(k)fluoranthene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Chrysene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U	0.03			
Acenaphthylene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Anthracene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Benzo(ghi)perylene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Fluorene	mg/kg	R		0.021	U	0.021	U	R		0.021	U		U		
Phenanthrene	mg/kg	R		0.021	U	0.021	U	R		0.021	U	0.034			
Dibenzo(a,h)anthracene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Indeno(1,2,3-cd)pyrene	mg/kg	0.022	U	0.021	U	0.021	U		U	0.021	U		U		
Pyrene	mg/kg	R		0.021	U	0.021	U	R		0.021	U	0.044			
Total PAH Constituent Concentrations =		0.132		0.168		0.168		0.023		0.168		0.205			
				TPH data P4-12-1-1		TPH data P4-13-1-1				TPH data P4-15-1-1					
				L0008882-17		L0009079-19				L0008885-05					
				10/3/2000		10/6/2000				10/4/2000					

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 10A
Summary of Organics in Soil - Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0009077-04		L0009077-09		L0009077-08		L0009077-06		L0111678-08		L0009079-21		L0009079-22		L0111678-07	
Sampling Date		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**12/10/01**		**10/06/00**		**10/06/00**		**12/10/01**	
Location ID	**Units**	**P2-5-1-1**	**Q**	**P2-6-1-1**	**Q**	**P2-8-1-1**	**Q**	**P2-9-1-1**	**Q**	**P4-2-1-2**	**Q**	**FD-14**	**Q**	**FD-15**	**Q**	**P4-16-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	150	U	76	U	96	U	120	U	420		100					
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																	
Acenaphthene	mg/kg									0.021	U			0.022	U	0.021	U
Fluoranthene	mg/kg									0.021	U			0.022	U	0.021	U
Naphthalene	mg/kg									0.021	U			R		0.021	U
Benzo(a)anthracene	mg/kg									0.021	U			0.022	U	0.021	U
Benzo(a)pyrene	mg/kg									0.021	U			0.022	U	0.021	U
Benzo(b)fluoranthene	mg/kg									0.021	U			0.022	U	0.021	U
Benzo(k)fluoranthene	mg/kg									0.021	U			0.022	U	0.021	U
Chrysene	mg/kg									0.021	U			0.022	U	0.021	U
Acenaphthylene	mg/kg									0.021	U			0.022	U	0.021	U
Anthracene	mg/kg									0.021	U			0.022	U	0.021	U
Benzo(ghi)perylene	mg/kg									0.021	U			0.022	U	0.021	U
Fluorene	mg/kg									0.021	U			R		0.021	U
Phenanthrene	mg/kg									0.021	U			R		0.021	U
Dibenzo(a,h)anthracene	mg/kg									0.021	U			0.022	U	0.021	U
Indeno(1,2,3-cd)pyrene	mg/kg									0.021	U			0.022	U	0.021	U
Pyrene	mg/kg									0.021	U			R		0.021	U
Total PAH Constituent Concentrations =										0.168				0.132		0.168	

TPH data P4-2-1-1
L0009079-20
10/6/2000

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 10A
Summary of Organics in Soil - Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0111678-09		L0111678-11		L0111678-15		L0111678-16		L0111678-20		L0111678-21	
Sampling Date		**12/10/01**		**12/10/01**		**12/11/01**		**12/11/01**		**12/11/01**		**12/11/01**	
Location ID	**Units**	**P4-17-1-1**	**Q**	**P4-18-1-1**	**Q**	**P4-19-1-1**	**Q**	**P4-20-1-1**	**Q**	**P4-21-1-1**	**Q**	**P4-22-1-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg												
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)													
Acenaphthene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Fluoranthene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Naphthalene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Benzo(a)anthracene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Benzo(a)pyrene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Benzo(b)fluoranthene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Benzo(k)fluoranthene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Chrysene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Acenaphthylene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Anthracene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Benzo(ghi)perylene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Fluorene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Phenanthrene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Dibenzo(a,h)anthracene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Indeno(1,2,3-cd)pyrene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Pyrene	mg/kg	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U	0.021	U
Total PAH Constituent Concentrations =		0.168		0.168		0.168		0.168		0.168		0.168	

Notes:
mg/kg = milligrams per kilogram
For PAHs, when all results reported as non-detections - the detection limits were summed and divided by two to derive the representative PAH concentration. Where positive results were combined with non-detects, only the positve detections were summed to derived the PAH concentration.
U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 10B
Statistical Analyses for Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	P4-1	P4-2	P4-9 (P-139/P-147)	P4-8 (P-142/P-141)	P4-6 (P-146)	P4-7 (P-136)	P4-5 (P-133)	P4-10 (P-149/P-150)	P4-11 (P-152/P-151)	P4-2'-1-2	P4-2-1-2	P4-3'-1-2	P4-3-1-1	P4-12-1-2	P4-13-1-2
PAH (mg/kg)	0.5	1.1	1.3	1	1.25	0.5	0.5	0.5	2	0.088	0.168	0.17	0.132	0.168	0.168

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P4-1	P4-2	P4-9 (P-139/P-147)	P4-8 (P-142/P-141)	P4-6 (P-146)	P4-7 (P-136)	P4-5 (P-133)	P4-10 (P-149/P-150)	P4-11 (P-152/P-151)	P4-2'-1-2	P4-2-1-2	P4-3'-1-2	P4-3-1-1	P4-12-1-2	P4-13-1-2
PAH (mg/kg)	-0.693	0.095	0.262	0.000	0.223	-0.693	-0.693	-0.693	0.693	-2.430	-1.784	-1.784	-2.025	-1.784	-1.784

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P4-1	P4-2	P4-9	P4-8	P4-6	P4-7	P4-5	P4-10	P4-11 (P-152/P-151)	P4-2'-1-2	P4-2-1-2	P4-3'-1-2	P4-3-1-1	P4-12-1-2	P4-13-1-2
PAH (mg/kg)	0.5	1.1	1.3	1	1.25	0.5	0.5	0.5	2	0.088	0.168	0.168	0.132	0.168	0.168

Table 10B
Statistical Analyses for Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	P4-14-1-1	P4-15-1-2	P2-2-1-1	P2-5-1-1	P2-6-1-1	P2-8-1-1	P2-9-1-1	P4-16-1-1	P4-17-1-1	P4-18-1-1	P4-19-1-1	P4-20-1-1	P4-21-1-1	P4-22-1-1
PAH (mg/kg)	0.023	0.168	-	-	-	-	-	0.168	0.168	0.168	0.168	0.168	0.168	0.168

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P4-14-1-1	P4-15-1-2	P2-2-1-1	P2-5-1-1	P2-6-1-1	P2-8-1-1	P2-9-1-1	P4-16-1-1	P4-17-1-1	P4-18-1-1	P4-19-1-1	P4-20-1-1	P4-21-1-1	P4-22-1-1	MEAN	STDEV	N
PAH (mg/kg)	-3.772	-1.784	-	-	-	-	-	-1.784	-1.784	-1.784	-1.784	-1.784	-1.784	-1.784	-1.30	1.03	24

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P4-14-1-1	P4-15-1-2	P2-2-1-1	P2-5-1-1	P2-6-1-1	P2-8-1-1	P2-9-1-1	P4-16-1-1	P4-17-1-1	P4-18-1-1	P4-19-1-1	P4-20-1-1	P4-21-1-1	P4-22-1-1	MEAN	STDEV	N
PAH (mg/kg)	0.023	0.168	-	-	-	-	-	0.168	0.168	0.168	0.168	0.168	0.168	P4-22-1-1	0.47	0.56	23

Table 10B
Statistical Analyses for Lagoon Stockpile #4
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data
Grid / Perimeter Sample Number
PAH (mg/kg)

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	N-1	H Statistic	95% UCLt	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	23	3.087	0.907	2.0	0.9	Use Lognormal UCL

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	N-1	t Statistic	95% UCL	Maximum Concentration	Lower of UCL and Max Conc.
PAH (mg/kg)	22	1.7459	0.672	2	0.7

Table 11A
Summary of Organics in Soil - Lagoon Stockpile # 5
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID														L0008776-12		L0008776-13		L0008776-14		L0008776-15
Sampling Date					8				9		10		12	**10/02/00**		**10/02/00**		**10/02/00**		**10/02/00**
Location ID	**Units**	5	5	1	(P-37)	3	2	6	(P-34)	4	(P-28/P-29)	1	(P-32)	**P3-1-1-1**	**Q**	**P3-1-2-1**	**Q**	**P5-4-1-1**	**Q**	**P5-4-2-1**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg													5100	J	5300	J	4800	J	2800
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)																				
Acenaphthene	mg/kg																			
Fluoranthene	mg/kg																			
Naphthalene	mg/kg																			
Benzo(a)anthracene	mg/kg																			
Benzo(a)pyrene	mg/kg																			
Benzo(b)fluoranthene	mg/kg																			
Benzo(k)fluoranthene	mg/kg																			
Chrysene	mg/kg																			
Acenaphthylene	mg/kg																			
Anthracene	mg/kg																			
Benzo(ghi)perylene	mg/kg																			
Fluorene	mg/kg																			
Phenanthrene	mg/kg																			
Dibenzo(a,h)anthracene	mg/kg																			
Indeno(1,2,3-cd)pyrene	mg/kg																			
Pyrene	mg/kg																			
Total Constituent Concentrations =		1.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.2	0.97	1.2	0.5							

Notes:
mg/kg = milligrams per kilogram
FD-Field duplicate; FD-4 is field duplicate for Sample P5-13
For non-detect PAH results, the detection limits were summed and divided by two to derive representative PAH concentrations. Only the positve detections were summed to derived the PAH concentration (e.g. detection limits for non-detects were not included).

U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 11A
Summary of Organics in Soil - Lagoon Stockpile # 5
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID			L0111678-03			L0111678-04		L0009239-05			L0009077-02		L0009077-05		L0009239-01
Sampling Date			**12/10/01**			**12/10/01**		**10/13/00**			**10/06/00**		**10/06/00**		**10/12/00**
Location ID	**Units**	**Q**	**P5-5-1-2**	**Q**	**Q**	**P5-6-1-2**	**Q**	**P5-6-1'-1**	**Q**	**Q**	**P5-8-1-1**	**Q**	**P5-10-1-1**	**Q**	**P5-12-1'-1**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	J				1400		2100			90	U	59	U	41
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)															
Acenaphthene	mg/kg			U		0.021	U		U						0.021
Fluoranthene	mg/kg			U		0.021	U	0.082							0.021
Naphthalene	mg/kg		0.024			0.021	U	0.056							0.021
Benzo(a)anthracene	mg/kg			U		0.021	U	0.045							0.021
Benzo(a)pyrene	mg/kg			U		0.021	U		U						0.021
Benzo(b)fluoranthene	mg/kg			U		0.021	U		U						0.021
Benzo(k)fluoranthene	mg/kg			U		0.021	U	0.046							0.021
Chrysene	mg/kg			U		0.021	U	0.059							0.021
Acenaphthylene	mg/kg			U		0.021	U		U						0.021
Anthracene	mg/kg			U		0.021	U		U						0.021
Benzo(ghi)perylene	mg/kg		0.022			0.021	U	0.067							0.021
Fluorene	mg/kg			U		0.021	U	R							0.021
Phenanthrene	mg/kg		0.031			0.021	U	0.099							0.021
Dibenzo(a,h)anthracene	mg/kg			U		0.021	U		U						0.021
Indeno(1,2,3-cd)pyrene	mg/kg			U		0.021	U		U						0.021
Pyrene	mg/kg			U		0.021	U	0.075							0.021
Total Constituent Concentrations =			0.08			0.17		0.53							0.17
						TPH data P5-6-1-1									TPH data P5-12-1-1
Notes:						L0009077-01 on									L0009239-01 on
mg/kg = milligrams per kilogram						10/6/2000									10/12/2000

FD-Field duplicate; FD-4 is field duplicate for Sample P5-13
For non-detect PAH results, the detection limits were summed and divided by two to derive representative PAH concentrations. Only the positve detections were summed to derived the PAH concentration (e.g. detection limits for non-detects were not included).

U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 11A
Summary of Organics in Soil - Lagoon Stockpile # 5
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID			L0009239-02		L0111678-02		L0008835-08		L0008962-15		L0008962-16	
Sampling Date			**10/12/00**		**12/10/01**		**10/03/00**		**10/05/00**		**10/05/00**	
Location ID	**Units**	**Q**	**P5-12-2'-1**	**Q**	**P5-13-2-2**	**Q**	**FD-4**	**Q**	**P8-5-1-1**	**Q**	**P8-5-2-1**	**Q**
Total Petroleum Hydrocarbons (TPH) by Method 418.1	mg/kg	U	40	U	42	U	2300		3400		3300	
Polycyclic Aromatic Hydrocarbons (PAH) by Method 8270M with SIM (GC/MS)												
Acenaphthene	mg/kg	U	0.016	U	0.021	U						
Fluoranthene	mg/kg	U	0.016	U	0.021	U						
Naphthalene	mg/kg	U	R		0.021	U						
Benzo(a)anthracene	mg/kg	U	0.016	U	0.021	U						
Benzo(a)pyrene	mg/kg	U	0.016	U	0.021	U						
Benzo(b)fluoranthene	mg/kg	U	0.016	U	0.021	U						
Benzo(k)fluoranthene	mg/kg	U	0.016	U	0.021	U						
Chrysene	mg/kg	U	0.016	U	0.021	U						
Acenaphthylene	mg/kg	U	0.016	U	0.021	U						
Anthracene	mg/kg	U	0.016	U	0.021	U						
Benzo(ghi)perylene	mg/kg	U	0.016	U	0.021	U						
Fluorene	mg/kg	U	R		0.021	U						
Phenanthrene	mg/kg	U	R		0.021	U						
Dibenzo(a,h)anthracene	mg/kg	U	0.016	U	0.021	U						
Indeno(1,2,3-cd)pyrene	mg/kg	U	0.016	U	0.021	U						
Pyrene	mg/kg	U	R		0.021	U						
Total Constituent Concentrations =			0.096		0.17							

Notes:
mg/kg = milligrams per kilogram
FD-Field duplicate; FD-4 is field duplicate for Sample P5-13
For non-detect PAH results, the detection limits were summed and divided by two to derive representative PAH concentrations. Only the positve detections were summed to derived the PAH concentration (e.g. detection limits for non-detects were not included).

U = parameter not detected above specified detection limit
J = indicates an estimated detection

Table 11B
Statistical Analyses for Lagoon Stockpile #5
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	5	5	1	8 (P-37)	3	2	6	9 (P-34)	4	10 (P-28/P-29)	1	12 (P-32)	P3-1-1-1 P3-1-2-1	P5-4-1-1 P5-4-2-1	P5-5-1-2	P5-6-1-2 P5-6-1'-1	P5-8-1-1
PAH (mg/kg)	1.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.2	0.97	1.2	0.5	-	-	0.077	0.3485	-
TPH (mg/kg)	-	-	-	-	-	-	-	-	-	-	-	-	5200	3800.0	-	1750.0	45.0

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	5	5	1	8 (P-37)	3	2	6	9	4	10	1	12	P3-1-1-1 P3-1-2-1	P5-4-1-1 P5-4-2-1	P5-5-1-2	P5-6-1-2 P5-6-1'-1	P5-8-1-1
PAH (mg/kg)	0.2624	-0.6931	-0.6931	-0.6931	-0.6931	-0.6931	-0.6931	-0.6931	0.1823	-0.0305	0.1823	-0.6931	-	-	-2.5639	-	-
TPH (mg/kg)													8.5564	8.2428	-	7.4674	3.8067

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	5	5	1	8 (P-37)	3	2	6	9 (P-34)	4	10 (P-28/P-29)	1	12 (P-32)	P3-1-1-1 P3-1-2-1	P5-4-1-1 P5-4-2-1	P5-5-1-2	P5-6-1-2 P5-6-1'-1	P5-8-1-1
PAH (mg/kg)	1.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.2	0.97	1.2	0.5	-	-	0.077	0.3485	-
TPH (mg/kg)	-	-	-	-	-	-	-	-	-	-	-	-	5200	3800	-	1750	45

Table 11B
Statistical Analyses for Lagoon Stockpile #5
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Analytical Data

Grid / Perimeter Sample Number	P5-10-1-1	P5-12-1'-1 P5-12-2'-1	P5-13-2-2	P8-5-1-1 P8-5-2-1
PAH (mg/kg)	-	0.132	0.168	-
TPH (mg/kg)	29.5	20.3	42.0	3350.0

LOGNORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P5-10-1-1	P5-12-1'-1 P5-12-2'-1	P5-13-2-2	P8-5-1-1 P8-5-2-1	MEAN	STDEV	N	N-1	H Statistic	95% UCLt	Maximum Concentration	Lower of UCL and Max Conc.
PAH (mg/kg)	-	-2.0250	-1.7838	-	-0.75	0.81	15	14	2.443	1.115	1.3	1.1
TPH (mg/kg)	3.384	3.01	3.74	8.1167	5.79	2.49	8	7	6.418	3121317.681	5200	5200.0

NORMAL DISTRIBUTION

Grid / Perimeter Sample Number	P5-10-1-1	P5-12-1'-1 P5-12-2'-1	P5-13-2-2	P8-5-1-1 P8-5-2-1	MEAN	STDEV	N	N-1	t Statistic	95% UCL	Maximum Concentration	Lower of UCL and Max Conc.	
PAH (mg/kg)	-	0.132	0.168	-	0.59	0.38	16	15	1.7531	0.754	1.3	0.8	Use Normal Distribution
TPH (mg/kg)	29.5	20.25	42	3350	1779.59	2085.13	8	7	1.8331	3130.965	5200	3131.0	Use Normal Distribution

Table 12
Summary of Metals in Soil
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008777-01		L0008777-02		L0008777-03		L0008777-04		L0008777-05		L0111679-01		L0008777-07		L0008838-01		L0008838-02	
Sampling Date		**10/02/00**		**10/02/00**		**10/02/00**		**10/02/00**		**10/02/00**		**12/10/01**		**10/02/00**		**10/02/00**		**10/02/00**	
Location ID	**Units**	**FD-3**	**Q**	**P3-2-1-1**	**Q**	**P3-2-2-1**	**Q**	**P3-6-1-1**	**Q**	**P3-6-2-1**	**Q**	**P3-4-1-2**	**Q**	**P3-4-2-1**	**Q**	**P9-7-1-1**	**Q**	**P9-7-2-1**	**Q**
Total Metals																			
Antimony	mg/kg																		
Arsenic	mg/kg																		
Cadmium	mg/kg																		
Chromium	mg/kg																		
Lead	mg/kg	8.6	J	8.1	J	2.5	J	43	J	2.3	J	8.6		260	J	20		3.2	

Notes:

mg/kg = milligrams per kilogram

FD=Field Duplicate

Blank space indicate that parameter was not analyzed

U = not detected above specified detection limit

J = indicates an estimated detection

Table 12
Summary of Metals in Soil
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008838-03		L0008838-04		L0008838-07		L0008883-01		L0008883-02		L0008883-03		L0008883-04		L0111679	L0008883-07	
Sampling Date		**10/02/00**		**10/02/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/03/00**		**10/03/00**		**12/11/01**	**10/03/00**	
Location ID	**Units**	**P9-3-1-1**	**Q**	**P9-3-2-1**	**Q**	**IA-3-1-1**	**Q**	**P6-7-1-1**	**Q**	**P6-11-1-1**	**Q**	**NL-4-1-1**	**Q**	**NL-9-1-1**	**Q**	**P4-12-1-2**	**NL-5-1-1**	**Q**
Total Metals																		
Antimony	mg/kg					2.1	U					2	U	2.1	U		2	U
Arsenic	mg/kg					4.4						1.9		3.8			2.8	
Cadmium	mg/kg					0.209	U					0.203	U	0.208	U		0.204	U
Chromium	mg/kg					11						13		11			10	
Lead	mg/kg	100		56		32		22		6.2		3.4		12		5.4	8.3	

Notes:

mg/kg = milligrams per kilogram

FD=Field Duplicate

Blank space indicate that parameter was not analyzed

U = not detected above specified detection limit

J = indicates an estimated detection

Table 12
Summary of Metals in Soil
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008886-01		L0008886-02		L0008886-03		L0008886-04		L0008886-05		L0008886-06		L0008886-07		L0008970-01		L0008970-02	
Sampling Date		**10/04/00**		**10/04/00**		**10/04/00**		**10/04/00**		**10/03/00**		**10/04/00**		**10/04/00**		**10/04/00**		**10/04/00**	
Location ID	**Units**	**P3-8-1-1**	**Q**	**P3-8-2-1**	**Q**	**IA-2-1-1**	**Q**	**P1-12-1-1**	**Q**	**SL-6-1-1**	**Q**	**OL-2-1-1**	**Q**	**FD-10**	**Q**	**OL-1-1-1**	**Q**	**P10-2-1-1**	**Q**
Total Metals																			
Antimony	mg/kg					2.1	U			2	U	2	U	2	U	2	U		
Arsenic	mg/kg					4.1				4.3		1.9	J	2.1	J	3.9			
Cadmium	mg/kg					0.21	U			0.2	U	0.23		0.26		0.37			
Chromium	mg/kg					6.8	J			7.7	J	21	J	23	J	27			
Lead	mg/kg	320		240		7.5		66		18		40		42		38		71	

Notes:

mg/kg = milligrams per kilogram

FD=Field Duplicate

Blank space indicate that parameter was not analyzed

U = not detected above specified detection limit

J = indicates an estimated detection

Table 12
Summary of Metals in Soil
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0008970-03		L0009078-01		L0009078-02		L0009078-03		L0009080-01		L0009080-02		L0009080-03		L0009080-04		L0009080-05	
Sampling Date		**10/04/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**		**10/06/00**	
Location ID	**Units**	**P10-2-2-1**	**Q**	**SL-8-1-1**	**Q**	**SL-4-1-1**	**Q**	**P7-11-1-1**	**Q**	**BIO-1-1-1**	**Q**	**BIO-2-1-1**	**Q**	**BIO-3-1-1**	**Q**	**BIO-4-1-1**	**Q**	**BIO-5-1-1**	**Q**
Total Metals																			
Antimony	mg/kg			2.1	U	2.2	U												
Arsenic	mg/kg			4.4		5.3													
Cadmium	mg/kg			0.21	U	0.32													
Chromium	mg/kg			8.6		18													
Lead	mg/kg	18		40		68		150		9.6		16		34		90		21	

Notes:

mg/kg = milligrams per kilogram

FD=Field Duplicate

Blank space indicate that parameter was not analyzed

U = not detected above specified detection limit

J = indicates an estimated detection

Table 12
Summary of Metals in Soil
Iron Horse Park Superfund Site
North Billerica, Massachusetts

Laboratory Sample ID		L0009080-06		L0009080-07		L0009080-08	
Sampling Date		**10/06/00**		**10/06/00**		**10/06/00**	
Location ID	**Units**	**BIO-6-1-1**	**Q**	**BIO-7-1-1**	**Q**	**FD-13**	**Q**
Total Metals							
Antimony	mg/kg						
Arsenic	mg/kg						
Cadmium	mg/kg						
Chromium	mg/kg						
Lead	mg/kg	24		24		13	

	Minimum Concentration	**Average Concentration**	**Maximum Concentration**	**Cleanup Goal**
	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	2.0	2.05	2.20	31
Arsenic	1.9	3.54	5.30	17
Cadmium	0.2	0.24	0.37	39
Chromium	6.8	14.3	27.0	390
Lead	2.3	50.0	320.0	400

Notes:

mg/kg = milligrams per kilogram

FD=Field Duplicate

Blank space indicate that parameter was not analyzed

U = not detected above specified detection limit

J = indicates an estimated detection

Appendix C
Information Related to the OU-2 Review

C.1 – Documents Reviewed

Action Environmental Solutions, PLLC (AES). Various dates. Semi-annual/Annual Landfill Monitoring Reports.

Brown and Caldwell. April, 2003. *Project Operations Plan for Post-Construction Monitoring activities at the Shaffer Landfill, Billerica, Massachusetts*.

Camp, Dresser & McKee (CDM). November, 1989. *Phase IC Remedial Investigation Report for the Shaffer Landfill, Iron Horse Park Site, Billerica, Massachusetts*.

Camp, Dresser & McKee (CDM). January, 1991. *Final Draft Phase IC Feasibility Study for the Shaffer Landfill, Iron Horse Park Site, Billerica, Massachusetts*.

De Maximis, Inc. Various dates. Monthly Progress Reports.

Environmental Compliance Services, Inc. (ECS). Various dates. Quarterly Gas Migration and Semi-Annual Surface Water Sampling Monitoring Summary Reports.

ENSR Consulting & Engineering. November 17, 1995. Memorandum from Robert Kirsch and David Lang to Loyda Rivera and Karen McGuire regarding the Operation of the leachate collection system.

ENSR Consulting & Engineering. October, 1999. *Final (100%) Design Deliverable for Shaffer Landfill.*

ENSR Consulting & Engineering. October, 1999. *Final Demonstration of Compliance Plan For Shaffer Landfill*.

GeoSyntec Consultants. August, 2003. *Final Remedial Construction Report. Iron Horse Park Superfund Site, Operable Unit Two, Shaffer Landfill, Billerica, Massachusetts*

Green Environmental. November 15, 2006. October 2006 Surface Water Sampling & Landfill Gas Monitoring Summary, Shaffer Landfill O&M, Billerica, MA.

Normandeau Associates. February, 2005. *Wetland Mitigation Monitoring Report, Year 2 - 2004, Shaffer Landfill Superfund Site, Billerica, MA.*

Normandeau Associates. February, 2007. *Wetland Mitigation Monitoring Report, Year 4 (Final) - 2004, Shaffer Landfill Superfund Site, Billerica, MA.*

United States Environmental Protection Agency. June 27, 1991. *Record of Decision, Shaffer Landfill Operable Unit, Iron Horse Park, Billerica, Massachusetts.*

United States Environmental Protection Agency. September 8, 2000. *Final Explanation of Significant Differences, Shaffer Landfill, Operable Unit 2, Iron Horse Park Superfund Site.*

United States Environmental Protection Agency. 2001. *Shaffer Landfill RD/RA Consent Decree*.

United States Environmental Protection Agency. June, 2001. *Comprehensive Five-Year Review Guidance.*

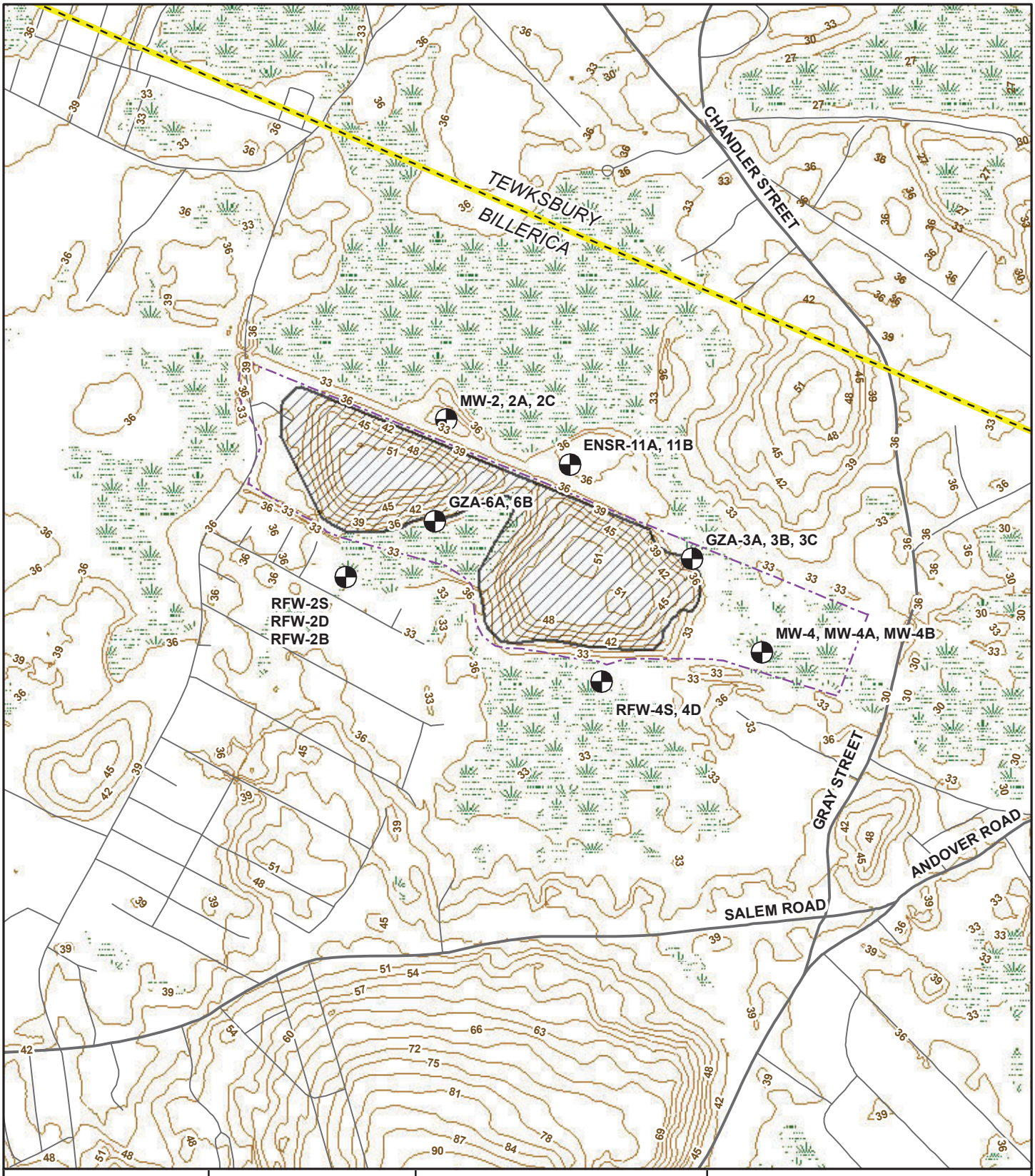
United States Environmental Protection Agency. September, 2003. *Second Five-Year Review Report for Iron Horse Park Superfund Site, Billerica, Massachusetts*.

United States Environmental Protection Agency. September, 2008. *Third Five-Year Review Report for Iron Horse Park Superfund Site, Billerica, Massachusetts*.

United States Environmental Protection Agency. September, 2013. *Fourth Five-Year Review Report for Iron Horse Park Superfund Site, Operable Units 1, 2, 3, and 4, North Billerica, Massachusetts*.

United States Environmental Protection Agency. September, 2018. *Fifth Five-Year Review Report for Iron Horse Park Superfund Site, Operable Units 1, 2, 3, and 4, North Billerica, Massachusetts*.

C.2 – Groundwater Monitoring Results



AECOM

Drawn:	BC	9/11/2013
Approved:	NT	9/11/2013
Project #:	60282276	

Map Location

Legend

- Monitoring Well
- SiteBoundary
- Landfill
- Contour (Meters)
- Town Boundary

0 500 1,000 Feet

N

FIGURE 1: GROUNDWATER MONITORING LOCATIONS

SHAFFER LANDFILL
BILLERICA, MASSACHUSETTS

G:\Projects\HAZWASTE\60282276IHP\Maps\Shaffer Landfill - GW Locations.mxd

Aerial Photography Date: April 2011

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	ENSR-11A	ENSR-11A	ENSR-11A	ENSR-11A	ENSR-11A
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	NS	6 U	6 U
Arsenic	**10/50**	11	9	NS	6.7	7.2
Barium	**2000**	43	35	NS	34	33
Beryllium	4	3 U	4 U	NS	4 U	4 U
Cadmium	**5**	5 U	2 U	NS	40.9	2.2 U
Cadmium, dissolved	NA	5 U	2 U	NS	2.2 U	2.2 U
Chromium	100	10 U	10 U	NS	10 U	10 U
Copper	1300	20 U	9 U	NS	9 U	9 U
Cyanide	200	0.01 U	5 U	NS	5 U	5 U
Iron	NA	12,700	11,000	NS	11,100	10,100
Lead	**15**	1 U	10 U	NS	10 U	10 U
Lead, dissolved	NA	1 U	10 U	NS	10 U	10 U
Magnesium	NA	9,990	6,640	NS	11,200	8,710
Manganese	NA	708	492	NS	530	542
Mercury	2	0.2 U	0.1 U	NS	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NS	40 U	40 U
Selenium	50	0.89 J	5 U	NS	5 U	5 U
Silver	NA	10 U	3 U	NS	3.4 U	3.4 U
Thallium	2	1 U	2 U	NS	2 U	2 U
Zinc	NA	20 U	20 U	NS	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	2.5 J	1 U	NS	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethene	7	5 U	2	NS	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	NS	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.063 U	1 U	NS	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	NS	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	NS	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	NS	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	NS	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	NS	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	NS	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
2-Hexanone	NA	5 U	5 U	NS	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	NS	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	NS	5 U	5 U
Acetone	NA	10 U	5 U	NS	5 U	16 U
Benzene	**5/5**	0.78 J	1 U	NS	1	2
Bromobenzene	NA	5 U	1 U	NS	1 U	1 U
Bromochloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromoform	NA	5 U	1 U	NS	1 U	1 U
Bromomethane	NA	5 U	1 U	NS	1 U	1 U
Carbon disulfide	NA	2.3 J	1 U	NS	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	NS	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	NS	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	NS	1 U	1 U
Chlorobenzene	100	0.35 J	1 U	NS	2	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	NS	1 U	1 U
Chloroethane	NA	8.1	1 U	NS	1 U	1 U
Chloroform	NA	5 U	1 U	NS	1 U	1 U
Chloromethane	NA	0.31 J	1 U	NS	1 U	1 U
cis-1,2-Dichloroethene	70	45	5	NS	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Dibromomethane	NA	5 U	1 U	NS	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	ENSR-11A	ENSR-11A	ENSR-11A	ENSR-11A	ENSR-11A
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	NS	1 U	1 U
Ethylbenzene	700	5 U	1 U	NS	1 U	1 U
Hexachloro-1,3-butadiene	NA	5 U	1 U	NS	1 U	1 U
Isopropylbenzene	NA	0.3 J	1 U	NS	1 U	1
m,p-Xylene	10000	0.32 J	2 U	NS	2 U	2 U
Naphthalene	NA	5 U	1 U	NS	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	NS	1 U	1 U
o-Xylene	10000	5 U	1 U	NS	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	NS	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Styrene	NA	5 U	1 U	NS	1 U	1 U
tert-Butylbenzene	NA	0.27 J	1 U	NS	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	NS	1 U	1 U
Toluene	1000	0.21 J	1 U	NS	1 U	1 U
trans-1,2-Dichloroethene	100	0.58 J	1 U	NS	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Trichloroethene	5/5	5 U	1 U	NS	1 U	1 U
Vinyl Chloride	**2/2**	76	5	NS	1 U	1 U
1,4 Dioxane	NA	NA	NA	NS	1.59	1.49
Diethyl Ether	NA	NA	5 U	NS	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	NS	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	NS	5 U	10

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	ENSR-11B	ENSR-11B	ENSR-11B	ENSR-11B	ENSR-11B
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	NS	6 U	6 U
Arsenic	**10/50**	12.2	7.3	NS	7.8	10.3
Barium	**2000**	272	282	NS	199	263
Beryllium	4	3 U	4 U	NS	4 U	4 U
Cadmium	**5**	5 U	2 U	NS	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	NS	2.2 U	2.2 U
Chromium	100	10 U	10 U	NS	10 U	10 U
Copper	1300	20 U	9 U	NS	9 U	9 U
Cyanide	200	0.01 U	5 U	NS	5 U	5 U
Iron	NA	17,600	18,100	NS	13,400	14,300
Lead	**15**	1 U	10 U	NS	10 U	10 U
Lead, dissolved	NA	1 U	10 U	NS	10 U	10 U
Magnesium	NA	18,000	19,600	NS	18,400	20,200
Manganese	NA	49	46	NS	35	44
Mercury	2	0.2 U	0.1 U	NS	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NS	40 U	40 U
Selenium	50	10.3	21	NS	20	21
Silver	NA	10 U	3 U	NS	3.4 U	3.4 U
Thallium	2	1 U	2 U	NS	2 U	2 U
Zinc	NA	20 U	20 U	NS	20 U	173
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	NS	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	NS	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	NS	1 U	1 U
1,2,4-Trimethylbenzene	NA	2.5 J	2	NS	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.059 U	1 U	NS	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	NS	1 U	1 U
1,2-Dichlorobenzene	600	0.75 J	1 U	NS	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	NS	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	NS	1 U	1 U
1,3,5-Trimethylbenzene	NA	0.28 J	1 U	NS	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,4-Dichlorobenzene	75	3.5 J	4	NS	3	1 U
2,2-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	NS	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
2-Hexanone	NA	5 U	5 U	NS	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	NS	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	NS	5 U	5 U
Acetone	NA	10 U	5 U	NS	5 U	16 U
Benzene	**5/5**	4.3 J	4	NS	4	6
Bromobenzene	NA	5 U	1 U	NS	1 U	1 U
Bromochloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromoform	NA	5 U	1 U	NS	1 U	1 U
Bromomethane	NA	5 U	1 U	NS	1 U	1 U
Carbon disulfide	NA	0.88 J	1 U	NS	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	NS	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	NS	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	NS	1 U	1 U
Chlorobenzene	100	5.3	6	NS	6	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	NS	1 U	1 U
Chloroethane	NA	5 U	1 U	NS	1 U	1 U
Chloroform	NA	5 U	1 U	NS	1 U	1 U
Chloromethane	NA	0.41 J	1 U	NS	1 U	1 U
cis-1,2-Dichloroethene	70	0.35 J	1 U	NS	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Dibromomethane	NA	5 U	1 U	NS	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	ENSR-11B	ENSR-11B	ENSR-11B	ENSR-11B	ENSR-11B
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	NS	1 U	1 U
Ethylbenzene	700	5 U	1 U	NS	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	NS	1 U	1 U
Isopropylbenzene	NA	7.9	6	NS	4	3
m,p-Xylene	10000	3.6 J	3	NS	3	3
Naphthalene	NA	2.5 J	2	NS	5	1 U
N-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
N-Propylbenzene	NA	0.4 J	1 U	NS	1 U	1 U
o-Xylene	10000	1.3 J	1 U	NS	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	NS	6 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Styrene	NA	5 U	1 U	NS	1 U	1 U
tert-Butylbenzene	NA	0.26 J	1 U	NS	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	NS	1 U	1 U
Toluene	1000	0.51 J	1 U	NS	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	NS	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Trichloroethene	5/5	5 U	1 U	NS	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	NS	1 U	1 U
1,4 Dioxane	NA	NA	NA	NS	82	1.42
Diethyl Ether	NA	NA	35	NS	30	63
Methyl tert-butyl ether	NA	NA	2	NS	1	2
Tetrahydrofuran	NA	NA	94	NS	67	48

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-6A	GZA-6A	GZA-6A	GZA-6A	GZA-6A
	Sample Date:	10/22/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	4.3	5 U	5 U	5 U	5 U
Barium	**2000**	4,370	6,150	4,510	4,520	4,520
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	9
Iron	NA	56,200	68,500	34,300	44,900	39,800
Lead	**15**	155	181	133	123	132
Lead, dissolved	NA	8.4	10 U	10 U	28.1	10 U
Magnesium	NA	12,600	10,600	NA	10,800	14,000
Manganese	NA	256	251	129	164	179
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2.8	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	13.6 J	20 U	22	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	0.73 J	1 U	2		1 U
1,2-Dibromo-3-chloropropane	NA	0.061 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	0.46 J	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	0.27 J	1 U	2	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	2.2 J	2	2	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	0.85 J	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	3.5 J	5 U	5 U	5 U	5 U
Benzene	**5/5**	5.5	5	5	4	3
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5.4	5	6	4	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	0.51 J	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		GZA-6A	GZA-6A	GZA-6A	GZA-6A	GZA-6A
Sample Date:		10/22/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	8.9	3	7	5	3
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	3.1 J	2	3	2	2
m,p-Xylene	10000	4.8 J	2 U	5	3	2
Naphthalene	NA	1.6 J	2	2	1	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	1 J	1 U	3	1 U	1 U
o-Xylene	10000	0.68 J	1 U	2	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	0.46 J	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	1.14	1.0	1.7
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	765	458	584	866

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-6B	GZA-6B	GZA-6B	GZA-6B	GZA-6B
	Sample Date:	10/22/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	2.9	6.5	5 U	5 U	5 U
Barium	**2000**	47	45	61	57	34
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	7
Iron	NA	4,650	6,270	340	841	75
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	0.18 J	10 U	10 U	10 U	10 U
Magnesium	NA	8,850	6,910	NA	6,900	6,910
Manganese	NA	1,910	1,590	898	1,450	1,820
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	0.076 J	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	22	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.064 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		GZA-6B	GZA-6B	GZA-6B	GZA-6B	GZA-6B
Sample Date:		10/22/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.5	1.1
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-2	MW-2	MW-2	MW-2	MW-2
Sample Date:		10/24/2018	10/18/2019	10/26/2020	11/30/2021	10/13/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	NS	6 U	6 U
Arsenic	**10/50**	5.2	5 U	NS	5 U	5 U
Barium	**2000**	15.1 J	14	NS	14	12
Beryllium	4	3 U	4 U	NS	4 U	4 U
Cadmium	**5**	5 U	2 U	NS	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	NS	2.2 U	2.2 U
Chromium	100	10 U	10 U	NS	10 U	10 U
Copper	1300	20 U	9 U	NS	9 U	9 U
Cyanide	200	0.01 U	5 U	NS	5 U	5 U
Iron	NA	679	680	NS	356	262
Lead	**15**	0.22 J	10 U	NS	10 U	10 U
Lead, dissolved	NA	1 U	10 U	NS	10 U	10 U
Magnesium	NA	14,000	13,300	NS	13,300	13,300
Manganese	NA	1,400	1,340	NS	1,080	973
Mercury	2	0.2 U	0.1 U	NS	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NS	40 U	40 U
Selenium	50	0.83 J	5 U	NS	5 U	5 U
Silver	NA	10 U	3 U	NS	3.4 U	3.4 U
Thallium	2	1 U	2 U	NS	2 U	2 U
Zinc	NA	20 U	20 U	NS	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	NS	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethane	NA	1.4 J	1 U	NS	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	NS	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	NS	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.06 U	1 U	NS	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	NS	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	NS	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	NS	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	NS	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	NS	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	NS	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
2-Hexanone	NA	5 U	5 U	NS	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	NS	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	NS	5 U	5 U
Acetone	NA	10 U	5 U	NS	5 U	16 U
Benzene	**5/5**	5 U	1 U	NS	1 U	1 U
Bromobenzene	NA	5 U	1 U	NS	1 U	1 U
Bromochloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromoform	NA	5 U	1 U	NS	1 U	1 U
Bromomethane	NA	5 U	1 U	NS	1 U	1 U
Carbon disulfide	NA	10 U	1 U	NS	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	NS	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	NS	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	NS	1 U	1 U
Chlorobenzene	100	0.34 J	1 U	NS	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	NS	1 U	1 U
Chloroethane	NA	5 U	1 U	NS	1 U	1 U
Chloroform	NA	5 U	1 U	NS	1 U	1 U
Chloromethane	NA	5 U	1 U	NS	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	NS	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Dibromomethane	NA	5 U	1 U	NS	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-2	MW-2	MW-2	MW-2	MW-2
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	11/30/2021	10/13/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	NS	1 U	1 U
Ethylbenzene	700	5 U	1 U	NS	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	NS	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	NS	1 U	1 U
m,p-Xylene	10000	5 U	2 U	NS	2 U	2 U
Naphthalene	NA	5 U	1 U	NS	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	NS	1 U	1 U
o-Xylene	10000	5 U	1 U	NS	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	NS	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Styrene	NA	5 U	1 U	NS	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	NS	1 U	1 U
Toluene	1000	1 U	1 U	NS	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	NS	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Trichloroethene	5/5	5 U	1 U	NS	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	NS	1 U	1 U
1,4 Dioxane	NA	NA	NA	NS	1.07	1.07
Diethyl Ether	NA	NA	5 U	NS	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	NS	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	NS	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-2A	MW-2A	MW-2A	MW-2A	MW-2A
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	11/30/2021	10/13/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	NS	6 U	6 U
Arsenic	**10/50**	144	101	NS	122	122
Barium	**2000**	145	136	NS	155	125
Beryllium	4	3 U	4 U	NS	4 U	4 U
Cadmium	**5**	5 U	2 U	NS	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	NS	2.2 U	2.2 U
Chromium	100	10 U	10 U	NS	10 U	10 U
Copper	1300	20 U	9 U	NS	9 U	9 U
Cyanide	200	0.01 U	5 U	NS	5 U	5 U
Iron	NA	16,900	15,200	NS	17,300	13,100
Lead	**15**	0.08 J	10 U	NS	10 U	10 U
Lead, dissolved	NA	1 U	10 U	NS	10 U	10 U
Magnesium	NA	11,200	11,000	NS	13,500	12,900
Manganese	NA	245	213	NS	228	213
Mercury	2	0.2 U	0.1 U	NS	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NS	40 U	40 U
Selenium	50	0.68 J	5 U	NS	5 U	5 U
Silver	NA	10 U	3 U	NS	3.4 U	3.4 U
Thallium	2	1 U	2 U	NS	2 U	2 U
Zinc	NA	20 U	20 U	NS	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	NS	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	NS	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	NS	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.059 U	1 U	NS	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	NS	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	NS	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	NS	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	NS	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,4-Dichlorobenzene	75	0.3 J	1 U	NS	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	NS	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
2-Hexanone	NA	5 U	5 U	NS	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	NS	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	NS	5 U	5 U
Acetone	NA	10 U	5 U	NS	5 U	16 U
Benzene	**5/5**	5 U	1 U	NS	1 U	1 U
Bromobenzene	NA	5 U	1 U	NS	1 U	1 U
Bromochloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromoform	NA	5 U	1 U	NS	1 U	1 U
Bromomethane	NA	5 U	1 U	NS	1 U	1 U
Carbon disulfide	NA	10 U	1 U	NS	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	NS	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	NS	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	NS	1 U	1 U
Chlorobenzene	100	0.73 J	1 U	NS	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	NS	1 U	1 U
Chloroethane	NA	5 U	1 U	NS	1 U	1 U
Chloroform	NA	5 U	1 U	NS	1 U	1 U
Chloromethane	NA	5 U	1 U	NS	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	NS	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Dibromomethane	NA	5 U	1 U	NS	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-2A	MW-2A	MW-2A	MW-2A	MW-2A
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	11/30/2021	10/13/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	NS	1 U	1 U
Ethylbenzene	700	5 U	1 U	NS	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	NS	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	NS	1 U	1 U
m,p-Xylene	10000	5 U	2 U	NS	2 U	2 U
Naphthalene	NA	5 U	1 U	NS	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	NS	1 U	1 U
o-Xylene	10000	5 U	1 U	NS	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	NS	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Styrene	NA	5 U	1 U	NS	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	NS	1 U	1 U
Toluene	1000	1 U	1 U	NS	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	NS	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Trichloroethene	5/5	5 U	1 U	NS	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	NS	1 U	1 U
1,4 Dioxane	NA	NA	NA	NS	3.52	1.7
Diethyl Ether	NA	NA	5 U	NS	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	NS	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	NS	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-2C	MW-2C	MW-2C	MW-2C	MW-2C
	Sample Date:	10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	NS	6 U	6 U
Arsenic	**10/50**	161	84.8	NS	113	132
Barium	**2000**	53.4	33	NS	15	13
Beryllium	4	3 U	4 U	NS	4 U	4 U
Cadmium	**5**	5 U	2 U	NS	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	NS	2.2 U	2.2 U
Chromium	100	10 U	10 U	NS	10 U	10 U
Copper	1300	20 U	9 U	NS	9 U	9 U
Cyanide	200	0.01 U	5 U	NS	5 U	5 U
Iron	NA	20,900	14,100	NS	6,700	6,760
Lead	**15**	1 U	10 U	NS	10 U	10 U
Lead, dissolved	NA	1 U	10 U	NS	10 U	10 U
Magnesium	NA	7,000	4,980	NS	2,670	3,410
Manganese	NA	1,250	990	NS	243	500
Mercury	2	0.2 U	0.1 U	NS	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NS	40 U	40 U
Selenium	50	2 U	5 U	NS	5 U	5 U
Silver	NA	10 U	3 U	NS	3.4 U	3.4 U
Thallium	2	0.096 J	2 U	NS	2 U	2 U
Zinc	NA	20 U	20 U	NS	10 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	NS	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	NS	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	NS	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	NS	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.059 U	1 U	NS	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	NS	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	NS	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	NS	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	NS	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	NS	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
1,4-Dichlorobenzene	75	0.29 J	1 U	NS	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	NS	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	NS	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
2-Hexanone	NA	5 U	5 U	NS	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	NS	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	NS	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	NS	5 U	5 U
Acetone	NA	10 U	5 U	NS	5 U	16 U
Benzene	**5/5**	0.38 J	1 U	NS	1 U	1 U
Bromobenzene	NA	5 U	1 U	NS	1 U	1 U
Bromochloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	NS	1 U	1 U
Bromoform	NA	5 U	1 U	NS	1 U	1 U
Bromomethane	NA	5 U	1 U	NS	1 U	1 U
Carbon disulfide	NA	10 U	1 U	NS	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	NS	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	NS	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	NS	1 U	1 U
Chlorobenzene	100	0.89 J	1 U	NS	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	NS	1 U	1 U
Chloroethane	NA	5 U	1 U	NS	1 U	1 U
Chloroform	NA	5 U	1 U	NS	1 U	1 U
Chloromethane	NA	0.31 BJ	1 U	NS	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	NS	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Dibromomethane	NA	5 U	1 U	NS	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-2C	MW-2C	MW-2C	MW-2C	MW-2C
Sample Date:		10/24/2018	10/18/2019	10/26/2020	12/28/2021	10/13/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	NS	1 U	1 U
Ethylbenzene	700	5 U	1 U	NS	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	NS	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	NS	1 U	1 U
m,p-Xylene	10000	5 U	2 U	NS	2 U	2 U
Naphthalene	NA	5 U	1 U	NS	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	NS	1 U	1 U
o-Xylene	10000	5 U	1 U	NS	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	NS	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Styrene	NA	5 U	1 U	NS	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	NS	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	NS	1 U	1 U
Toluene	1000	1 U	1 U	NS	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	NS	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	NS	1 U	1 U
Trichloroethene	5/5	5 U	1 U	NS	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	NS	1 U	1 U
1,4 Dioxane	NA	NA	NA	NS	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	NS	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	NS	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	NS	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2B	RFW-2B	RFW-2B	RFW-2B	RFW-2B
Sample Date:		10/23/2018	10/12/2019	10/27/2020	10/27/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	3.4	5 U	5 U	5 U	5 U
Barium	**2000**	50.3	73	48	43	35
Beryllium	4	3 U	4 U	4 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	4 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	10,400	19,000	6,680	9,140	8,010
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	8,560	11,000	NA	9,150	9,410
Manganese	NA	397	566	222	309	314
Mercury	2	0.2 U	0.1 J	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.063 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	14 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2B	RFW-2B	RFW-2B	RFW-2B	RFW-2B
Sample Date:		10/23/2018	10/12/2019	10/27/2020	10/27/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2D	RFW-2D	RFW-2D	RFW-2D	RFW-2D
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/27/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	1 U	5 U	5 U	5 U	5 U
Barium	**2000**	81.6	101	117	113	80
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	4,130	211	78	78	29
Lead	**15**	0.23 J	10 U	10 U	10 U	10 U
Lead, dissolved	NA	0.096 J	10 U	10 U	10 U	10 U
Magnesium	NA	12,300	6,830	NA	8,220	6,780
Manganese	NA	291	341	17	25	20
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	37.5 J	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	0.032 J	2 U	2 U	2 U	2 U
Zinc	NA	53.3	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.061 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	14 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	0.33 J	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2D	RFW-2D	RFW-2D	RFW-2D	RFW-2D
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/27/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2S	RFW-2S	RFW-2S	RFW-2S	RFW-2S
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/27/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	NS	6 U	6 U	6 U	6 U
Arsenic	**10/50**	NS	5 U	5 U	5 U	5 U
Barium	**2000**	NS	146	128	63	71
Beryllium	4	NS	4 U	40 U	4 U	4 U
Cadmium	**5**	NS	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	NS	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	NS	10 U	10 U	10 U	10 U
Copper	1300	NS	9 U	9 U	9 U	9 U
Cyanide	200	NS	5 U	5 U	5 U	5 U
Iron	NA	NS	10 U	10 U	53	10
Lead	**15**	NS	10 U	10 U	10 U	10 U
Lead, dissolved	NA	NS	10 U	10 U	10 U	10 U
Magnesium	NA	NS	2000 U	NA	3,630	4,500
Manganese	NA	NS	671	49	28	118
Mercury	2	NS	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	NS	40 U	40 U	40 U	40 U
Selenium	50	NS	5 U	5 U	5 U	5 U
Silver	NA	NS	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	NS	2 U	2 U	2 U	2 U
Zinc	NA	NS	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	NS	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	NS	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	NS	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	NS	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	NS	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	NS	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	NS	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	NS	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	NS	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	NS	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	NS	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	NS	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	NS	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	NS	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	NS	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	NS	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	NS	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	NS	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	NS	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	NS	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	NS	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	NS	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	NS	1 U	1 U	1 U	1 U
2-Hexanone	NA	NS	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	NS	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	NS	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	NS	5 U	5 U	5 U	5 U
Acetone	NA	NS	5 U	5 U	5 U	14 U
Benzene	**5/5**	NS	1 U	1 U	1 U	1 U
Bromobenzene	NA	NS	1 U	1 U	1 U	1 U
Bromochloromethane	NA	NS	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	NS	1 U	1 U	1 U	1 U
Bromoform	NA	NS	1 U	1 U	1 U	1 U
Bromomethane	NA	NS	1 U	1 U	1 U	1 U
Carbon disulfide	NA	NS	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	NS	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	NS	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	NS	1 U	1 U	1 U	1 U
Chlorobenzene	100	NS	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	NS	1 U	1 U	1 U	1 U
Chloroethane	NA	NS	1 U	1 U	1 U	1 U
Chloroform	NA	NS	1 U	1 U	1 U	1 U
Chloromethane	NA	NS	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	NS	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	NS	1 U	1 U	1 U	1 U
Dibromomethane	NA	NS	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-2S	RFW-2S	RFW-2S	RFW-2S	RFW-2S
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/27/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	NS	1 U	1 U	1 U	1 U
Ethylbenzene	700	NS	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	NS	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	NS	1 U	1 U	1 U	1 U
m,p-Xylene	10000	NS	2 U	2 U	2 U	2 U
Naphthalene	NA	NS	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	NS	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	NS	1 U	1 U	1 U	1 U
o-Xylene	10000	NS	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	NS	5 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	NS	1 U	1 U	1 U	1 U
Styrene	NA	NS	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	NS	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	NS	1 U	1 U	1 U	1 U
Toluene	1000	NS	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	NS	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	NS	1 U	1 U	1 U	1 U
Trichloroethene	5/5	NS	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	NS	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NS	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NS	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NS	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NS	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-3A	GZA-3A	GZA-3A	GZA-3A	GZA-3A
	Sample Date:	10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	25.4	12.7	15.9	14.8	14.2
Barium	**2000**	49.6	67	57	30	33
Beryllium	4	3 U	4 U	NA	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	6
Iron	NA	2,540	1,460	NA	1,070	692
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	5,810	6,020	NA	3,480	8,310
Manganese	NA	497	364	NA	121	184
Mercury	2	0.2 U	0.1 U	NA	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NA	40 U	40 U
Selenium	50	2 U	5 U	NA	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	0.2 J	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.064 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-3A	GZA-3A	GZA-3A	GZA-3A	GZA-3A
	Sample Date:	10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		GZA-3B	GZA-3B	GZA-3B	GZA-3B	GZA-3B
Sample Date:		10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	686	547	677	595	760
Barium	**2000**	49.4	50	52	36	27
Beryllium	4	3 U	4 U	NA	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	18,400	18,000	NA	13,100	12,300
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	8,990	8,060	NA	7,770	8,700
Manganese	NA	603	556	NA	406	417
Mercury	2	0.2 U	0.1 U	NA	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NA	40 U	40 U
Selenium	50	2 U	5 U	NA	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.061 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	0.3 J	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	0.7 J	1	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	0.9 J	2	1	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	0.95 J	1	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	0.41 J	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-3B	GZA-3B	GZA-3B	GZA-3B	GZA-3B
	Sample Date:	10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	0.23 J	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	3.52	2.22	1.98
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	GZA-3C	GZA-3C	GZA-3C	GZA-3C	GZA-3C
	Sample Date:	10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	258	186	252	216	243
Barium	**2000**	9.3 J	25	9	9	7
Beryllium	4	3 U	4 U	NA	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	3.8 J	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	8
Iron	NA	100 U	49	NA	17	17
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	3,200	2,660	NA	3,480	3,890
Manganese	NA	364	254	NA	330	242
Mercury	2	0.2 U	0.1 U	NA	0.1 U	0.1 U
Nickel	NA	40 U	40 U	NA	40 U	40 U
Selenium	50	2 U	5 U	NA	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.65 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		GZA-3C	GZA-3C	GZA-3C	GZA-3C	GZA-3C
Sample Date:		10/22/2018	10/12/2019	10/26/2020	11/29/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.41	0.22
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-4	MW-4	MW-4	MW-4	MW-4
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	147	136	160	112	152
Barium	**2000**	22.4	32	45	25	43
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	22	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	3,390 U	5,980	6,150	5,750	8,420
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	2,050	3,310	NA	4,110	6,920
Manganese	NA	128	192	187	228	275
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	27	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.062 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	0.3 J	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	14 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	0.22 J	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	0.33 J	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-4	MW-4	MW-4	MW-4	MW-4
	Sample Date:	10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	4.29	0.93	10.9
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	6 U	5 U	15

Notes

Laboratory qualifiers (i.e., not data validation qualifiers)

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U = Undetected

J = Estimated value

NA - Not Analyzed or Not Available

NS - Not Sampled

Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-4A	MW-4A	MW-4A	MW-4A	MW-4A
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	89.5	44.6	59.9	51.7	54.6
Barium	**2000**	52.5	57	73	42	49
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	2.2 J	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	5,750	6,670	4,140	4,720	5,850
Lead	**15**	0.94 J	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	4,710	5,380	NA	4,850	7,750
Manganese	NA	220	178	161	193	277
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	9.4 J	20 U	21	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.059 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	0.41 J	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	14 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	0.39 J	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-4A	MW-4A	MW-4A	MW-4A	MW-4A
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	4.77	0.77	4.57
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	6 U	5 U	5 U

Notes

Laboratory qualifiers (i.e., not data validation qualifiers)

B = Between the instrument detection limit and the reporting limit (inorganics)

U = Undetected

J = Estimated value

NA - Not Analyzed or Not Available

NS - Not Sampled

Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		MW-4B	MW-4B	MW-4B	MW-4B	MW-4B
Sample Date:		10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	0.72 J	5 U	5 U	5 U	5 U
Barium	**2000**	24	27	24	22	14
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	9 U
Copper	1300	20 U	9 U	26	9 U	5 U
Cyanide	200	0.01 U	5 U	5 U	5 U	6
Iron	NA	299	433	161	198	112
Lead	**15**	0.092 J	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	1,440	2000 U	NA	2000 U	2,000 U
Manganese	NA	34.8	38	17	27	19
Mercury	2	0.2 U	0.1 U	0.1 J	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	33	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.061 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	14 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	2	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	MW-4B	MW-4B	MW-4B	MW-4B	MW-4B
	Sample Date:	10/23/2018	10/12/2019	10/27/2020	12/1/2021	10/11/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	5 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	6 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	RFW-4D	RFW-4D	RFW-4D	RFW-4D	RFW-4D
	Sample Date:	10/23/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	7	18	12.3	8.3	6.9
Barium	**2000**	29.1	35	35	34	24
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	6
Iron	NA	4,970	14,600	3,140	5,680	3,730
Lead	**15**	1 U	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	5,880	6,160	NA	6,480	7,640
Manganese	NA	172	178	97	181	122
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	20 U	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.064 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-4D	RFW-4D	RFW-4D	RFW-4D	RFW-4D
Sample Date:		10/23/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

Iron Horse Park OU-2 - Historical Groundwater Results

Well:		RFW-4S	RFW-4S	RFW-4S	RFW-4S	RFW-4S
Sample Date:		10/23/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Inorganics-Metals (ug/l)						
Antimony	6	60 U	6 U	6 U	6 U	6 U
Arsenic	**10/50**	37.2	75.1	43.7	47.6	37.8
Barium	**2000**	18.9	15	15	21	10
Beryllium	4	3 U	4 U	40 U	4 U	4 U
Cadmium	**5**	5 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium, dissolved	NA	5 U	2 U	2.2 U	2.2 U	2.2 U
Chromium	100	10 U	10 U	10 U	10 U	10 U
Copper	1300	20 U	9 U	9 U	9 U	9 U
Cyanide	200	0.01 U	5 U	5 U	5 U	5 U
Iron	NA	4,530	8,400	2,600	3,180	3,380
Lead	**15**	0.14 J	10 U	10 U	10 U	10 U
Lead, dissolved	NA	1 U	10 U	10 U	10 U	10 U
Magnesium	NA	6,350	5,390	NA	6,270	7,850
Manganese	NA	94	93	52	57	84
Mercury	2	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U
Selenium	50	2 U	5 U	5 U	5 U	5 U
Silver	NA	10 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	2	1 U	2 U	2 U	2 U	2 U
Zinc	NA	20 U	20 U	25	20 U	20 U
Organics (ug/l)						
1,1,1,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane (TCA)	200	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5/3	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NA	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	5 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	5 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	0.062 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (EDB)	0.05	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5/5	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	NA	5 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	75	5 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	5 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	NA	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Ispropyltoluene	NA	5 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	5 U	5 U
Acetone	NA	10 U	5 U	5 U	5 U	5 U
Benzene	**5/5**	5 U	1 U	1 U	1 U	1 U
Bromobenzene	NA	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	NA	5 U	1 U	1 U	1 U	1 U
Bromoform	NA	5 U	1 U	1 U	1 U	1 U
Bromomethane	NA	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	10 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Freon-11)	NA	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	NA	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	5 U	1 U	1 U	1 U	1 U
Dibromochloromethane (Chlorodibromomethane)	NA	5 U	1 U	1 U	1 U	1 U
Chloroethane	NA	5 U	1 U	1 U	1 U	1 U
Chloroform	NA	5 U	1 U	1 U	1 U	1 U
Chloromethane	NA	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Dibromomethane	NA	5 U	1 U	1 U	1 U	1 U

Iron Horse Park OU-2 - Historical Groundwater Results

	Well:	RFW-4S	RFW-4S	RFW-4S	RFW-4S	RFW-4S
	Sample Date:	10/23/2018	10/13/2019	10/26/2020	12/2/2021	10/10/2022
	MCL/ICL					
Methylene Chloride (Dichloromethane)	5/5	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	1 U	1 U	1 U	1 U
Hexachloro-1,3-butadiene	NA	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	NA	5 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	5 U	2 U	2 U	2 U	2 U
Naphthalene	NA	5 U	1 U	1 U	1 U	1 U
N-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
N-Propylbenzene	NA	5 U	1 U	1 U	1 U	1 U
o-Xylene	10000	5 U	1 U	1 U	1 U	1 U
Pentachlorophenol	1/1	0.5 U	6 U	5 U	5 U	1 U
Sec-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Styrene	NA	5 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	5	5 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	100	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5/5	5 U	1 U	1 U	1 U	1 U
Vinyl Chloride	**2/2**	5 U	1 U	1 U	1 U	1 U
1,4 Dioxane	NA	NA	NA	0.2 U	0.2 U	0.2 U
Diethyl Ether	NA	NA	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	NA	NA	1 U	1 U	1 U	1 U
Tetrahydrofuran	NA	NA	5 U	5 U	5 U	5 U

Notes
Laboratory qualifiers (i.e., not data validation qualifiers)
B = Between the instrument detection limit and the reporting limit (inorganics)
U = Undetected
J = Estimated value
NA - Not Analyzed or Not Available
NS - Not Sampled
Shaded cells exceed MCLs/ICLs

PFAS Groundwater Monitoring Results - Iron Horse Park OU-2

Analyte		Units	MW-4	MW-4A	GZA-3A	GZA-3B	ENSR-11A	MW-2C	MW-2A
		Date:	12/1/2021	12/1/2023	12/27/2021	12/27/2021	12/28/2021	12/28/2021	12/28/2021
		Method:	533	533	533	533	533	533	533
Per-and Polyfluoroalkyl Substances	**Standard**								
Perfluorobutanoic acid (PFBA)	1800 (RSL)	ng/L	4.3	5.7	6.0	10	13	13	46
Perfluoropentanoic acid (PFPeA)		ng/L	4 U	4 U	4 U	4.3	8.3	4.5	10
Perfluorobutanesulfonic acid (PFBS)	600 (RSL)	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Perfluorohexanoic acid (PFHxA)	990 (RSL)	ng/L	4 U	4 U	4 U	9.6	14	4.6	19
Perfluoroheptanoic acid (PFHpA)		ng/L	4 U	4 U	4 U	5.0	8.8	4 U	8.2
Perfluorohexanesulfonic acid (PFHxS)	39 (RSL)	ng/L	4 U	4 U	4 U	4 U	4.8	4 U	6.6
Perfluorooctanoic acid (PFOA)	6 (RSL)	ng/L	**8.5**	**8.9**	**7.2**	**25**	**37**	**9.8**	**35**
Perfluorononanoic acid (PFNA)	5.9 (RSL)	ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Perfluorooctanesulfonic acid (PFOS)	4 (RSL)	ng/L	4 U	4 U	**7.1**	**13**	**20**	**11**	**15**
Perfluorodecanoic acid (PFDA)		ng/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U
combined six "PFAS6"	20 (MMCL)	ng/L	9	9	14	**43**	**71**	**21**	**65**
PFOA+PFOS		ng/L	9	9	14	38	57	21	50

Notes:

ng/l - Nanograms per liter

MMCL - 2020 MassDEP MCL for PFAS6 (highlighted) - 20 ng/L

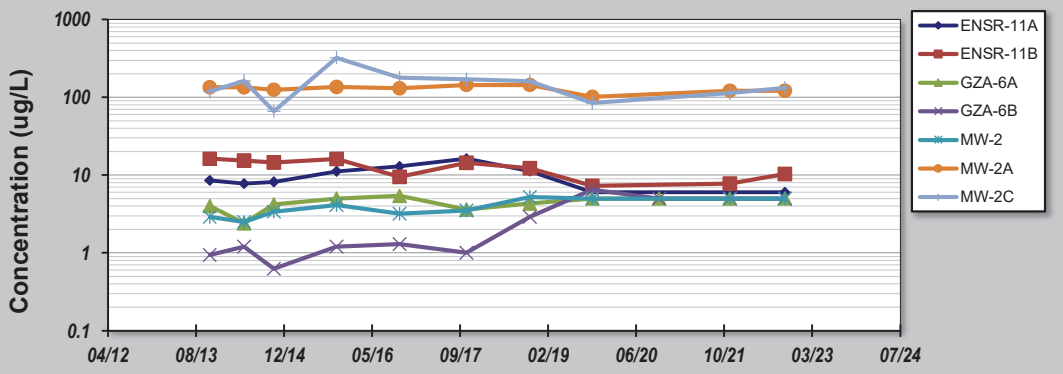
RSL - Regional Screening Level - Resident Tapwater Table, May 2023

Boldface cells exceed standard presented

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	28-Feb-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Arsenic
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	ENSR-11A	ENSR-11B	GZA-6A	GZA-6B	MW-2	MW-2A	MW-2C
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	31-Oct-13	8.5	16.2	4	0.942	2.9	135	119
2	14-May-14	7.8	15.4	2.4	1.2	2.5	135	163
3	29-Oct-14	8.2	14.5	4.2	0.625	3.4	125	66.2
4	21-Oct-15	11.2	16.1	5	1.2	4.1	136	323
5	13-Oct-16	13	9.5	5.4	1.3	3.2	130	180
6	27-Oct-17	16.3	14.4	3.6	1	3.5	144	170
7	22-Oct-18	11.3	12.2	4.3	2.9	5.2	144	161
8	13-Oct-19	6	7.3	5	6.5	5	101	84.8
9	26-Oct-20			5	5			
10	2-Dec-21	6	7.8	5	5	5	122	113
11	10-Oct-22	6	10.3	5	5	5	122	132
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.37	0.28	0.20	0.78	0.25	0.10	0.47
Mann-Kendall Statistic (S):		8	29	23	35	28	10	7
Confidence Factor:		72.9%	99.5%	95.7%	99.7%	99.4%	78.4%	70.0%
Concentration Trend:		Stable	Decreasing	Increasing	Increasing	Increasing	Stable	Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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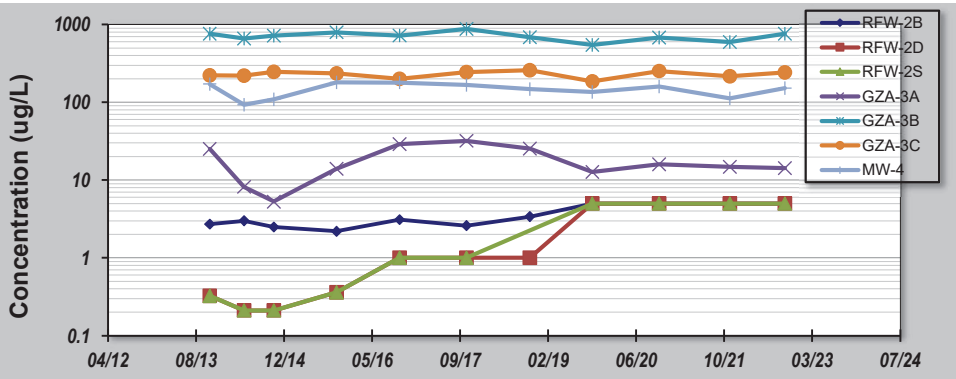
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	28-Feb-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Arsenic
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	RFW-2B	RFW-2D	RFW-2S	GZA-3A	GZA-3B	GZA-3C	MW-4
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	31-Oct-13	2.7	0.324	0.324	25.2	763	222	171
2	14-May-14	3	0.211	0.211	8.2	659	220	92.6
3	29-Oct-14	2.5	0.211	0.211	5.3	716	246	109
4	21-Oct-15	2.2	0.359	0.359	14	796	235	181
5	13-Oct-16	3.1	1	1	29	720	200	180
6	27-Oct-17	2.6	1	1	31.9	879	244	167
7	22-Oct-18	3.4	1		25.4	686	258	147
8	13-Oct-19	5	5	5	12.7	547	186	136
9	26-Oct-20	5	5	5	15.9	677	252	160
10	2-Dec-21	5	5	5	14.8	595	216	112
11	10-Oct-22	5	5	5	14.2	760	243	152
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.32	1.03	1.01	0.48	0.13	0.10	0.21
Mann-Kendall Statistic (S):		33	41	33	3	11	3	7
Confidence Factor:		99.5%	100.0%	99.9%	56.0%	77.7%	56.0%	67.6%
Concentration Trend:		Increasing	Increasing	Increasing	No Trend	Stable	No Trend	Stable



Notes:

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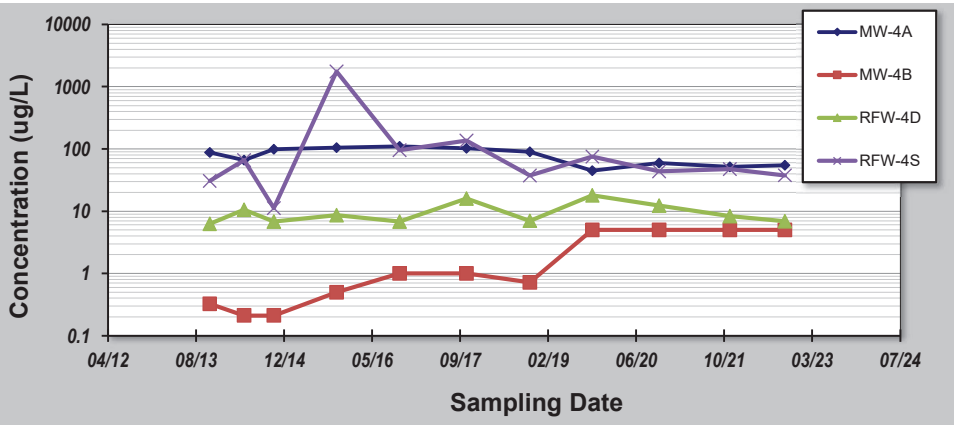
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	28-Feb-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Arsenic
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	MW-4A	MW-4B	RFW-4D	RFW-4S			
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	31-Oct-13	87.7	0.324	6.3	30.7			
2	14-May-14	66	0.211	10.6	66.1			
3	29-Oct-14	98.3	0.211	6.8	11.2			
4	21-Oct-15	105	0.5	8.6	1760			
5	13-Oct-16	110	1	6.8	95			
6	27-Oct-17	102	1	15.9	137			
7	22-Oct-18	89.5	0.72	7	37.2			
8	13-Oct-19	44.6	5	18	75.1			
9	26-Oct-20	59.9	5	12.3	43.7			
10	2-Dec-21	51.7	5	8.3	47.6			
11	10-Oct-22	54.6	5	6.9	37.8			
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.30	1.03	0.41	2.42			
Mann-Kendall Statistic (S):		-19	39	12	1			
Confidence Factor:		91.8%	99.9%	79.9%	50.0%			
Concentration Trend:		Prob. Decreasing	Increasing	No Trend	No Trend			



Notes:

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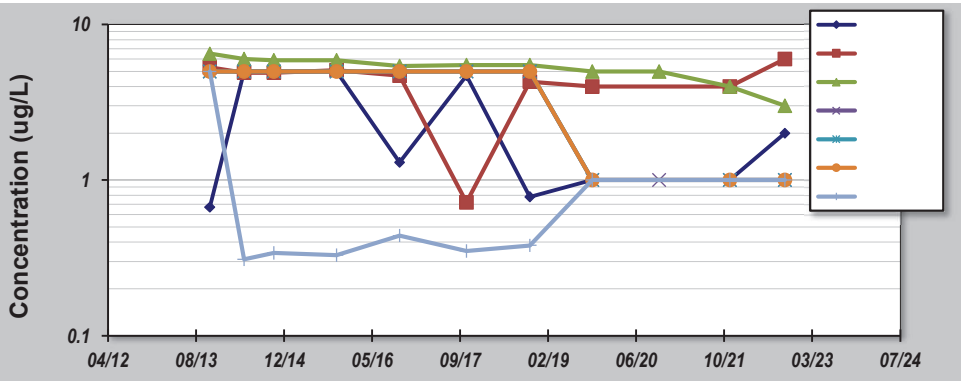
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	28-Feb-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Benzene
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	ENSR-11A	ENSR-11B	GZA-6A	GZA-6B	MW-2	MW-2A	MW-2C
Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)						
1	31-Oct-13	0.67	5.3	6.5	5	5	5	5
2	14-May-14	5	4.9	6	5	5	5	0.31
3	29-Oct-14	5	4.9	5.9	5	5	5	0.34
4	21-Oct-15	5	5.1	5.9	5	5	5	0.33
5	13-Oct-16	1.3	4.7	5.4	5	5	5	0.44
6	27-Oct-17	4.7	0.72	5.5	5	5	5	0.35
7	22-Oct-18	0.78	4.3	5.5	5	5	5	0.38
8	13-Oct-19	1	4	5	1	1	1	1
9	26-Oct-20			5	1			
10	2-Dec-21	1	4	4	1	1	1	1
11	10-Oct-22	2	6	3	1	1	1	1
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.75	0.32	0.19	0.57	0.51	0.51	1.41
Mann-Kendall Statistic (S):		-9	-15	-48	-28	-21	-21	18
Confidence Factor:		75.8%	89.2%	>99.9%	98.4%	96.4%	96.4%	93.4%
Concentration Trend:		Stable	Stable	Decreasing	Decreasing	Decreasing	Decreasing	Prob. Increasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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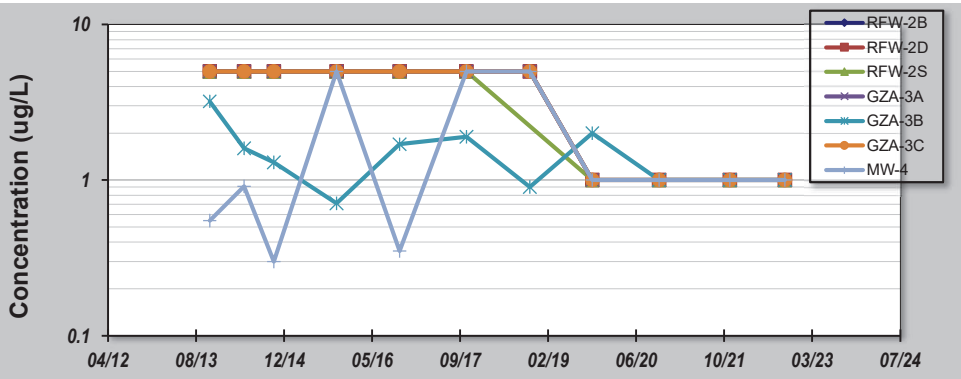
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	28-Feb-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Benzene
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	RFW-2B	RFW-2D	RFW-2S	GZA-3A	GZA-3B	GZA-3C	MW-4
Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)						
1	31-Oct-13	5	5	5.0	5	3.2	5	0.55
2	14-May-14	5	5	5	5	1.6	5	0.91
3	29-Oct-14	5	5	5.0	5	1.3	5	0.3
4	21-Oct-15	5	5	5	5	0.71	5	5
5	13-Oct-16	5	5	5	5	1.7	5	0.35
6	27-Oct-17	5	5	5	5	1.9	5	5
7	22-Oct-18	5	5		5	0.9	5	5
8	13-Oct-19	1	1	1	1	2	1	1
9	26-Oct-20	1	1	1	1	1	1	1
10	2-Dec-21	1	1	1	1	1	1	1
11	10-Oct-22	1	1	1	1	1	1	1
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.57	0.57	0.61	0.57	0.48	0.57	1.04
Mann-Kendall Statistic (S):		-28	-28	-24	-28	-12	-28	12
Confidence Factor:		98.4%	98.4%	98.2%	98.4%	79.9%	98.4%	79.9%
Concentration Trend:		Decreasing	Decreasing	Decreasing	Decreasing	Stable	Decreasing	No Trend



Notes:

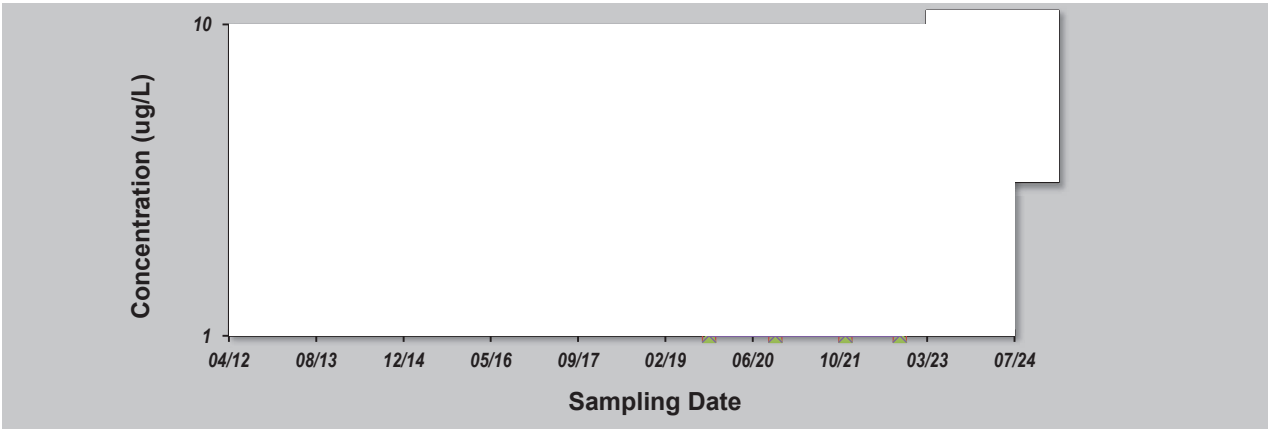
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:		Job ID:	
Facility Name:		Constituent:	
Conducted By:		Concentration Units:	

Sampling Point ID:	MW-4A	MW-4B	RFW-4D	RFW-4S			
Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)						
1	31-Oct-13	5	5	5	5			
2	14-May-14	5	5	5	5			
3	29-Oct-14	5	5	5	5			
4	21-Oct-15	5	5	5	5			
5	13-Oct-16	5	5	5	5			
6	27-Oct-17	5	5	5	5			
7	22-Oct-18	5	5	5	5			
8	13-Oct-19	1	1	1	1			
9	26-Oct-20	1	1	1	1			
10	2-Dec-21	1	1	1	1			
11	10-Oct-22	1	1	1	1			
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.57	0.57	0.57	0.57			
Mann-Kendall Statistic (S):		-28	-28	-28	-28			
Confidence Factor:		98.4%	98.4%	98.4%	98.4%			
Concentration Trend:		Decreasing	Decreasing	Decreasing	Decreasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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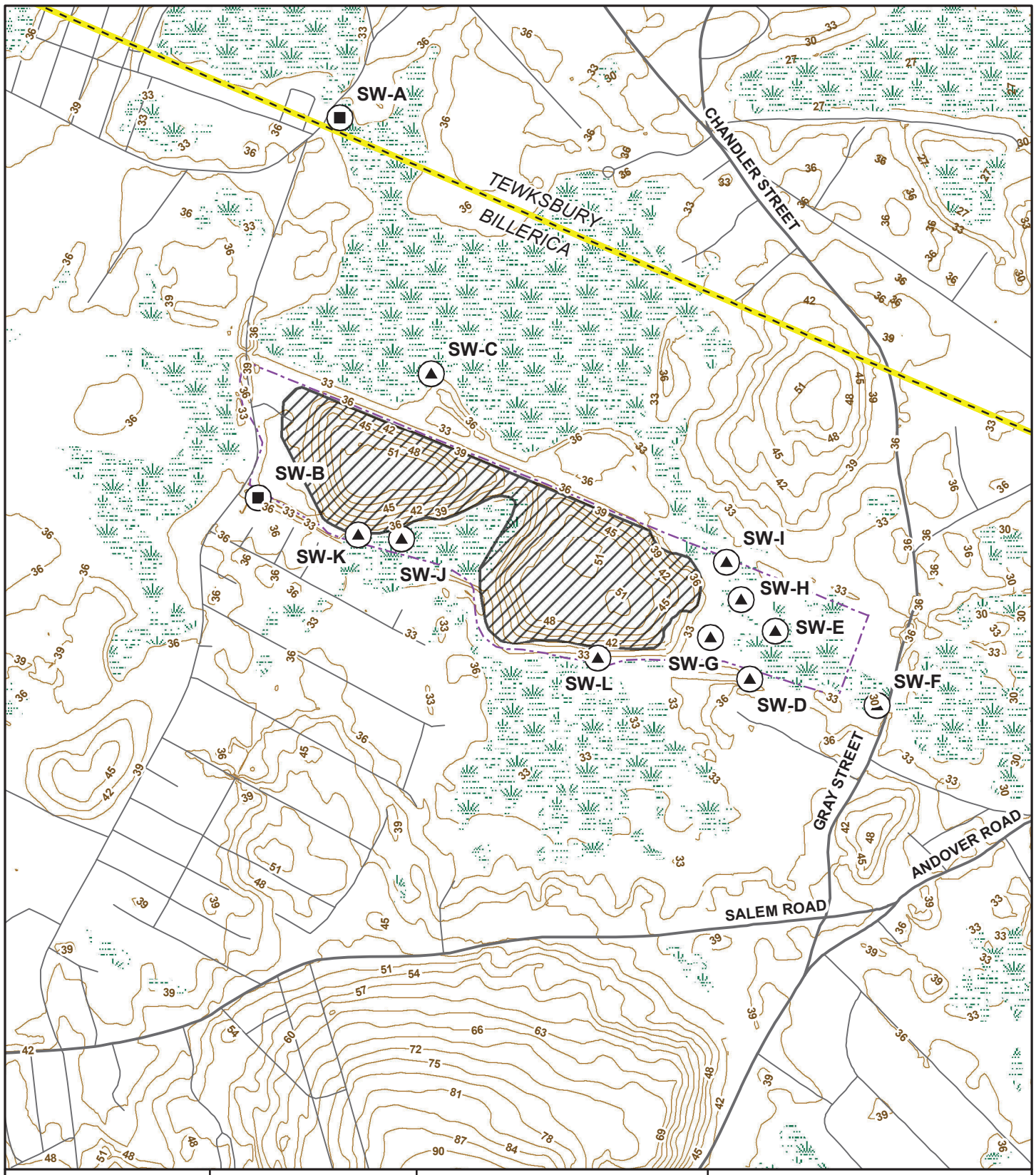
C.3 – Surface Water Monitoring Results



AECOM

Drawn:	BC	9/12/2013
Approved:	NT	9/12/2013
Project #:	60282276	

FIGURE 5:
SURFACE WATER MONITORING LOCATIONS

SHAFFER LANDFILL
BILLERICA, MASSACHUSETTS

G:\Projects\HAZWASTE\60282276IHP\Maps\Shaffer Landfill - SW Locations.mxd

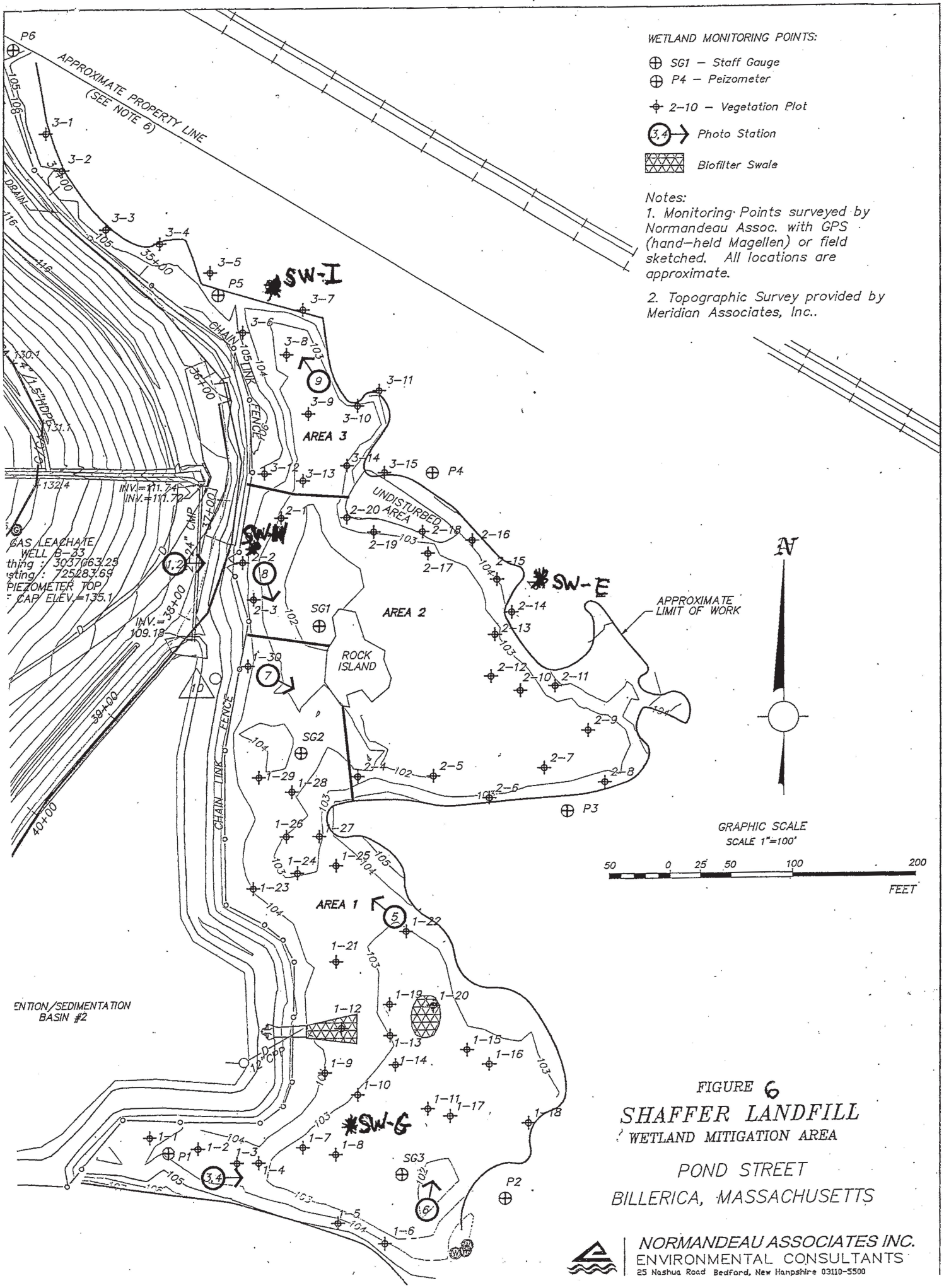


FIGURE 6

SHAFFER LANDFILL

WETLAND MITIGATION AREA

POND STREET

BILLERICA, MASSACHUSETTS

NORMANDEAU ASSOCIATES INC.
ENVIRONMENTAL CONSULTANTS
25 Nashua Road Bedford, New Hampshire 03110–5500

Shaffer Landfill Surface Water Sampling

SW-A		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	32	151	55	12	36
COD	mg/l	43	20 U	40	45	20 U
Chloride	mg/l	110	143	216	69	141
Iron (total)	mg/l	1070	790	1990	618	884.00
Manganese (total)	mg/l	332	212	504	131	343
Nitrogen, nitrate (as N)	mg/l	0.06	0.1	0.062	0.136	0.15
TDS	mg/l	188	228	220	100	284
Sulfate	mg/l	2 U	5	6	2 U	17
pH	s.u.	6.93	6.7	6.54	7.22	6.61
Temp	^{o}C	11.4	12.41	10.6	1.6	11.2
Specific Cond.	uS/cm	452	576	369	210	867
DO	mg/l	7.76	6.06	1.57	12.16	9.04
ORP	mV	135	266	98.4	136.2	88.6
turbidity	NTU	4.6	11	5.83	15.32	14.99
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	6	5 U	5 U	5 U	5 U
Barium	ug/l	30	40	45	22	32
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	3100	3,650	4,780	2,720	4690
Mercury	ug/l	0.1 U	0.1 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	26	20 U	20 U
VOCs (none detected)						
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

SW-B		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	45	101	46	39	57
COD	mg/l	20 U	20 U	33	22	20 U
Chloride	mg/l	90	196	162	83	130
Iron (total)	mg/l	270	2880	3870	759	2460
Manganese (total)	mg/l	180	382	908	89	448
Nitrogen, nitrate (as N)	mg/l	0.12	0.03 U	0.37 U	0.396	0.1
TDS	mg/l	220	280	60	168	276
Sulfate	mg/l	6	11	16	14	13
pH	s.u.	6.58	6.48	6.47	6.89	6.98
Temp	^{o}C	8.3	11.82	10.9	2.7	13.7
Specific Cond.	uS/cm	449	598	279	288	842
DO	mg/l	2.68	4.48	0.8	8.39	7.08
ORP	mV	87.7	230	102	107.1	134.6
turbidity	NTU	8.6	27	13.93	0.95	17.6
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	10	5 U	5 U	5 U	5 U
Barium	ug/l	41	62	76	38	53
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	3350	4460	4060	3690	4810
Mercury	ug/l	0.1 U	0.1 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U		20 U	20 U
VOCs (none detected)						
Pentachlorophenol (not detected)						

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SW-C1		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	62	201	77	84	59
COD	mg/l	21	20 U	NA	32	20 U
Chloride	mg/l	87	98	100	83	78
Iron (total)	mg/l	800	13200	12	15500	9150
Manganese (total)	mg/l	976	1760	1	898	1550
Nitrogen, nitrate (as N)	mg/l	0.03	0.03 U	0.37 U	0.04	0.04
TDS	mg/l	212	188	12	132	192
Sulfate	mg/l	2 U	2 U	2 U	2 U	9
pH	s.u.	6.21	6.32	6.44	6.44	7.19
Temp	°C	6.1	11.8	9.9	4.1	13.1
Specific Cond.	uS/cm	417	521	301	324	980
DO	mg/l	3.5	2.9	0.95	0.96	3.81
ORP	mV	33	23	1	-27.3	-72.1
turbidity	NTU	73	41	17.87	5	542.1
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	10	11.4	28.2	11.4	16.1
Barium	ug/l	27	41	44	57	28
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	3550	4080	NS	4040	4020
Mercury	ug/l	0.1 U	0.1 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	30	20 U	20 U
Toluene	ug/l	1 U	1 U	1 U	2	1 U
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

SW-D		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Dec-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	24	42	48	35	44
COD	mg/l	20 U	20 U	43	45	20 U
Chloride	mg/l	140	125	261	106	133
Iron (total)	mg/l	220	2180	9340	865	1750
Manganese (total)	mg/l	234	569	1440	148	573
Nitrogen, nitrate (as N)	mg/l	1.71	0.119	0.149	0.593	0.32
TDS	mg/l	280	280	156	216	360
Sulfate	mg/l	16	11	20	4 U	12
pH	s.u.	7.35	6.82	6.53	7.37	7.25
Temp	°C	11.5	11.02	8.2	3.6	10.6
Specific Cond.	uS/cm	582	600	305	310	276
DO	mg/l	9.82	8.48	7	10.8	9.69
ORP	mV	131.3	186	101.2	-13.1	42.9
turbidity	NTU	17	26	7.89	320	12.64
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	9	5 U	9.4	5 U	5 U
Barium	ug/l	75	59	156	44	47
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5.2 U	5 U	5 U	5 UJ	7
Lead (total)	ug/l	10 U	10 U	14.1	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	4450	4390	5010	3620	5020
Mercury	ug/l	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	32	20 U	20 U
Acetone	ug/l	21	5 U	5 U	5 U	14 U
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

SW-F		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	28	121	50	37	46
COD	mg/l	20 U	20 U	44	29	20 U
Chloride	mg/l	90	134	198	93	109
Iron (total)	mg/l	450	3810	6760	1190	2030
Manganese (total)	mg/l	364	1080	1070	228	627
Nitrogen, nitrate (as N)	mg/l	0.5	0.352	0.238	0.449	0.42
TDS	mg/l	240	264	152	164	308
Sulfate	mg/l	14	10	24	14	13
pH	s.u.	7.32	6.63	6.66	7.17	7.08
Temp	^{o}C	7.51	11.12	8.6	0.6	10.9
Specific Cond.	uS/cm	486	576	308	257	869
DO	mg/l	8.04	5.56	5.01	12.37	8.35
ORP	mV	98.7	162	30.4	166	54.9
turbidity	NTU	1	32	35.1	1.38	16.27
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	9	5 U	11.5	5 U	5 U
Barium	ug/l	63	63	80	40	49
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	4200	4170	4710	3550	4960
Mercury	ug/l	0.1 U	0.2 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	23	20 U	20 U
Acetone	ug/l	31	5 U	5 U	5 U	14 U
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

SW-G		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Dec-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	236	352	46	280	170
COD	mg/l	114	1100	132	140	20 U
Chloride	mg/l	130	201	90	125	122
Iron (total)	mg/l	27000	44300	9970	7030	961
Manganese (total)	mg/l	332	226	669	192	130
Nitrogen, nitrate (as N)	mg/l	0.03 U	0.625	0.192	0.52	2.44
TDS	mg/l	316	588	100	720	580
Sulfate	mg/l	2 U	4 U	40	4 U	24
pH	s.u.	6.72	7.03	6	7.05	6.98
Temp	°C	12.1	12.79	6.7	6.2	7.9
Specific Cond.	uS/cm	923	1340	217	865	457
DO	mg/l	3.86	4.78	18.1	325	6.55
ORP	mV	-37	-160	91.5	-39	58.4
turbidity	NTU	14	949	676.78	801	114.73
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	280	447	65	58.9	6.5
Barium	ug/l	111	1030	75	76	39
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10	42	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	7,370	16,600	6,100	11,600	11,100
Mercury	ug/l	0.1 U	0.3 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	37	20 U	20 U
Chlorobenzene	ug/l	5 U	2	1 U	1	1 U
1,4-Dichlorobenzene	ug/l	5 U	1	1 U	1.0 U	1 U
Tetrahydrofuran	ug/l	25 U	27	5 U	19	5 U
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

Shaffer Landfill Surface Water Sampling

SW-H		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	333	302	185	219	168
COD	mg/l	60	67	151	346	20 U
Chloride	mg/l	105	107	131	5 U	83
Iron (total)	mg/l	990	6110	11500	45100	4020
Manganese (total)	mg/l	180	120	743	1700	369
Nitrogen, nitrate (as N)	mg/l	0.05	0.235	0.084	0.03 U	0.29
TDS	mg/l	448	600	424	232	388
Sulfate	mg/l	2 U	2	119	27	12
pH	s.u.	7.31	7.27	7.17	6.93	6.35
Temp	°C	11.8	12.6	9.1	2.3	12.6
Specific Cond.	uS/cm	1021	968	342	328	351
DO	mg/l	5.57	9.01	2.77	3.01	19.8
ORP	mV	-15.0	77	-25	-59.9	170
turbidity	NTU	26	475	14.52	15960	311.8
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	6	63.2	124	302	60
Barium	ug/l	57	83	136	205	47
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	15.1	10 U
Copper	ug/l	9 U	9 U	12	39	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	5 U
Lead (total)	ug/l	10 U	10 U	35.9	97.9	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	9670	12300	11800	13000	10400
Mercury	ug/l	0.1 U	0.1 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	20 U	53	207	20 U
VOCs (none detected)						
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value prıe presented is reporting limit
NS - not sampled/analyzed

Shaffer Landfill Surface Water Sampling

SW-I		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Nov-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	666	906	44	26	NS
COD	mg/l	58	943	422	618	NS
Chloride	mg/l	107	89	306	49	NS
Iron (total)	mg/l	2490	847	738000	399000	NS
Manganese (total)	mg/l	195	704	424	1320	NS
Nitrogen, nitrate (as N)	mg/l	0.06	0.113	0.037 U	0.052	NS
TDS	mg/l	436	244	216	72	NS
Sulfate	mg/l	2 U	4 U	39	51	NS
pH	s.u.	7.3	7.47	6.44	6.41	NS
Temp	°C	11.3	11.93	10.6	8.6	NS
Specific Cond.	uS/cm	1019	534	311	144	NS
DO	mg/l	6.42	9.22	1.30	4	NS
ORP	mV	60.1	-183	-13.3	-15.2	NS
turbidity	NTU	27	1000	1500	174.94	NS
Antimony	ug/l	6 U	6.2	13.7	6 U	NS
Arsenic	ug/l	8	1400	1250	2480	NS
Barium	ug/l	59	776	1040	505	NS
Beryllium	ug/l	4 U	4 U	4 U	4 U	NS
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.3	NS
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	NS
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	30.6	NS
Copper	ug/l	9 U	15	14	96	NS
Cyanide	ug/l	5 U	7	5 U	5 UJ	NS
Lead (total)	ug/l	10 U	70.9	109	99.5	NS
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	NS
Magnesium	ug/l	9,450	8,660	12,500	7,330	NS
Mercury	ug/l	0.1 U	1.2 J	0.1 UJ	0.2	NS
Nickel	ug/l	40 U	40 U	40 U	43	NS
Selenium	ug/l	5 U	5 U	5 U	5 U	NS
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	NS
Thallium	ug/l	2 U	2 U	2 U	2 U	NS
Zinc	ug/l	20 U	42	50	539	NS
VOCs (none detected)						NS
Pentachlorophenol (not detected)						NS

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NS - not sampled/analyzed

SW-J		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Dec-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	366	282	61	342	NS
COD	mg/l	2230	20 U	48	559	NS
Chloride	mg/l	30	152	212	19	NS
Iron (total)	mg/l	19600	1670	5130	83400	NS
Manganese (total)	mg/l	150	103	1060	528	NS
Nitrogen, nitrate (as N)	mg/l	0.04	0.03 U	0.305	0.12	NS
TDS	mg/l	428	476	292	352	NS
Sulfate	mg/l	2 U	15	14	10 U	NS
pH	s.u.	6.6	6.63	6.59	6.24	NS
Temp	°C	8.1	12.32	11	1.7	NS
Specific Cond.	uS/cm	737	630	430	497	NS
DO	mg/l	1.84	10.41	3.18	5.25	NS
ORP	mV	-21	208	10.4	49.1	NS
turbidity	NTU	25.3	270	24.76	610	NS
Antimony	ug/l	6 U	6 U	6 U	6 U	NS
Arsenic	ug/l	6	5 U	39.5	5 U	NS
Barium	ug/l	160	49	105	483	NS
Beryllium	ug/l	4 U	4 U	4 U	4 U	NS
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	NS
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	NS
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	NS
Copper	ug/l	10	9 U	10	9 U	NS
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	NS
Lead (total)	ug/l	10 U	10 U	10 U	10 U	NS
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	NS
Magnesium	ug/l	2490	4150	6330	12700	NS
Mercury	ug/l	0.4	0.1 J	0.1 UJ	0.1 UJ	NS
Nickel	ug/l	40 U	40 U	40 U	40 U	NS
Selenium	ug/l	5 U	5 U	5 U	5 U	NS
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	NS
Thallium	ug/l	2 U	2 U	2 U	2 U	NS
Zinc	ug/l	177	20 U	37	39	NS
Tetrahydrofuran	ug/l	25 U	5 U	5 U	24	NS
Pentachlorophenol (not detected)						NS

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SW-K1		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Dec-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	22	654	5	70	NS
COD	mg/l	265	1580	199	580	NS
Chloride	mg/l	140	89	414	87	NS
Iron (total)	mg/l	220	32500	16300	12900	NS
Manganese (total)	mg/l	174	565	631	612	NS
Nitrogen, nitrate (as N)	mg/l	0.55	0.048	0.123	0.641	NS
TDS	mg/l	252	264	392	284	NS
Sulfate	mg/l	18	31	24	6	NS
pH	s.u.	6.64	6.16	6.07	6.69	NS
Temp	^{o}C	11.40	11.34	10.20	3.9	NS
Specific Cond.	uS/cm	549	564	444	315	NS
DO	mg/l	7.81	4.45	1.4	7.81	NS
ORP	mV	73	136	30.5	74	NS
turbidity	NTU	74.7	263	250.97	21.67	NS
Antimony	ug/l	6 U	6 U	6.7	6 U	NS
Arsenic	ug/l	10	9.3	8.5	5 U	NS
Barium	ug/l	64	173	1500	117	NS
Beryllium	ug/l	4 U	4 U	4 U	4 U	NS
Cadmium	ug/l	2.2 U	2 U	10.6	2.2 U	NS
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	NS
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium (total)	ug/l	10 U	10 U	10 U	10 U	NS
Copper	ug/l	9 U	10	9	9 U	NS
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	NS
Lead (total)	ug/l	10 U	41.7	425	14	NS
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	NS
Magnesium	ug/l	4380	3840	15200	5510	NS
Mercury	ug/l	0.1 U	0.7 J	0.16 J	0.1 UJ	NS
Nickel	ug/l	40 U	40 U	40 U	40 U	NS
Selenium	ug/l	5 U	5 U	5 U	5 U	NS
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	NS
Thallium	ug/l	2 U	2 U	2 U	2 U	NS
Zinc	ug/l	20 U	59	101	39	NS
VOCs (none detected)						NS
Pentachlorophenol (not detected)						NS

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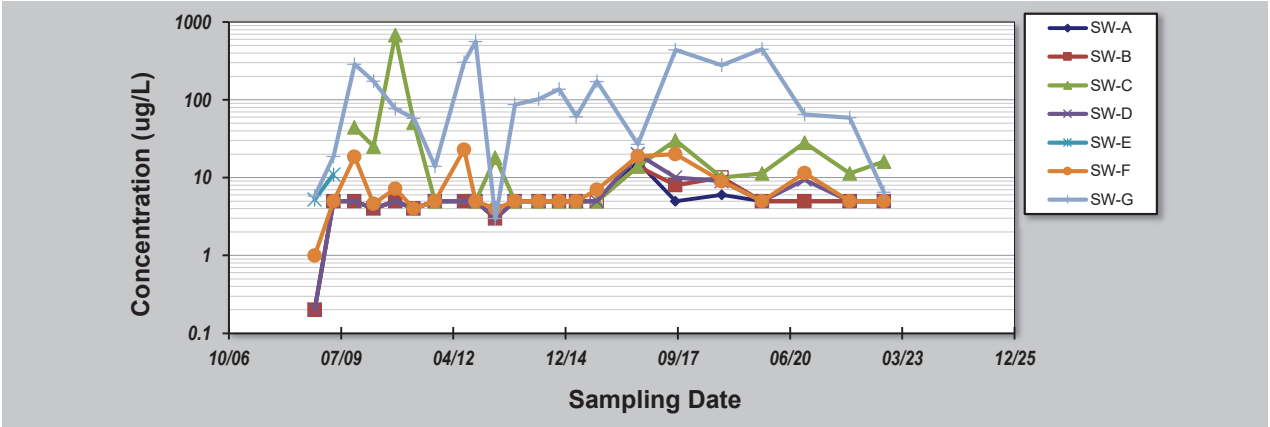
SW-L		Round 28	Round 29	Round 30	Round 31	Round 32
		Oct-18	Oct-19	Oct-20	Dec-21	Oct-22
Alkalinity (as $CaCO_3$)	mg/l	41	91	48	35	47
COD	mg/l	20 U	40	33	56	20 U
Chloride	mg/l	130	152	221	91	138
Iron (total)	mg/l	41	13000	4270	571	6200
Manganese (total)	mg/l	229	567	715	142	3300
Nitrogen, nitrate (as N)	mg/l	0.38	0.10	0.107	0.657	0.16
TDS	mg/l	268	272	284	180	352
Sulfate	mg/l	15	12	21	13	8
pH	s.u.	6.82	6.71	7.7	6.58	6.33
Temp	°C	11.7	11.46	9.7	3.6	12.5
Specific Cond.	uS/cm	578	607	305	309	421
DO	mg/l	1.45	7.47	6.96	8.63	8.56
ORP	mV	123	185	79.3	40.9	99.2
turbidity	NTU	51.3	70	17.55	4.11	5.94
Antimony	ug/l	6 U	6 U	6 U	6 U	6 U
Arsenic	ug/l	8	20.3	6.3	5 U	5.1
Barium	ug/l	74	115	77	43	94
Beryllium	ug/l	4 U	4 U	4 U	4 U	4 U
Cadmium	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Cadmium (dissolved)	ug/l	2.2 U	2 U	2.2 U	2.2 U	2.2 U
Calcium	ug/l	NS	NS	NS	NS	NS
Chromium	ug/l	10 U	10 U	10 U	10 U	10 U
Copper	ug/l	9 U	9 U	9 U	9 U	9 U
Cyanide	ug/l	5 U	5 U	5 U	5 UJ	6
Lead (total)	ug/l	10 U	22	10 U	10 U	10 U
Lead (dissolved)	ug/l	10 U	10 U	10 U	10 U	10 U
Magnesium	ug/l	4,240	4,590	4,530	3,750	5210
Mercury	ug/l	0.1 U	0.1 J	0.1 UJ	0.1 UJ	0.1 U
Nickel	ug/l	40 U	40 U	40 U	40 U	40 U
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	3.4 U	3 U	3.4 U	3.4 U	3.4 U
Thallium	ug/l	2 U	2 U	2 U	2 U	2 U
Zinc	ug/l	20 U	24	21	20 U	22
Acetone	ug/l	16	5 U	5 U	5 U	5 U
Pentachlorophenol (not detected)						

The only organics presented are those which were detected in one of the sampling rounds.
U - Not detected; value presented is reporting limit
NS - not sampled/analyzed

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Arsenic
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	SW-A	SW-B	SW-C	SW-D	SW-E	SW-F	SW-G
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	13-Nov-08	0.2	0.2		0.2	5.2	1	5.8
2	29-Apr-09	5	5		5	10.9	5	18.7
3	3-Nov-09	5	5	44.6	5		18.6	288
4	22-Apr-10	4	4	25.2	4		4.6	174
5	2-Nov-10	5	5	683	5		7.2	77
6	14-Apr-11	4	4	51	4		4	58.1
7	20-Oct-11	5	5	5	5		5	14
8	5-Jul-12	5	5		5		23	305
9	16-Oct-12	5	5	5	5		5	563
10	10-Apr-13	3	3	18	3		4	3
11	1-Oct-13	5	5	5	5		5	87
12	1-May-14	5	5	5	5		5	102
13	30-Oct-14	5	5	5	5		5	137
14	1-Apr-15	5	5	5	5		5	61
15	1-Oct-15	5	5	5	5		7	173
16	1-Oct-16	16	14	14	20		19	27
17	1-Sep-17	5	8	30	10		20	440
18	19-Oct-18	6	10	10	9		9	280
19	11-Oct-19	5	5	11.4	5		5	447
20	25-Oct-20	5	5	28.2	9.4		11.5	65
21	30-Nov-21	5	5	11.4	5		5	58.9
22	1-Oct-22	5	5	16.1	5		5	6.5
23								
24								
25								
Coefficient of Variation:		0.52	0.48	2.98	0.64	0.50	0.76	1.06
Mann-Kendall Statistic (S):		64	71	11	81	1	51	19
Confidence Factor:		96.3%	97.6%	63.5%	98.9%		92.0%	69.2%
Concentration Trend:		Increasing	Increasing	No Trend	Increasing		Prob. Increasing	No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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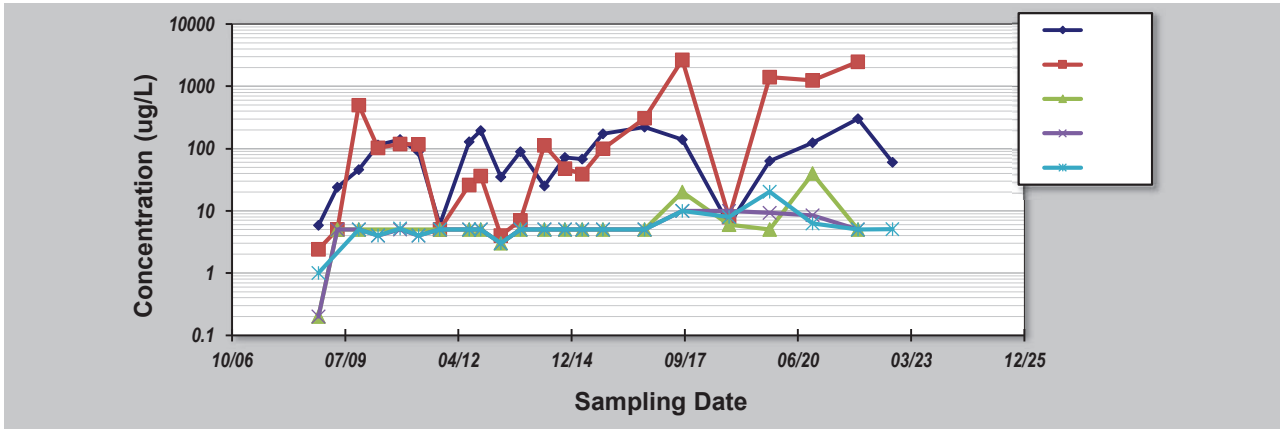
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Arsenic
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	ug/L

Sampling Point ID:	SW-H	SW-I	SW-J	SW-K	SW-L		
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	13-Nov-08	5.8	2.4	0.2	0.2	1		
2	29-Apr-09	24	5	5	5			
3	3-Nov-09	45.8	497	5	5	5		
4	22-Apr-10	114	102		4	4		
5	2-Nov-10	139	118		5	5.2		
6	14-Apr-11	89.2	117		4	4		
7	20-Oct-11	6	5	5	5	5		
8	5-Jul-12	129	26	5	5	5		
9	16-Oct-12	196	36	5	5	5		
10	10-Apr-13	35	4	3	3	3		
11	1-Oct-13	89	7	5	5	5		
12	1-May-14	25	112	5	5	5		
13	30-Oct-14	72	48	5	5	5		
14	1-Apr-15	68	39	5	5	5		
15	1-Oct-15	174	100	5	5	5		
16	1-Oct-16	221	308	5	5	5		
17	1-Sep-17	140	2650	20	10	10		
18	19-Oct-18	6	8	6	10	8		
19	11-Oct-19	63.2	1400	5	9.3	20.3		
20	25-Oct-20	124	1250	39.5	8.5	6.3		
21	30-Nov-21	302	2480	5	5	5		
22	1-Oct-22	60				5.1		
23								
24								
25								
Coefficient of Variation:		0.80	1.82	1.19	0.42	0.64		
Mann-Kendall Statistic (S):		50	77	53	86	88		
Confidence Factor:		91.6%	99.0%	97.6%	99.5%	99.6%		
Concentration Trend:		Prob. Increasing	Increasing	Increasing	Increasing	Increasing		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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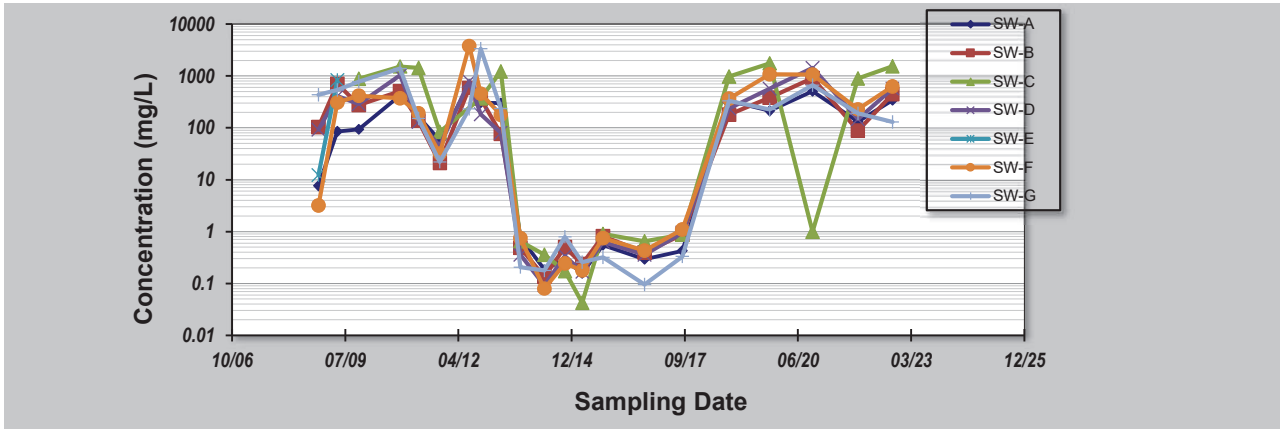
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Manganese (Total)
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-A	SW-B	SW-C	SW-D	SW-E	SW-F	SW-G
Sampling Event	Sampling Date	MANGANESE (TOTAL) CONCENTRATION (mg/L)						
1	13-Nov-08	7.6	104		92.8	12.2	3.2	433
2	29-Apr-09	85.7	702		409	836	309	536
3	3-Nov-09	93.8	277	879	289		418	776
4	22-Apr-10							
5	2-Nov-10	422	506	1520	1030		373	1390
6	14-Apr-11	164	138	1430	130		192	152
7	20-Oct-11	58	21	84	45		32	22
8	5-Jul-12	682	588		794		3800	232
9	16-Oct-12	308	366	373	181		456	3370
10	10-Apr-13	301	76	1220	80		178	238
11	1-Oct-13	0.767	0.486	0.649	0.354		0.748	0.206
12	1-May-14	0.186	0.133	0.36	0.0915		0.0794	0.176
13	30-Oct-14	0.289	0.502	0.174	0.338		0.244	0.799
14	1-Apr-15	0.156	0.236	0.0423	0.168		0.179	0.258
15	1-Oct-15	0.544	0.809	0.899	0.629		0.75	0.316
16	1-Oct-16	0.293	0.392	0.648	0.358		0.43	0.095
17	1-Sep-17	0.428	0.873	0.875	0.955		1.09	0.33
18	19-Oct-18	332	180	976	234		364	332
19	11-Oct-19	212	382	1760	569		1080	226
20	25-Oct-20	504	908	1	1440		1070	669
21	30-Nov-21	131	89	898	148		228	192
22	1-Oct-22	343	448	1550	573		627	130
23								
24								
25								
Coefficient of Variation:		1.14	1.19	1.13	1.37	1.37	1.93	1.83
Mann-Kendall Statistic (S):		6	14	-1	-2	1	6	-46
Confidence Factor:		55.9%	65.1%	50.0%	51.2%		55.9%	91.2%
Concentration Trend:		No Trend	No Trend	No Trend	No Trend		No Trend	Prob. Decreasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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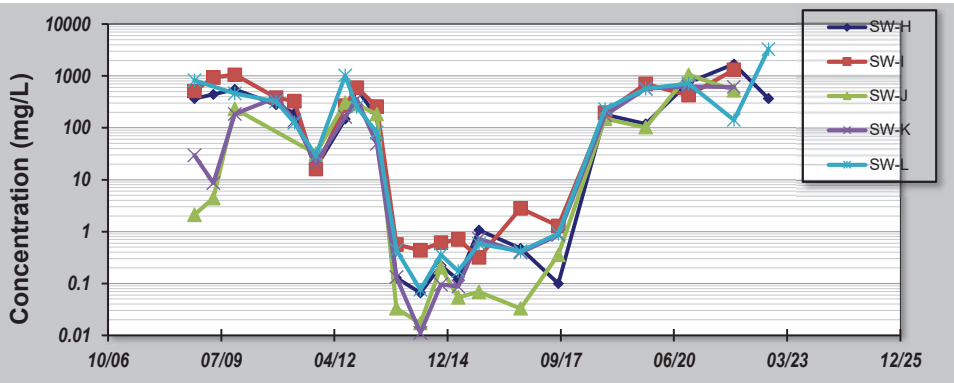
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Manganese (Total)
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-H	SW-I	SW-J	SW-K	SW-L		
Sampling Event	Sampling Date	MANGANESE (TOTAL) CONCENTRATION (mg/L)						
1	13-Nov-08	369	512	2.1	29.6	823		
2	29-Apr-09	439	935	4.4	8.6			
3	3-Nov-09	554	1060	233	185	463		
4	22-Apr-10							
5	2-Nov-10	279	384		382	321		
6	14-Apr-11	193	326		140	126		
7	20-Oct-11	17	16	32	21	29		
8	5-Jul-12	147	267	307	163	1020		
9	16-Oct-12	577	595	285	356	252		
10	10-Apr-13	157	257	183	49	81		
11	1-Oct-13	0.127	0.564	0.033	0.132	0.44		
12	1-May-14	0.0656	0.437	0.0171	0.0112	0.0753		
13	30-Oct-14	0.222	0.609	0.205	0.0951	0.359		
14	1-Apr-15	0.119	0.705	0.0538	0.0875	0.174		
15	1-Oct-15	1.07	0.317	0.069	0.724	0.577		
16	1-Oct-16	0.471	2.79	0.033	0.393	0.416		
17	1-Sep-17	0.1	1.29	0.354	0.854	0.904		
18	19-Oct-18	180	195	150	174	229		
19	11-Oct-19	120	704	103	565	567		
20	25-Oct-20	743	424	1060	631	715		
21	30-Nov-21	1700	1320	528	612	142		
22	1-Oct-22	369				3300		
23								
24								
25								
Coefficient of Variation:		1.42	1.14	1.68	1.33	1.86		
Mann-Kendall Statistic (S):		-21	30	12	16	8		
Confidence Factor:		72.5%	82.4%	66.0%	68.5%	58.9%		
Concentration Trend:		No Trend	No Trend	No Trend	No Trend	No Trend		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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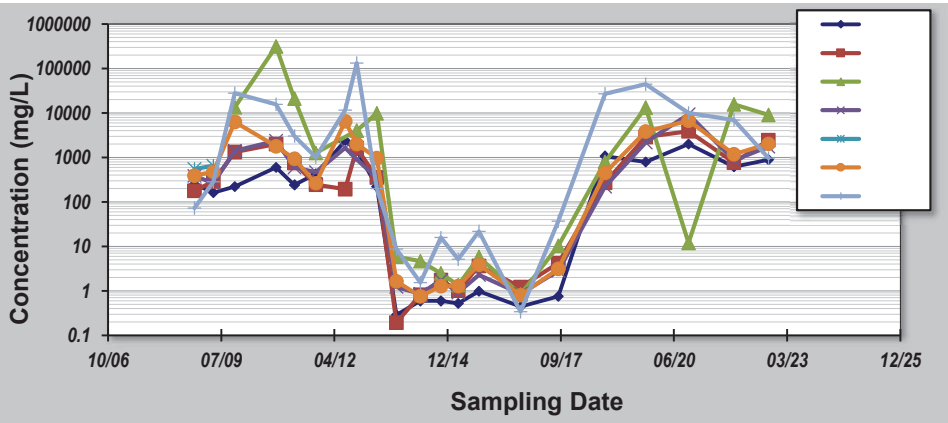
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Iron (Total)
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-A	SW-B	SW-C	SW-D	SW-E	SW-F	SW-G
Sampling Event	Sampling Date	IRON (TOTAL) CONCENTRATION (mg/L)						
1	13-Nov-08	255	178		385	552	391	72.7
2	29-Apr-09	162	290		267	650	473	284
3	3-Nov-09	219	1320	13500	1410		6260	27800
4	22-Apr-10		NS					
5	2-Nov-10	597	1990	315000	2350		1770	15600
6	14-Apr-11	241	748	21100	601		930	3050
7	20-Oct-11	428	244	1250	467		262	1010
8	5-Jul-12	2380	193		1630		6490	11700
9	16-Oct-12	1450	1620	4030	902		1990	133000
10	10-Apr-13	223	355	9760	348		965	200
11	1-Oct-13	0.288	0.193	5.84	1.22		1.62	8.75
12	1-May-14	0.591	0.811	4.63	0.857		0.746	1.54
13	30-Oct-14	0.591	1.74	2.46	1.72		1.27	15.7
14	1-Apr-15	0.516	1.01	1.34	0.915		1.29	5.14
15	1-Oct-15	0.97	3.62	5.74	2.27		3.86	21.6
16	1-Oct-16	0.445	1.21	0.828	0.859		0.795	0.338
17	1-Sep-17	0.75	4.19	10.3	2.81		3.1	36.7
18	19-Oct-18	1070	270	800	220		450	27000
19	11-Oct-19	790	2880	13200	2180		3810	44300
20	25-Oct-20	1990	3870	12	9340		6760	9970
21	30-Nov-21	618	759	15500	865		1190	7030
22	1-Oct-22	884	2460	9150	1750		2030	961
23								
24								
25								
Coefficient of Variation:		1.27	1.37	3.27	1.88	0.12	1.41	2.23
Mann-Kendall Statistic (S):		15	20	-25	2	1	2	14
Confidence Factor:		66.2%	71.5%	81.6%	51.2%		51.2%	65.1%
Concentration Trend:		No Trend	No Trend	No Trend	No Trend		No Trend	No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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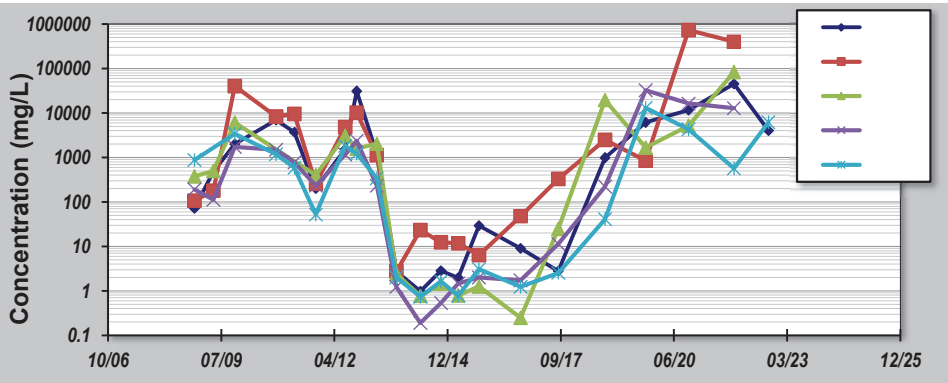
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Iron (Total)
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-H	SW-I	SW-J	SW-K	SW-L		
Sampling Event	Sampling Date	IRON (TOTAL) CONCENTRATION (mg/L)						
1	13-Nov-08	71.9	108	376	191	876		
2	29-Apr-09	486	179	500	112			
3	3-Nov-09	1990	40700	6070	1740	3440		
4	22-Apr-10							
5	2-Nov-10	6980	8400		1490	1180		
6	14-Apr-11	3740	9500		782	582		
7	20-Oct-11	200	258	400	232	52		
8	5-Jul-12	1540	4810	3110	1160	1810		
9	16-Oct-12	31000	10100	1600	2350	1230		
10	10-Apr-13	1200	1110	2020	232	343		
11	1-Oct-13	2.73	2.72	2.4	1.23	2		
12	1-May-14	0.978	23.3	0.769	0.191	0.739		
13	30-Oct-14	2.82	12.4	1.44	0.528	1.62		
14	1-Apr-15	1.94	11.7	0.783	1.47	0.774		
15	1-Oct-15	29.1	6.37	1.26	1.99	3.06		
16	1-Oct-16	8.97	47.9	0.246	1.73	1.24		
17	1-Sep-17	2.78	330	24.7	11.4	2.54		
18	19-Oct-18	990	2490	19600	220	41		
19	11-Oct-19	6110	847	1670	32500	13000		
20	25-Oct-20	11500	738000	5130	16300	4270		
21	30-Nov-21	45100	399000	83400	12900	571		
22	1-Oct-22	4020				6200		
23								
24								
25								
Coefficient of Variation:		2.09	3.00	2.86	2.31	1.88		
Mann-Kendall Statistic (S):		16	4	7	9	8		
Confidence Factor:		67.3%	53.8%	58.9%	60.1%	58.9%		
Concentration Trend:		No Trend	No Trend	No Trend	No Trend	No Trend		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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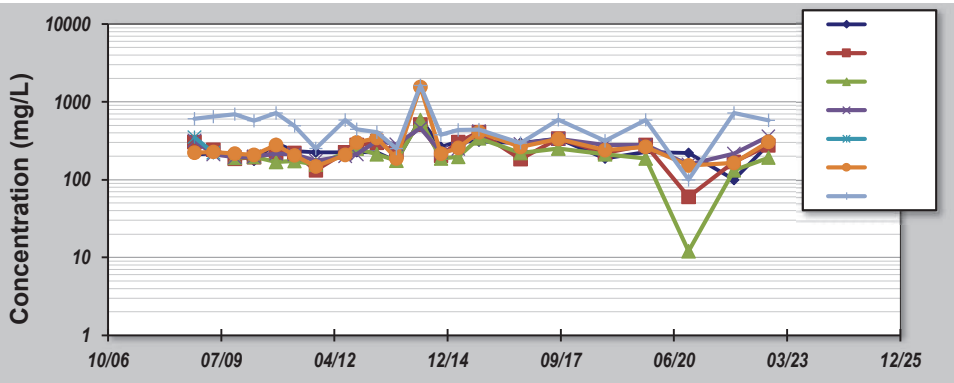
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Total Dissolved Solids
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-A	SW-B	SW-C	SW-D	SW-E	SW-F	SW-G
Sampling Event	Sampling Date	TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)						
1	13-Nov-08	210	304		318	352	223	606
2	29-Apr-09	219	244		212	223	227	644
3	3-Nov-09	212	186	190	194		216	694
4	22-Apr-10	176	195	197	198		208	571
5	2-Nov-10	294	222	168	217		279	721
6	14-Apr-11	233	220	174	213		205	492
7	20-Oct-11	224	132	156	176		148	252
8	5-Jul-12	224	224		200		208	584
9	16-Oct-12	228	280	252	212		300	444
10	10-Apr-13	224	296	212	316		344	408
11	1-Oct-13	172	228	176	284		188	252
12	1-May-14	608	512	588	460		1560	1632
13	30-Oct-14	264	204	188	228		216	380
14	1-Apr-15	312	304	196	248		256	436
15	1-Oct-15	312	408	340	420		408	440
16	1-Oct-16	296	184	220	288		264	296
17	1-Sep-17	338	339	252	334		333	590
18	19-Oct-18	188	220	212	280		240	316
19	11-Oct-19	228	280	188	280		264	588
20	25-Oct-20	220	60	12	156		152	100
21	30-Nov-21	100	168	132	216		164	720
22	1-Oct-22	284	276	192	360		308	580
23								
24								
25								
Coefficient of Variation:		0.38	0.38	0.52	0.30	0.32	0.94	0.56
Mann-Kendall Statistic (S):		38	2	0	57	1	24	-46
Confidence Factor:		85.0%	51.1%	48.6%	94.2%		73.9%	89.6%
Concentration Trend:		No Trend	No Trend	Stable	Prob. Increasing		No Trend	Stable



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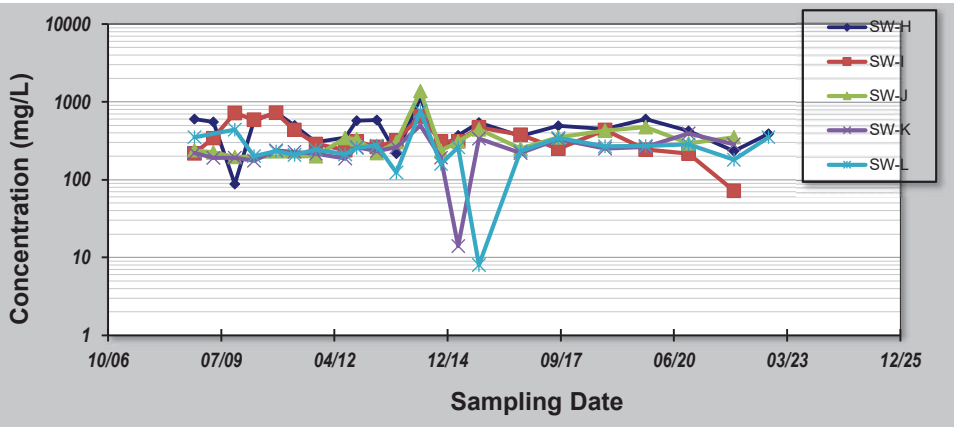
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2-Mar-23	Job ID:	0157
Facility Name:	Iron Horse Park OU2	Constituent:	Total Dissolved Solids
Conducted By:	Chris Kelly, U.S. EPA	Concentration Units:	mg/L

Sampling Point ID:	SW-H	SW-I	SW-J	SW-K	SW-L		
Sampling Event	Sampling Date	TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)						
1	13-Nov-08	604	219	238	221	351		
2	29-Apr-09	551	343	225	191			
3	3-Nov-09	88	720	196	192	442		
4	22-Apr-10	575	593		175	201		
5	2-Nov-10	735	723		238	232		
6	14-Apr-11	499	439		227	208		
7	20-Oct-11	304	288	200	216	244		
8	5-Jul-12	348	240	344	188	212		
9	16-Oct-12	576	312	332	260	256		
10	10-Apr-13	584	264	220	232	276		
11	1-Oct-13	216	320	304	260	124		
12	1-May-14	1136	656	1376	500	760		
13	30-Oct-14	248	312	236	192	160		
14	1-Apr-15	372	312	312	14	260		
15	1-Oct-15	540	472	444	338	8		
16	1-Oct-16	364	376	252	220	232		
17	1-Sep-17	491	250	350	332	345		
18	19-Oct-18	448	436	428	252	268		
19	11-Oct-19	600	244	476	264	272		
20	25-Oct-20	424	216	292	392	284		
21	30-Nov-21	232	72	352	284	180		
22	1-Oct-22	388				352		
23								
24								
25								
Coefficient of Variation:		0.46	0.47	0.73	0.38	0.53		
Mann-Kendall Statistic (S):		-31	59	63	84	19		
Confidence Factor:		79.9%	96.0%	99.1%	99.5%	70.5%		
Concentration Trend:		Stable	Decreasing	Increasing	Increasing	No Trend		



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C.4 – Site Inspection Checklist

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-2	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Not reviewed			
2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Not reviewed			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Not reviewed			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	X Readily available	X Up to date	☐ N/A
	Remarks: AECOM reviewed available records of gas well monitoring prior to site visit. Frequency of monitoring is currently under discussion.			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: No settlement records from the past five years were available prior to the site visit. Measurements of settlement are to be collected every 5 years, per discussion with EPA in 2020.			
7.	**Groundwater Monitoring Records**	X Readily available	X Up to date	☐ N/A
	Remarks: AECOM reviewed records prior to site visit			
8.	**Leachate Extraction Records**	X Readily available	X Up to date	☐ N/A
	Remarks: AECOM reviewed available records of leachate levels prior to site visit. Collection of leachate levels was discontinued per discussion with EPA in 2020.			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Not reviewed			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house X Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: A tree had fallen on fence but the repair had already been called in by the PRP's representative. In addition, there is some slumping of the fenceline along the Residential Landfill. Historic damage has been repaired immediately upon discovery.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks_____
_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached
ICs being developed_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks_____
_____

2. **Land use changes on site** X N/A
Remarks_____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A
   Remarks_____
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches X Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

C. Letdown Channels X Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map X No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** ☐ Location shown on site map X No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map X No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** ☐ Location shown on site map X No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ X No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
X Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks: There is some growth which should be removed, but there is no evidence of standing water.

D. Cover Penetrations X Applicable ☐ N/A

1. **Gas Vents** X Active ☐ Passive
☐ Properly secured/locked X Functioning X Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks: Covers not locked, but there has been no evidence of trespassing at the site

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked X Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____ Covers not locked, but there has been no evidence of trespassing at the site
_____

5. **Settlement Monuments** ☐ Located X Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment X Applicable ☐ N/A

1. **Gas Treatment Facilities**
   X Flaring ☐ Thermal destruction ☐ Collection for reuse
   X Good condition ☐ Needs Maintenance
   Remarks____Candlestick flares now used. Operate intermittently. Enclosed flare no longer in operation. Discussed dismantling the enclosed flare. PRP representative said they have contacted scrap metals dealers but have been unable to locate someone interested in taking the flare. It was mentioned that dismantling of the flare is not part of the PRP's obligation.

2. **Gas Collection Wells, Manifolds and Piping**
   X Good condition ☐ Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance X N/A
   Remarks_____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

   Remarks: Not inspected

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks: Not inspected

G. Detention/Sedimentation Ponds X Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks: Detention basin appears to be functioning properly.

2. **Erosion** Areal extent_____ Depth_____
   X Erosion not evident
   Remarks_____

3. **Outlet Works** X Functioning ☐ N/A
   Remarks_____

4. **Dam** ☐ Functioning X N/A
   Remarks_____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map X Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   X Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** X Functioning ☐ N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover and gas and leachate collection systems are well-maintained. Monitoring continues to be performed and submitted in a timely fashion.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

With some contaminant concentrations observed to be lower at some locations, it may be possible to reduce the number of sampling locations in the future.

Appendix D
Information Related to the OU-3/OU-4 Review

D.1 – Documents Reviewed

Environmental Resources Management (ERM). Various dates. Monthly Progress Reports.

ERM, 2014. *Final Remedial Construction Report, AOC 4 and 5, Iron Horse Park Superfund Site, Operable Unit 3, Billerica, Massachusetts*. September 25, 2014.

ERM, 2017. *Final Remedial Construction Report, AOCs 2 and 6, Iron Horse Park Superfund Site, Operable Unit 3, Billerica, Massachusetts.* September 19, 2017.

ERM, 2020a. *OU4 Final Design, Iron Horse Park Superfund Site, Operable Unit 4, Billerica, Massachusetts.* October 30, 2020.

ERM, 2020b. *Final Remedial Construction Report, AOC 3, Iron Horse Park Superfund Site, Operable Unit 3, Billerica, Massachusetts*. November 19, 2020.

ERM, 2021. *OU-4 Remedial Action Construction Completion Report, Iron Horse Park Superfund Site, Billerica, Massachusetts*. November 10, 2021.

ERM, 2022. *AOC 1 Remedial Construction Report, Iron Horse Park Superfund Site, Operable Unit 3, Billerica, Massachusetts.* November 9, 2022.

ERM, 2023. *OU3 and OU4 2022 Annual Groundwater and Surface Water Monitoring Report, Iron Horse Park Superfund Site*. March 31, 2023.

Golden Environmental Consultants, Inc. (GEC). January 11, 2007. *Final Report – Soil Capping, Iron Horse Park Superfund Site OU3, Cooperative Reserve Supply, Inc.*

Metcalf & Eddy (M&E). September, 1997. *Remedial Investigation Final Report - Iron Horse Park Superfund Site, 3rd Operable Unit, North Billerica, Massachusetts.*

Metcalf & Eddy (M&E). June, 2004. *Feasibility Study Final Report, Iron Horse Park Superfund Site, 3rd Operable Unit, North Billerica, Massachusetts.*

Metcalf & Eddy (M&E). September, 2006. *Ecological Risk Assessment / Wetlands Remedial Investigation Addendum (ERA/WRIA), Iron Horse Park Superfund Site, Operable Unit 4, North Billerica, Massachusetts.*

Metcalf & Eddy (M&E). September, 2006. *Groundwater Data Evaluation Report, Iron Horse Park Superfund Site, Operable Unit 4, North Billerica, Massachusetts.*

Metcalf & Eddy (M&E). February, 2008. *Supplemental Human Health Risk Assessment, Iron Horse Park Superfund Site, Operable Unit 4, North Billerica, Massachusetts*.

Metcalf & Eddy|AECOM (M&E), 2010. *Draft Final Feasibility Study, Iron Horse Park Superfund Site, Operable Unit 4, North Billerica, Massachusetts*. October 2010.

United States Environmental Protection Agency. September, 2004. *Record of Decision*

Summary, Iron Horse Park, OU3.

United States Environmental Protection Agency. June, 2001. *Comprehensive Five-Year Review Guidance.*

United States Environmental Protection Agency. September, 2008. *Third Five-Year Review Report for Iron Horse Park Superfund Site, Billerica, Massachusetts*.

United States Environmental Protection Agency. September, 2013. *Fourth Five-Year Review Report for Iron Horse Park Superfund Site, Operable Units 1, 2, 3, and 4, North Billerica, Massachusetts*.

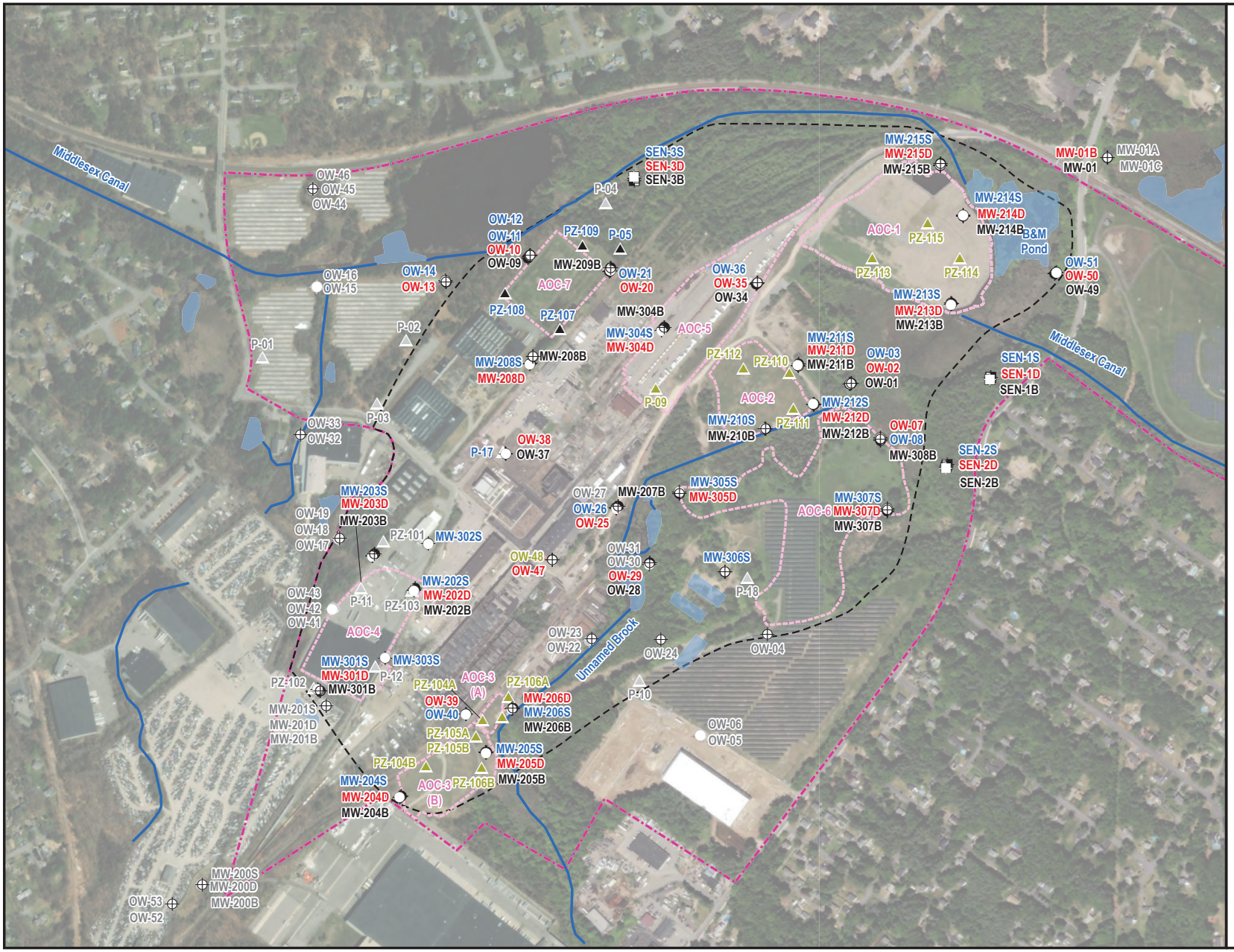
Woodard & Curran (W&C). Various dates. Operation and Maintenance Reports.

Woodard & Curran (W&C). Various dates. Monthly Progress Reports.

Woodard & Curran (W&C), 2010. *Final Remedial Construction Report, Area of Concern 7 (AOC 7), Operable Unit 3 (OU3), Iron Horse Park Superfund Site, Billerica, Massachusetts.* November 29, 2010.

Woodard & Curran (W&C), 2023. *Operation & Maintenance Report – 2022 - Revised, Area of Concern 7 (AOC 7), Operable Unit 3 (OU3), Iron Horse Park Superfund Site, Billerica, Massachusetts*. April 2023.

D.2 – Monitoring Results – Multiple Source Areas



Legend

- MW-214S — OU3 Shallow Overburden Well
- MW-214D — OU3 Deep Overburden Well
- MW-214B — OU3 Bedrock Well
- SEN-1S — OU4 Shallow Overburden Well
- SEN-1D — OU4 Deep Overburden Well
- SEN-1B — OU4 Bedrock Well
- Piezometer
- Destroyed Piezometer
- Piezometer Not Included in Monitoring Program
- Destroyed Well
- Well Not Included in Monitoring Program
- Iron Horse Park Superfund Site Boundary
- Groundwater Compliance Boundary (Approximate)
- AOC Boundary
- Stream
- Water Bodies

AREAS OF CONCERN:

AOC 1 - B&M Railroad Landfill
AOC 2 - RSI Landfill
AOC 3 - B&M Locomotive Shop Disposal Areas
AOC 4 - Old B&M Oil/Sludge Recycling Area
AOC 5 - Contaminated Soils Area
AOC 6 - Asbestos Landfill
AOC 7 - Asbestos Lagoons

NOTES:

- Aerial Imagery from ESRI World Imagery, used under license with ArcGIS 10.8

N

0 250 500 1,000
Feet

Figure 3: Well Summary Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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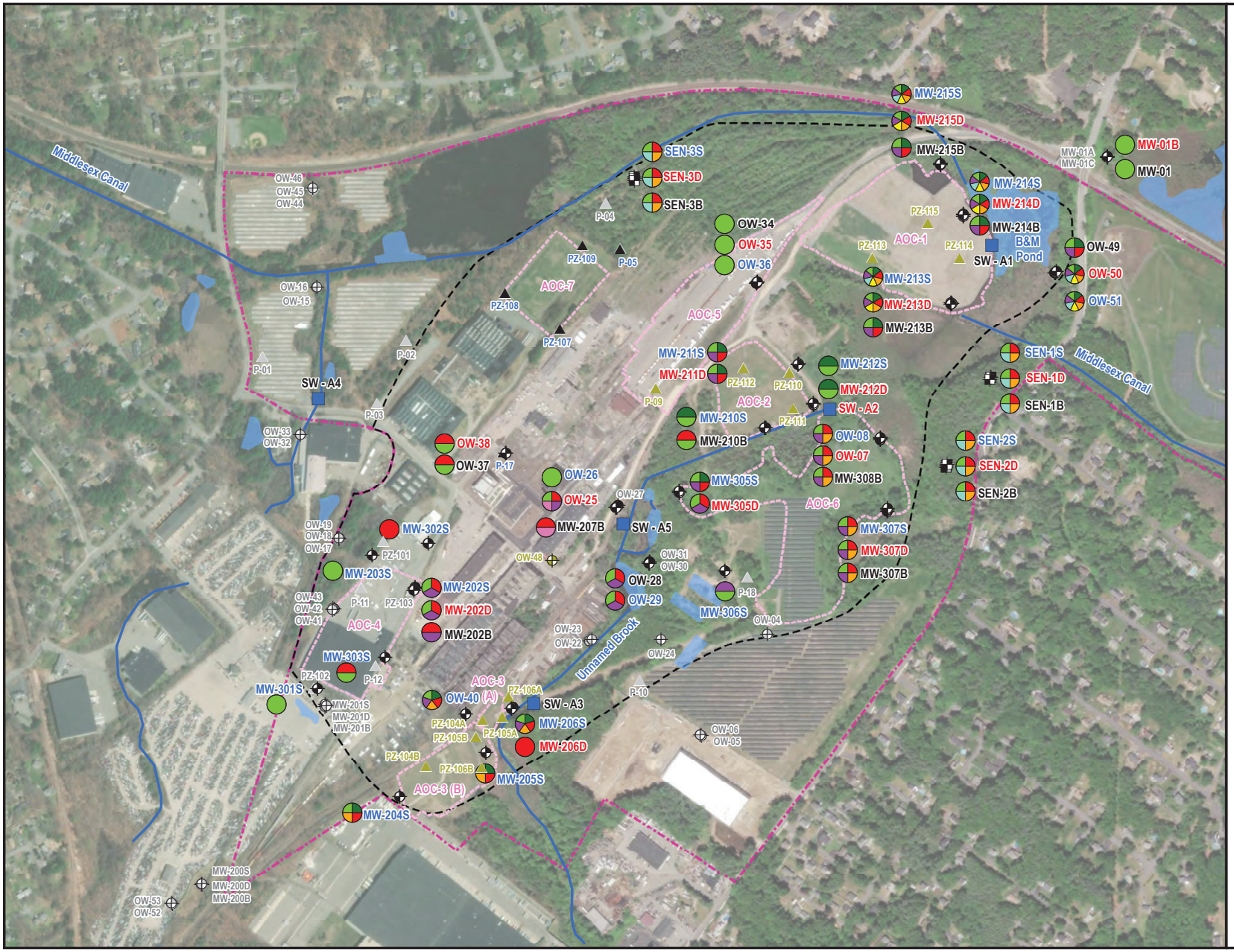
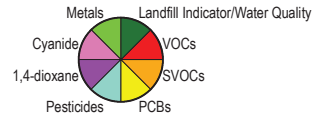


Legend

MW-214S	OU3 Shallow Overburden Well
MW-214D	OU3 Deep Overburden Well
MW-214B	OU3 Bedrock Well
SEN-1S	OU4 Shallow Overburden Well
SEN-1D	OU4 Deep Overburden Well
SEN-1B	OU4 Bedrock Well

- Piezometer
- Destroyed Piezometer
- Piezometer Not Included in Monitoring Program
- Destroyed Well
- Well Not Included in Monitoring Program
- Surface Water Sampling Location
- Iron Horse Park Superfund Site Boundary
- Groundwater Compliance Boundary (Approximate)
- AOC Boundary
- Stream
- Water Bodies

Proposed Sample Analyses



AREAS OF CONCERN:
AOC 1 - B&M Railroad Landfill
AOC 2 - RSI Landfill
AOC 3 - B&M Locomotive Shop Disposal Areas
AOC 4 - Old B&M Oil/Sludge Recycling Area
AOC 5 - Contaminated Soils Area
AOC 6 - Asbestos Landfill
AOC 7 - Asbestos Lagoons

NOTES:
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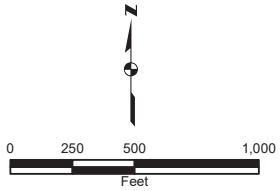

Figure 4: Groundwater and Surface Water Monitoring Program

Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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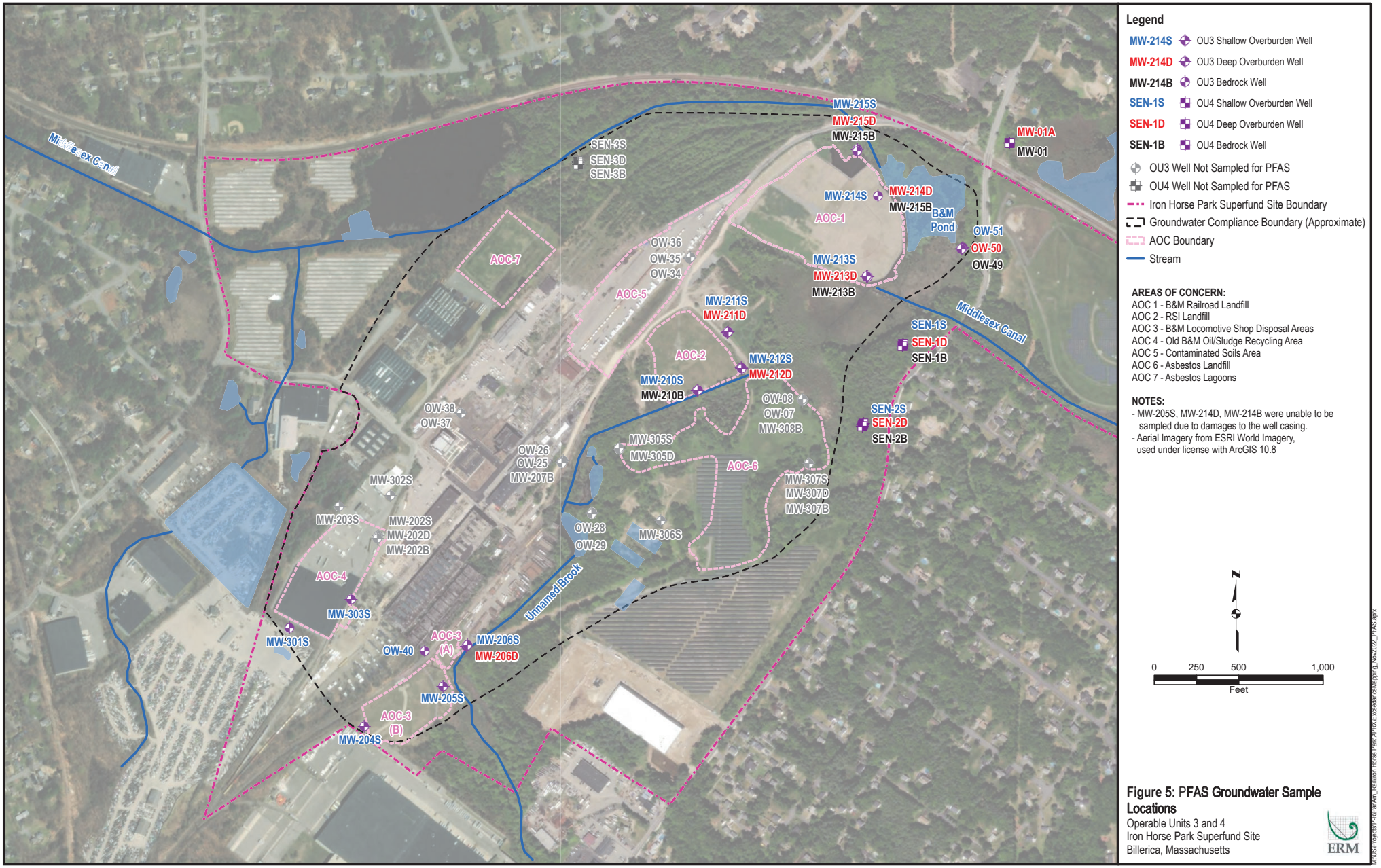

Figure 5: PFAS Groundwater Sample Locations
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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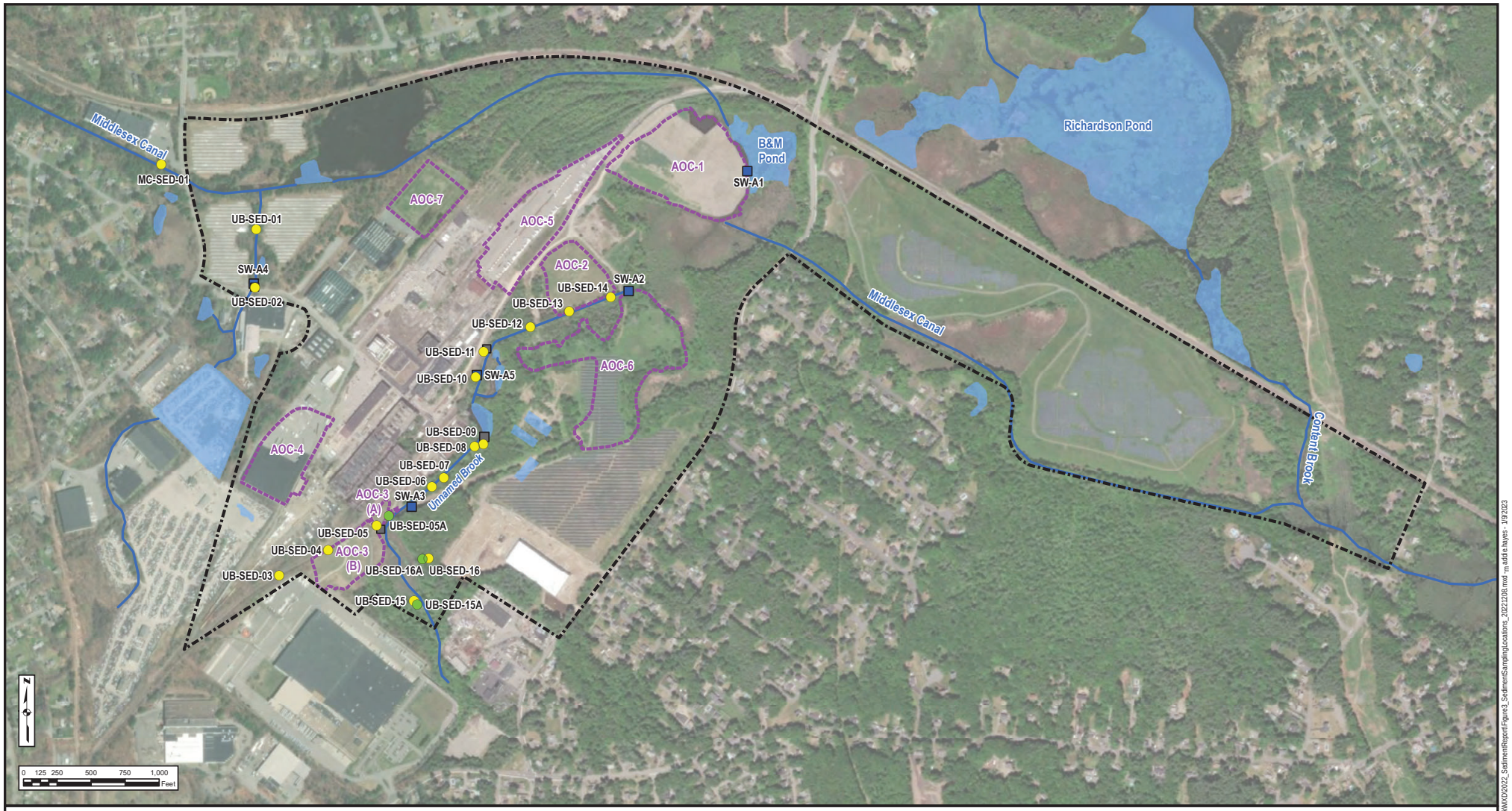

Legend

- Sediment Sampling Locations
- Alternate Sediment Sampling Location
- Historic Sediment Sampling Location
- Surface Water Location
- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

- Aerial Imagery from ESRI World Imagery. Reproduced under license with ArcGIS 10.8.2
- Surface water data provided by MassGIS Hydrography

Figure 6: Sediment Sampling Locations
Unnamed Brook and Unnamed Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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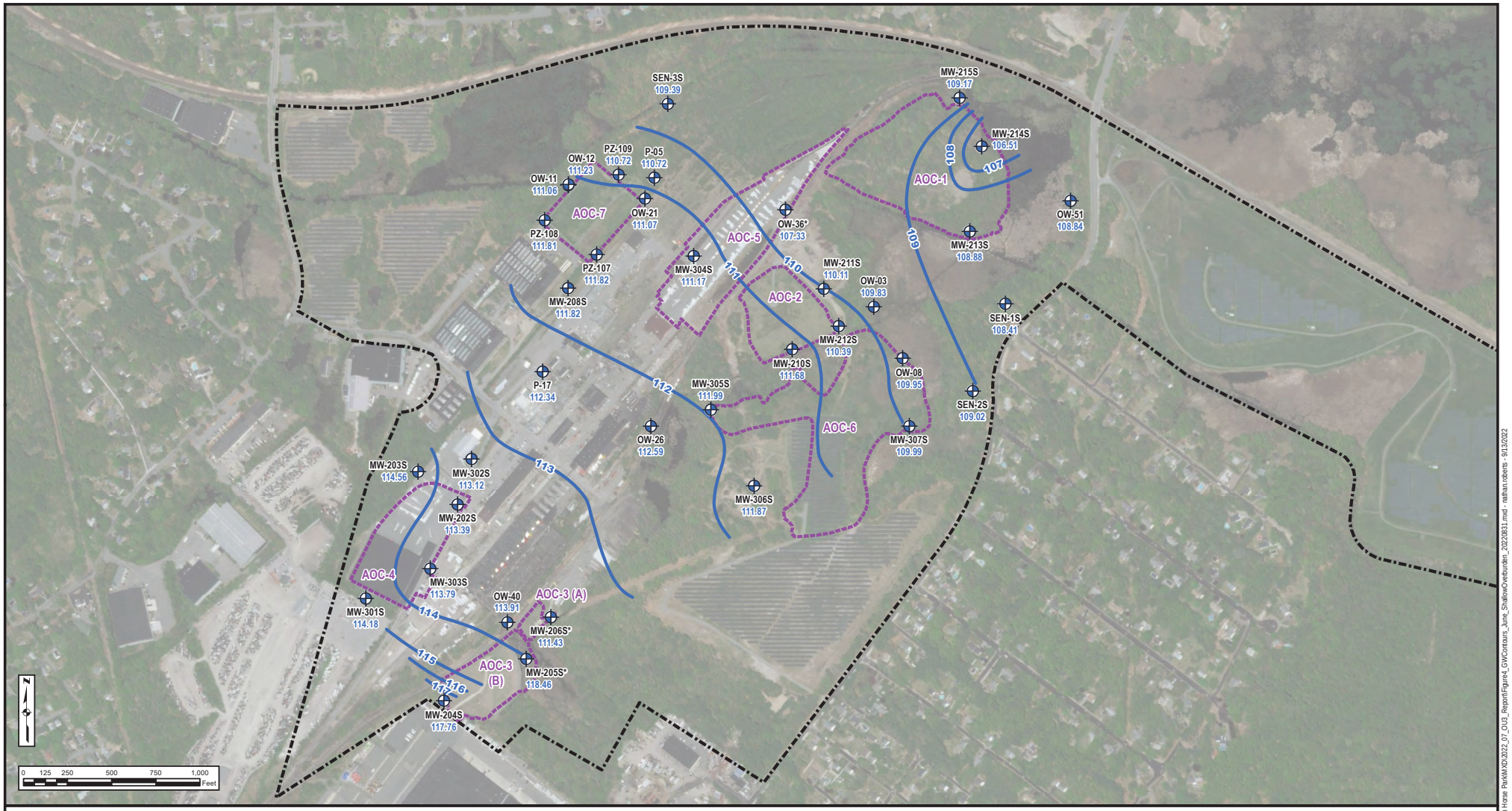

Legend

- Monitoring Wells - Shallow Overburden (June 2022)
- 139.50 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

Aerial Imagery from ESRI World Imagery.
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NOTES:

1. * = Monitoring well not used for groundwater contours
2. ft. amsl = Feet above mean sea level

Figure 7: June 2022 Shallow Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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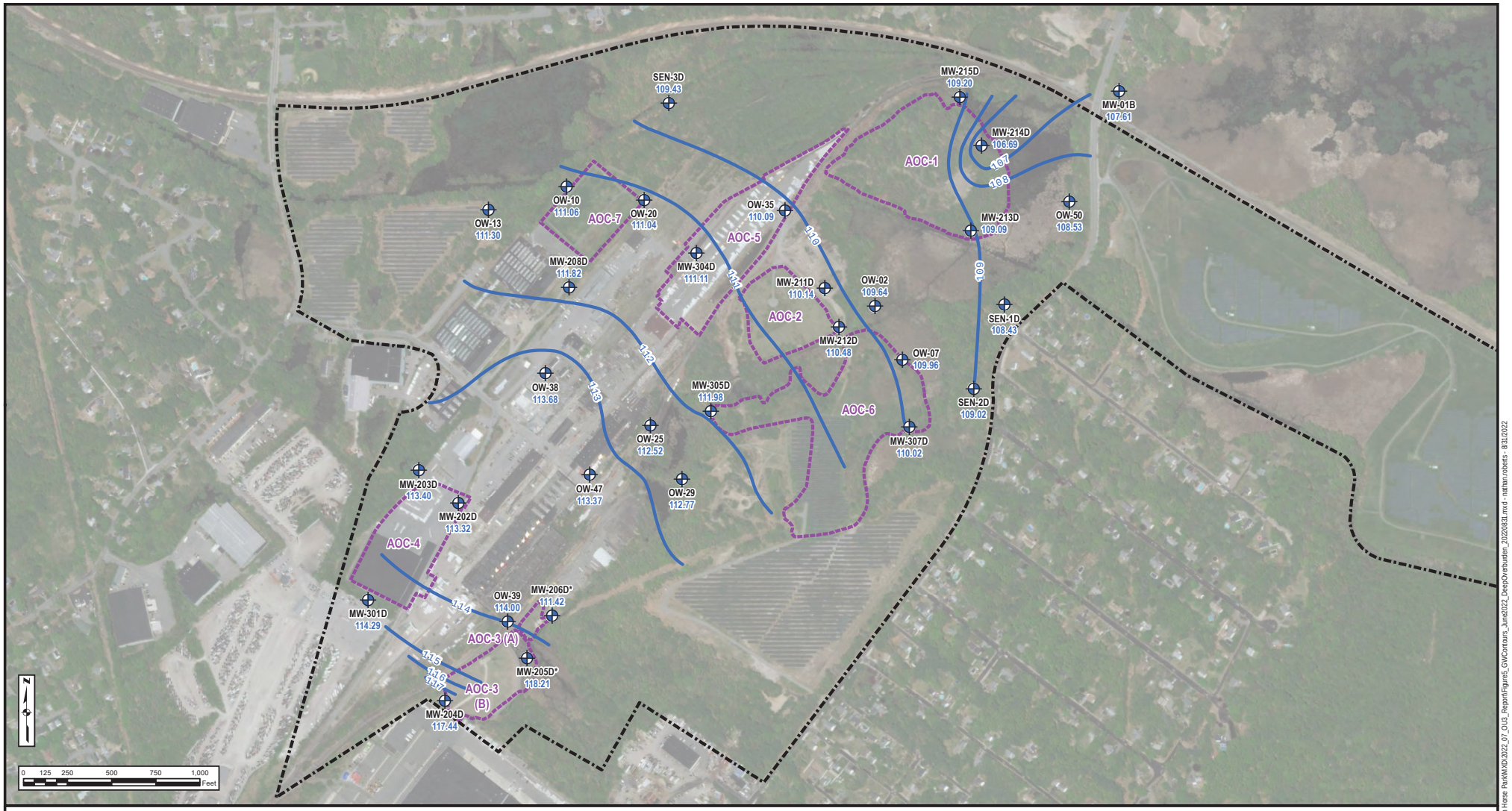

Legend

- Monitoring Wells - Deep Overburden (June 2022)
- 139.50 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

Aerial Imagery from ESRI World Imagery.
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NOTES:

1. * = Monitoring well not used for groundwater contours
2. ft. amsl = Feet above mean sea level

Figure 8: June 2022 Deep Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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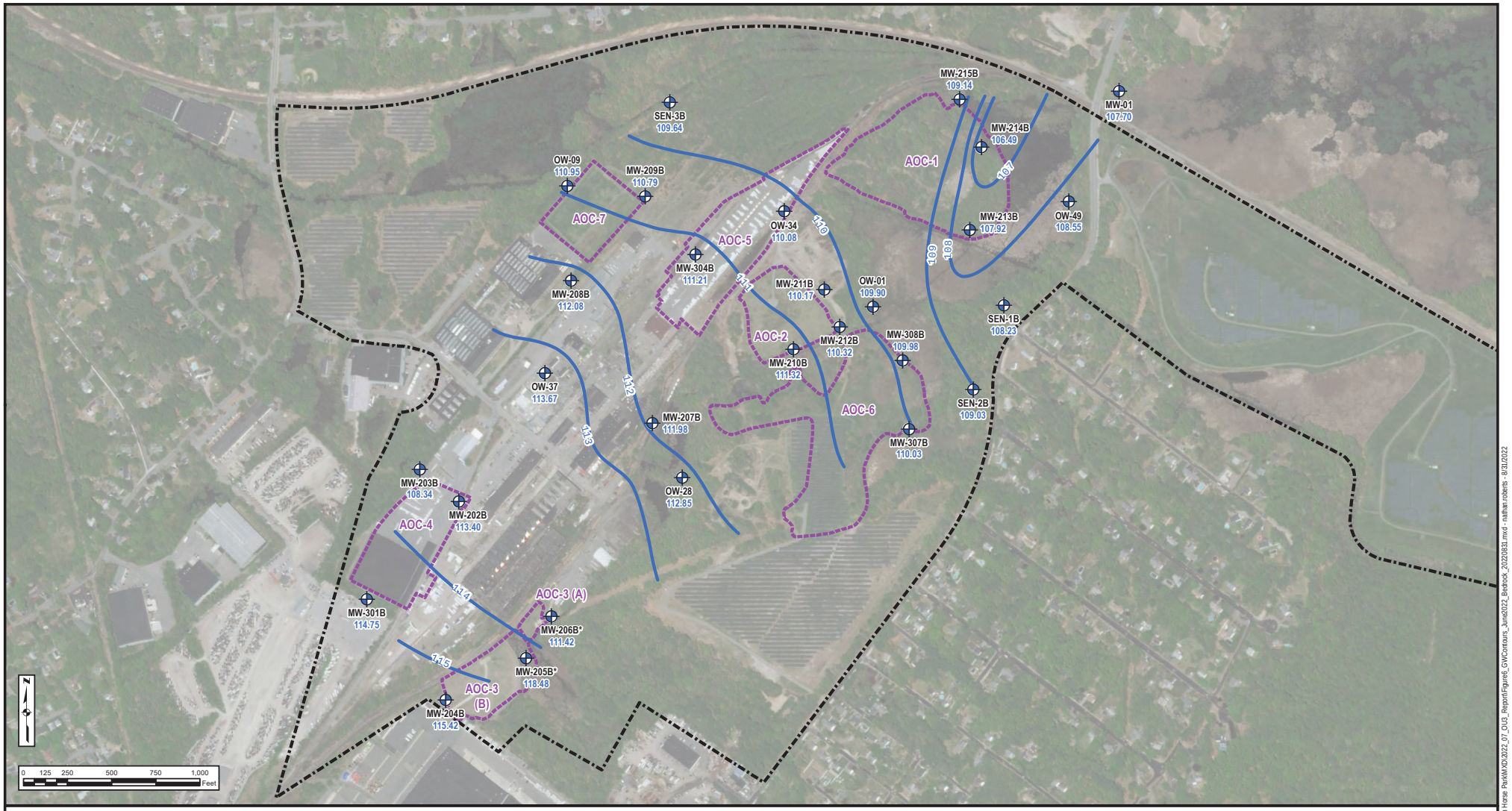

Legend

- Monitoring Wells - Bedrock (June 2022)
- 139.50 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. * = Monitoring well not used for groundwater contours
2. ft. amsl = Feet above mean sea level

Figure 9: June 2022 Bedrock Potentiometric Surface Map
Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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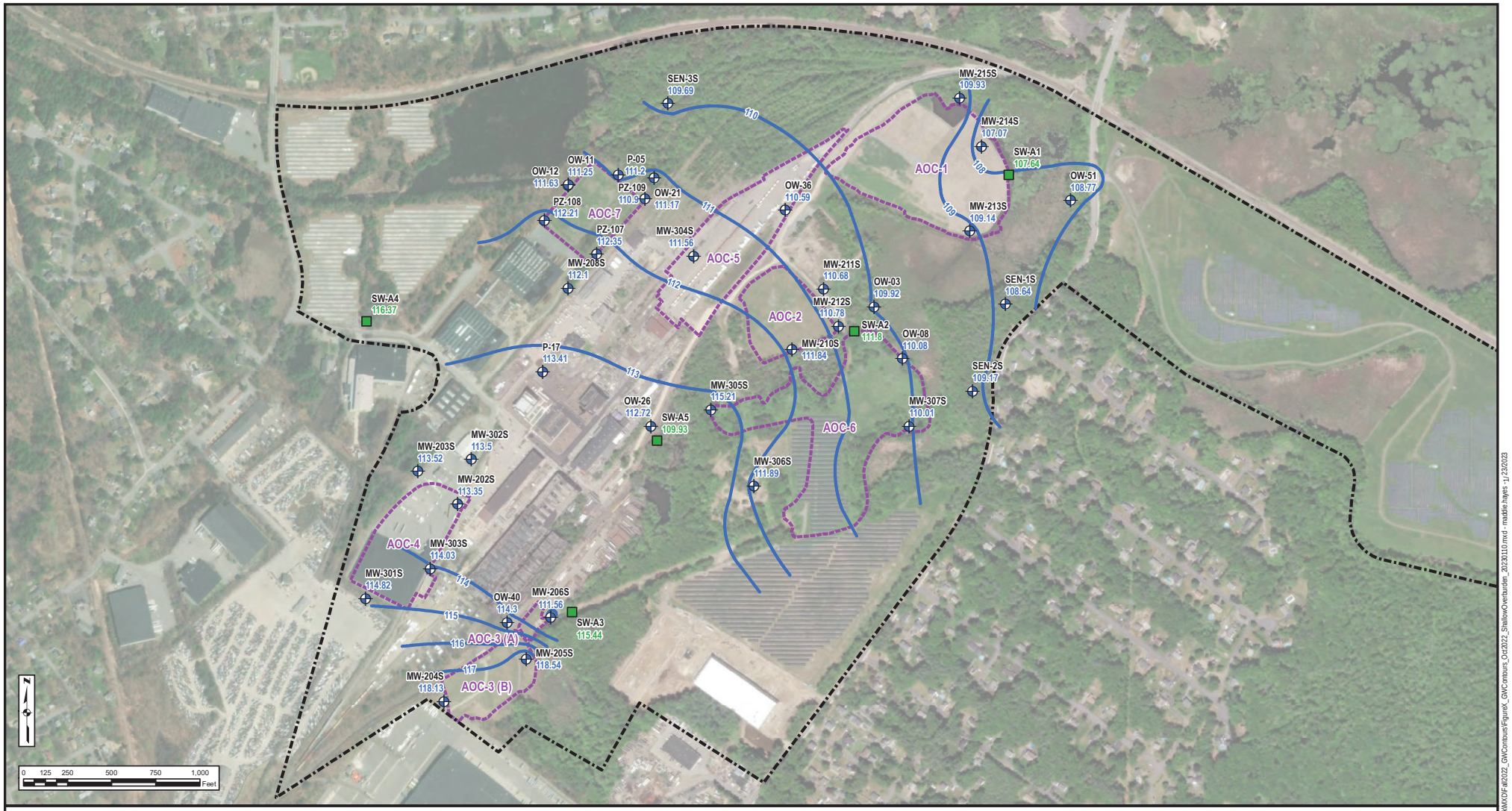

Legend

- Surface Water Location
- Monitoring Well - Shallow Overburden (October 2022)
- 115.44 Surface Water Elevation (ft. amsl)
- 114.82 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. ft. amsl = Feet above mean sea level

Figure 10: October 2022 Shallow Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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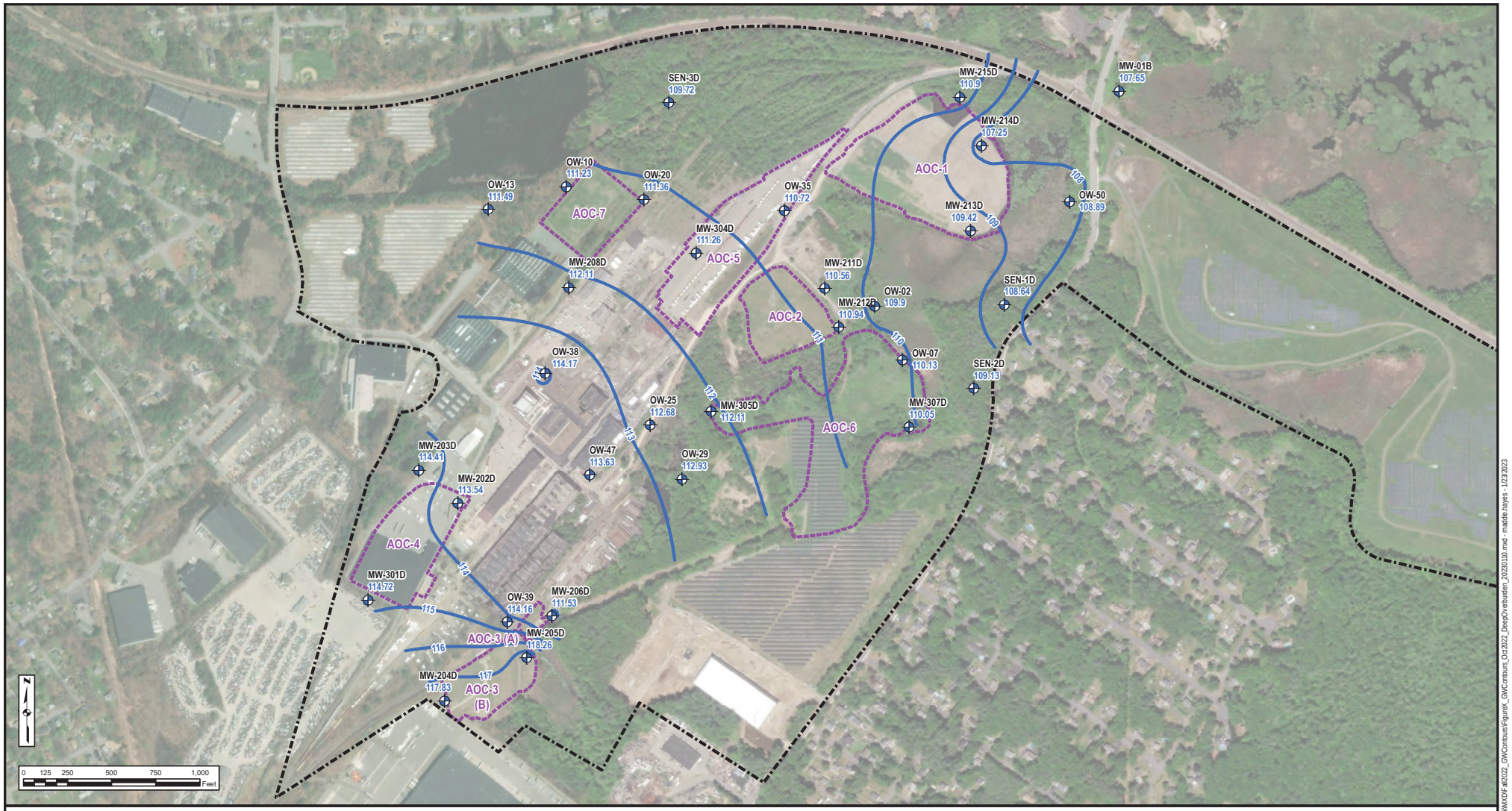

Legend

- Monitoring Well - Deep Overburden (October 2022)
- 114.72 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. ft. amsl = Feet above mean sea level

Figure 11: October 2022 Deep Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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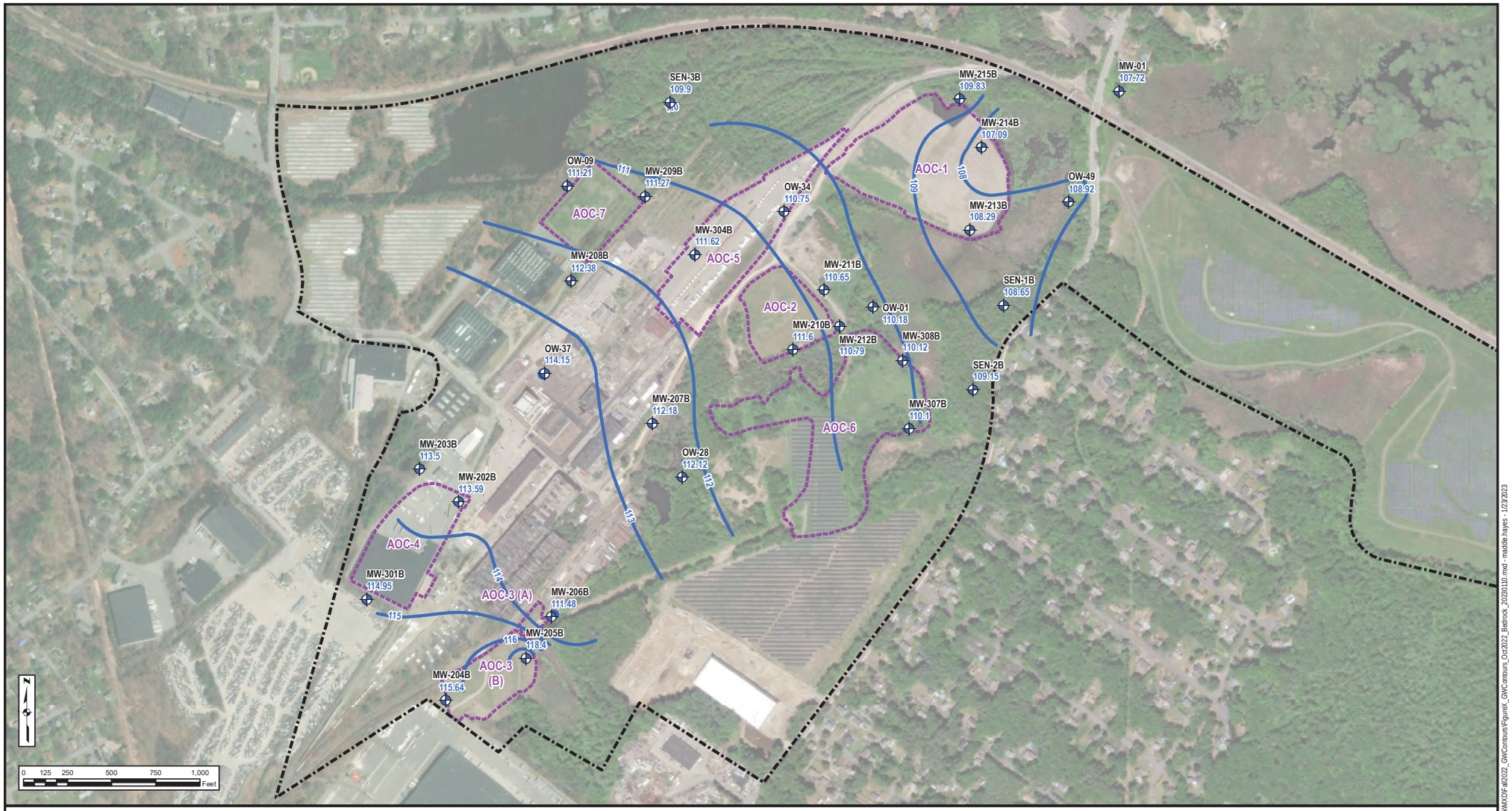

Legend

- Monitoring Well - Bedrock (October 2022)
- 114.95 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

Aerial Imagery from ESRI World Imagery.
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NOTES:

1. * = Monitoring well not used for groundwater contours
2. ft. amsl = Feet above mean sea level

Figure 12: October 2022 Bedrock Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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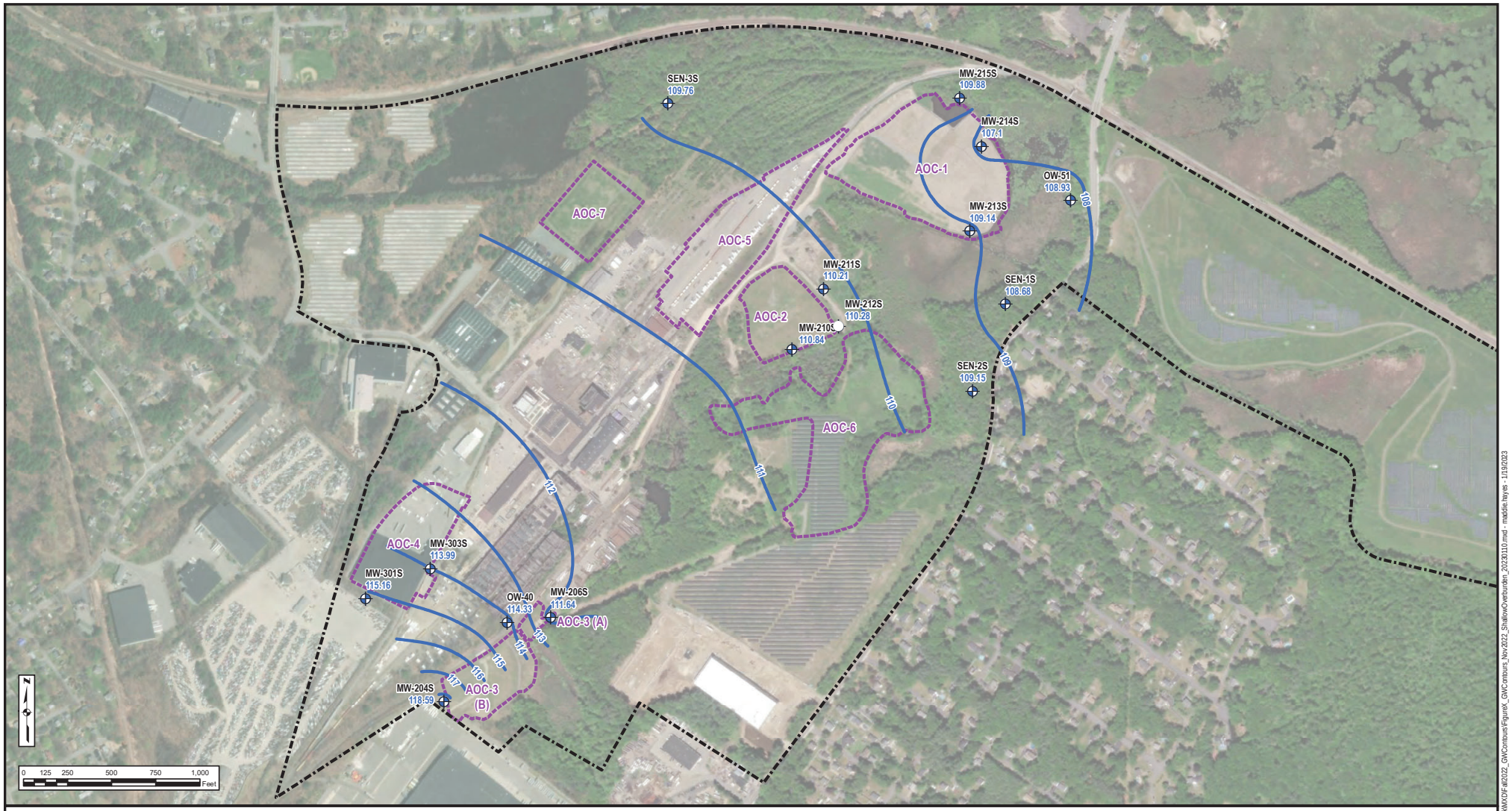

Legend

- Monitoring Well - Shallow Overburden (November 2022)
- 115.16 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. ft. amsl = Feet above mean sea level

Figure 13: November 2022 Shallow Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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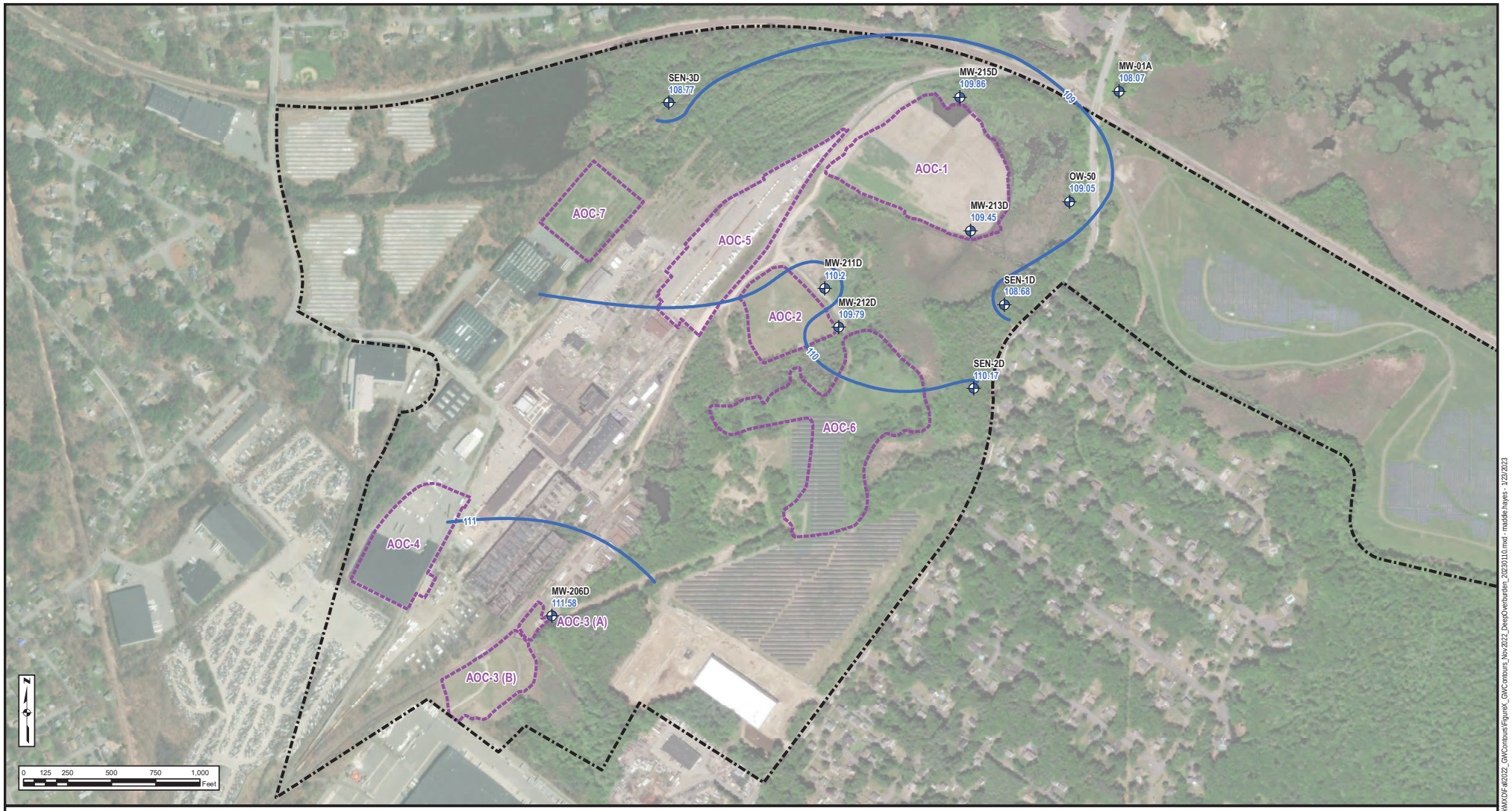

Legend

- Monitoring Well - Deep Overburden (November 2022)
- 111.58 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. ft. amsl = Feet above mean sea level

Figure 14: November 2022 Deep Overburden Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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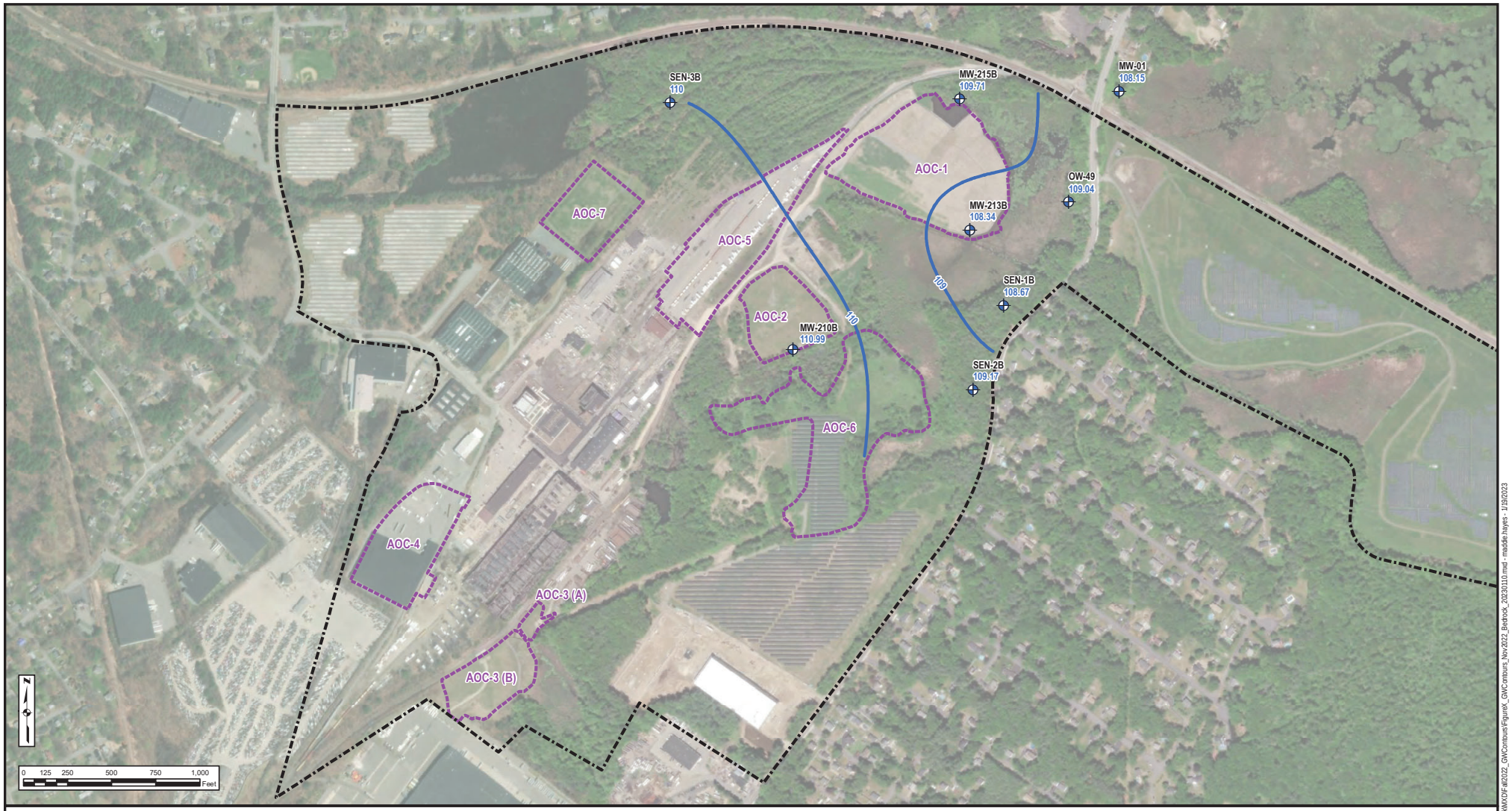

Legend

- Monitoring Well - Bedrock (November 2022)
- 108.15 Groundwater Elevation (ft. amsl)
- Groundwater Elevation Contours (ft. asl)
- Iron Horse Park Site Boundary
- AOC Boundary

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

SOURCE

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NOTES:

1. ft. amsl = Feet above mean sea level

Figure 15: November 2022 Bedrock Potentiometric Surface Map

Operable Unit 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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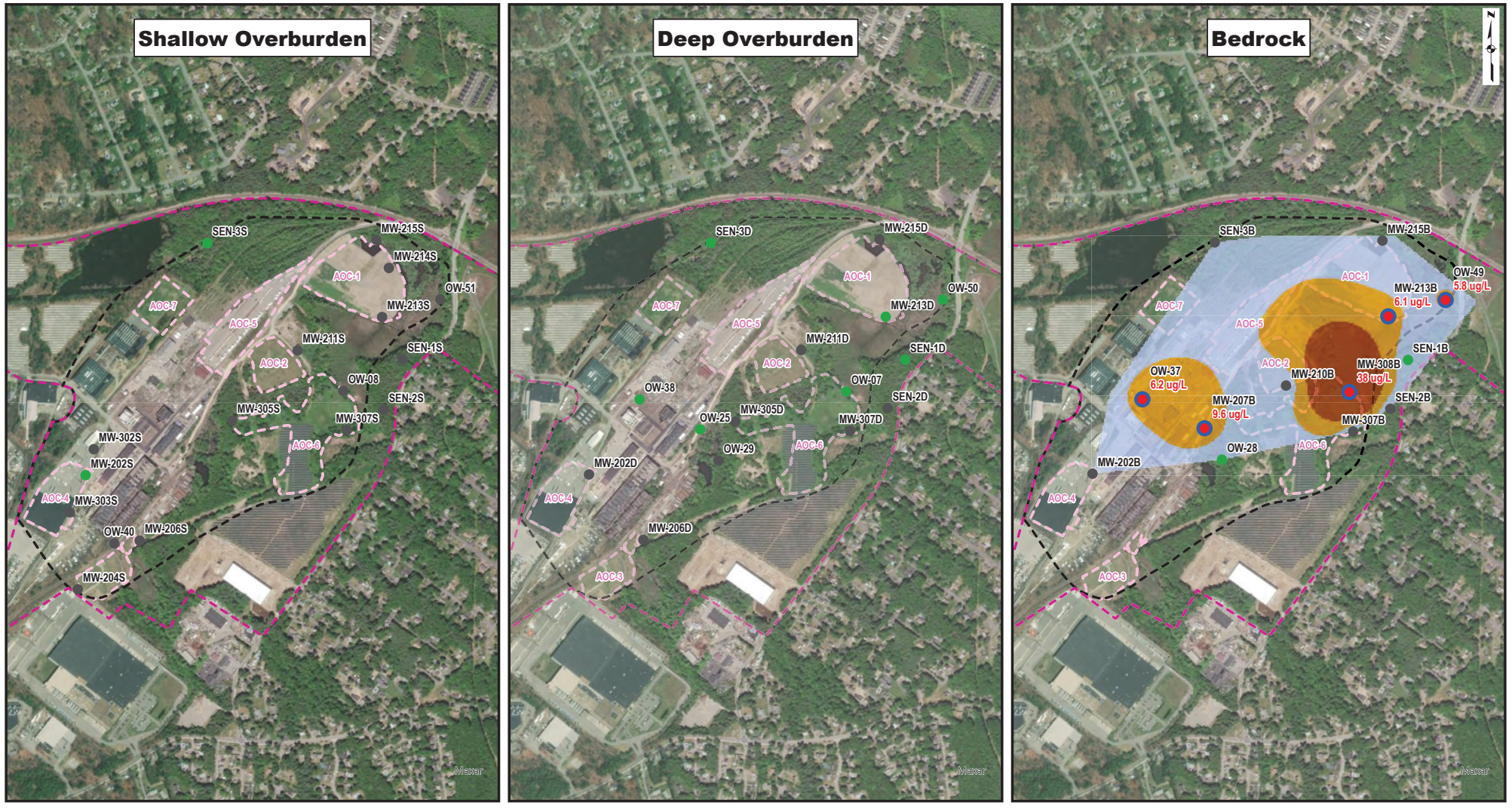

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 5.0
- 5.0 - 10
- > 10

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 16: Trichloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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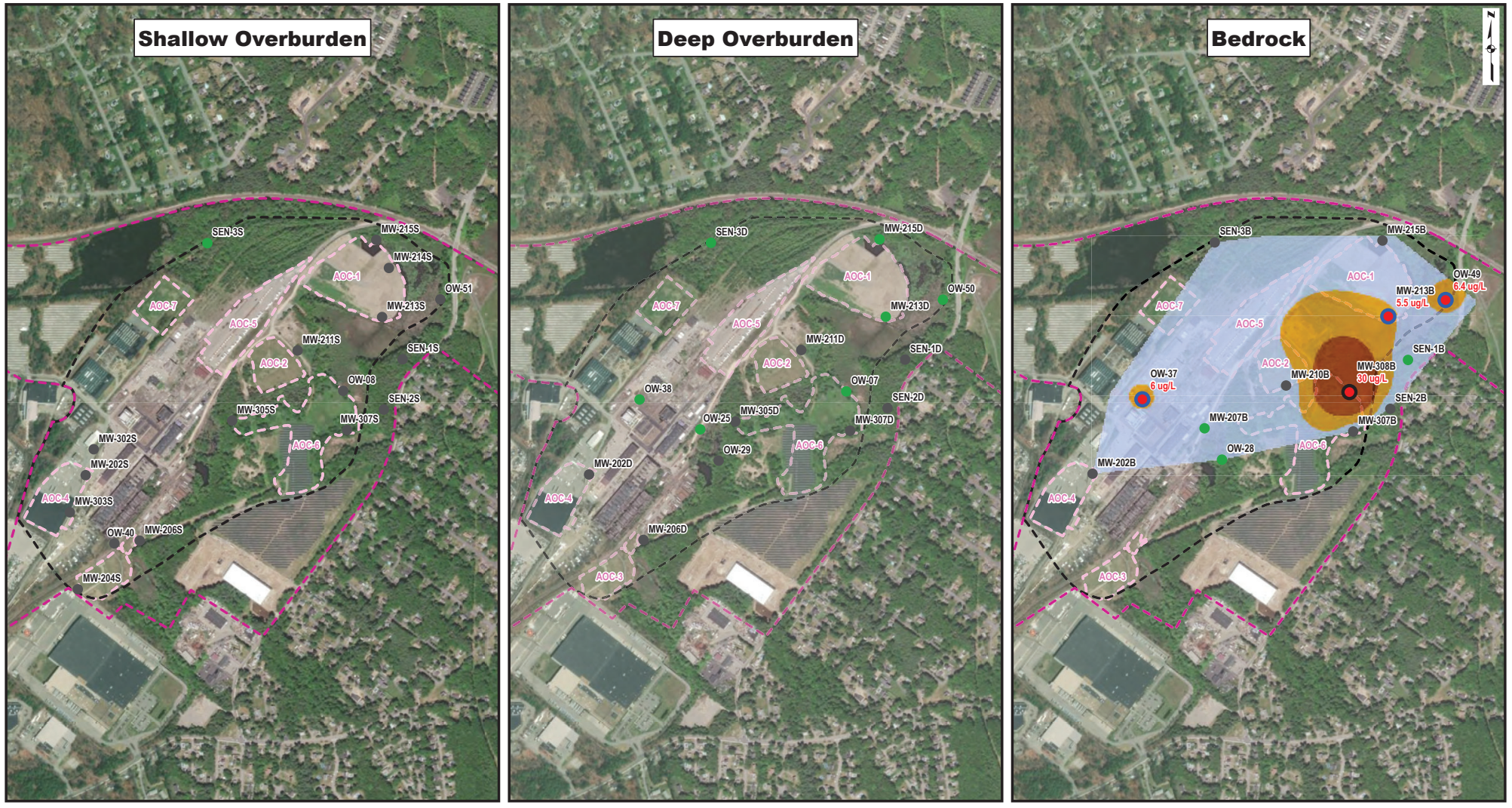

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 5.0
- 5.0 - 10
- > 10

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 17: Trichloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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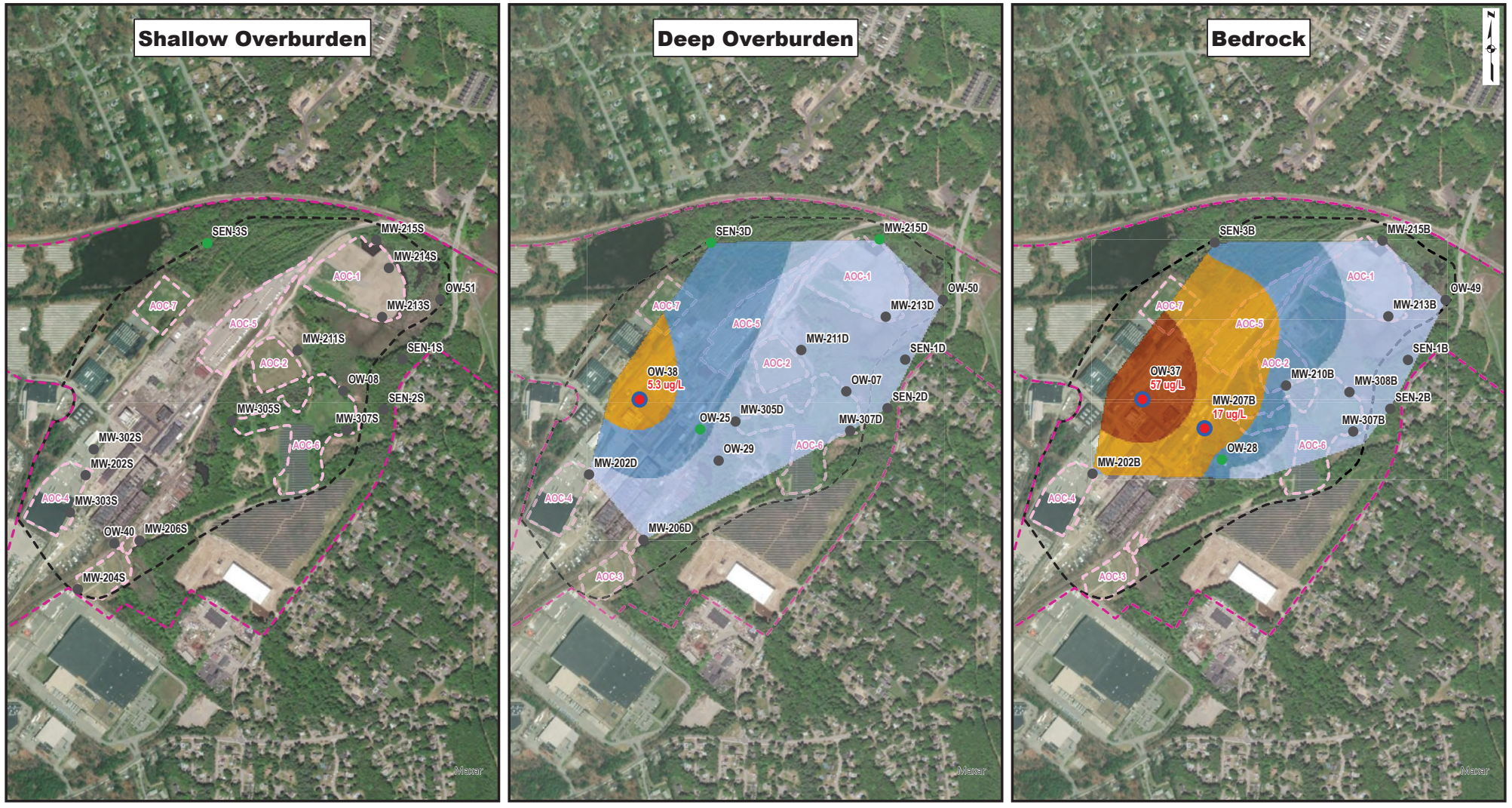

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- 5.0 - 25
- > 25

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 18: Tetrachloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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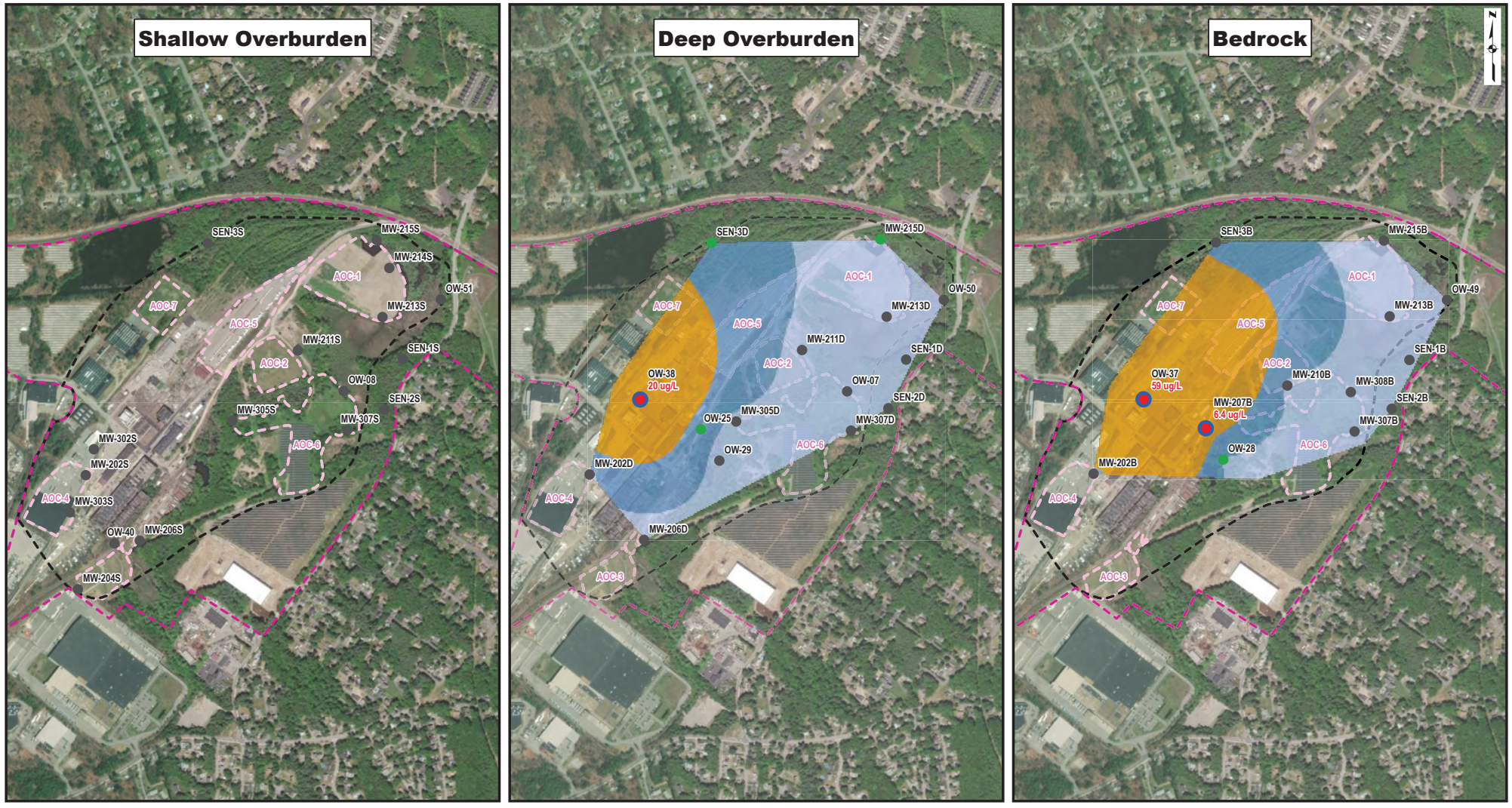

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- > 5.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 19: Tetrachloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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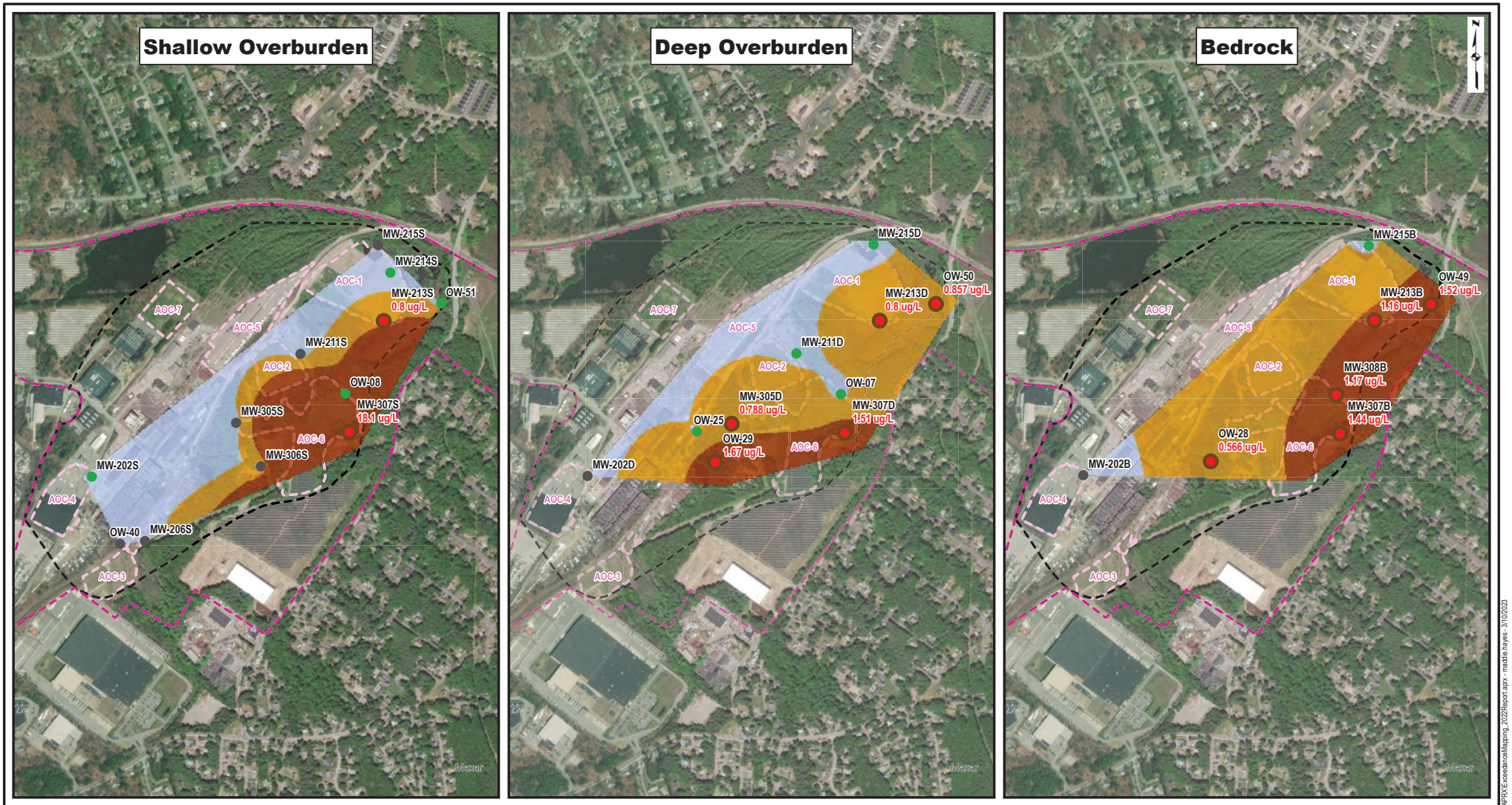

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 0.3
- 0.3 - 1.0
- > 1.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 20: 1,4-Dioxane Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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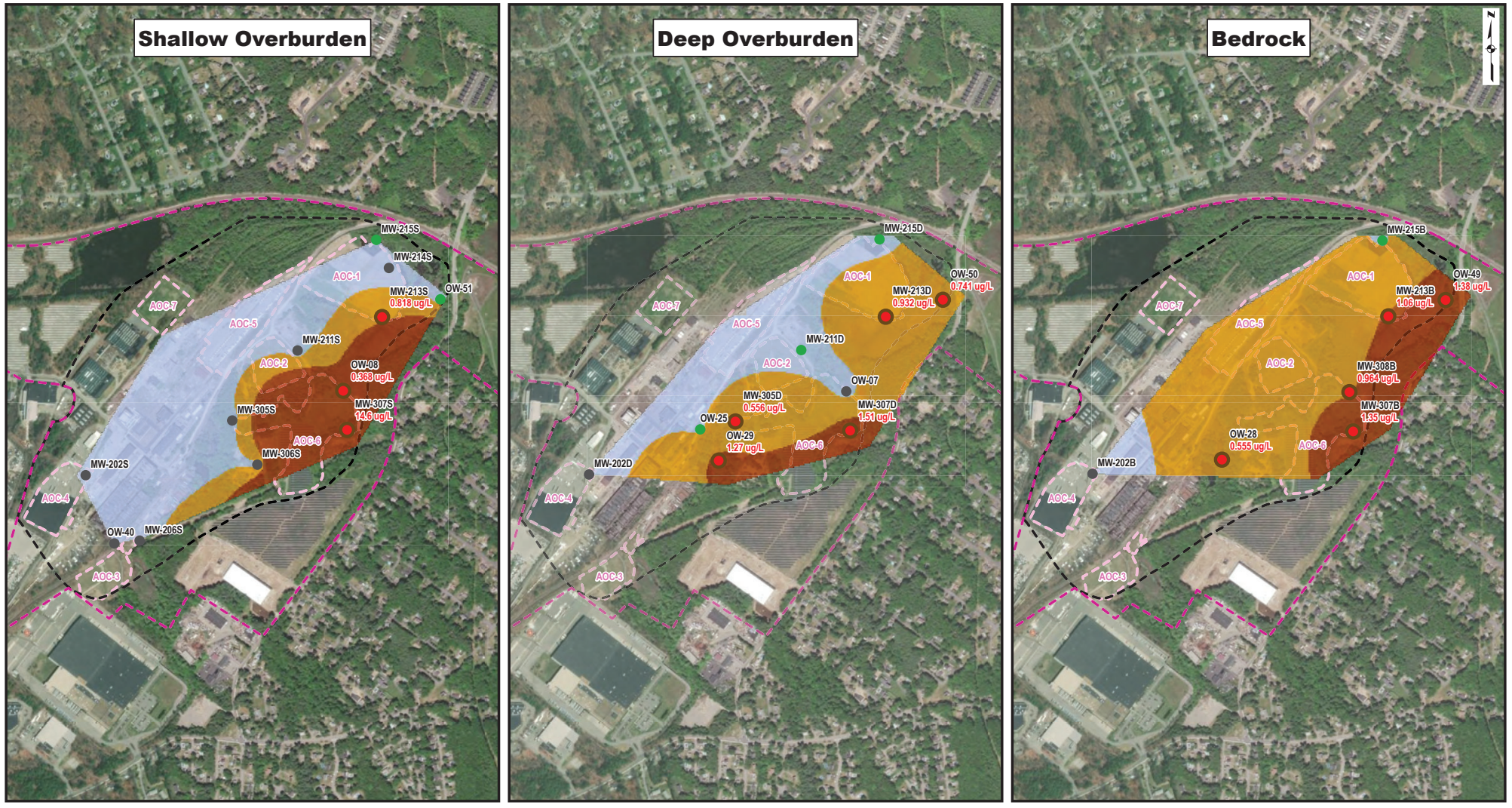

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 0.3
- 0.3 - 1.0
- > 1.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 21: 1,4-Dioxane Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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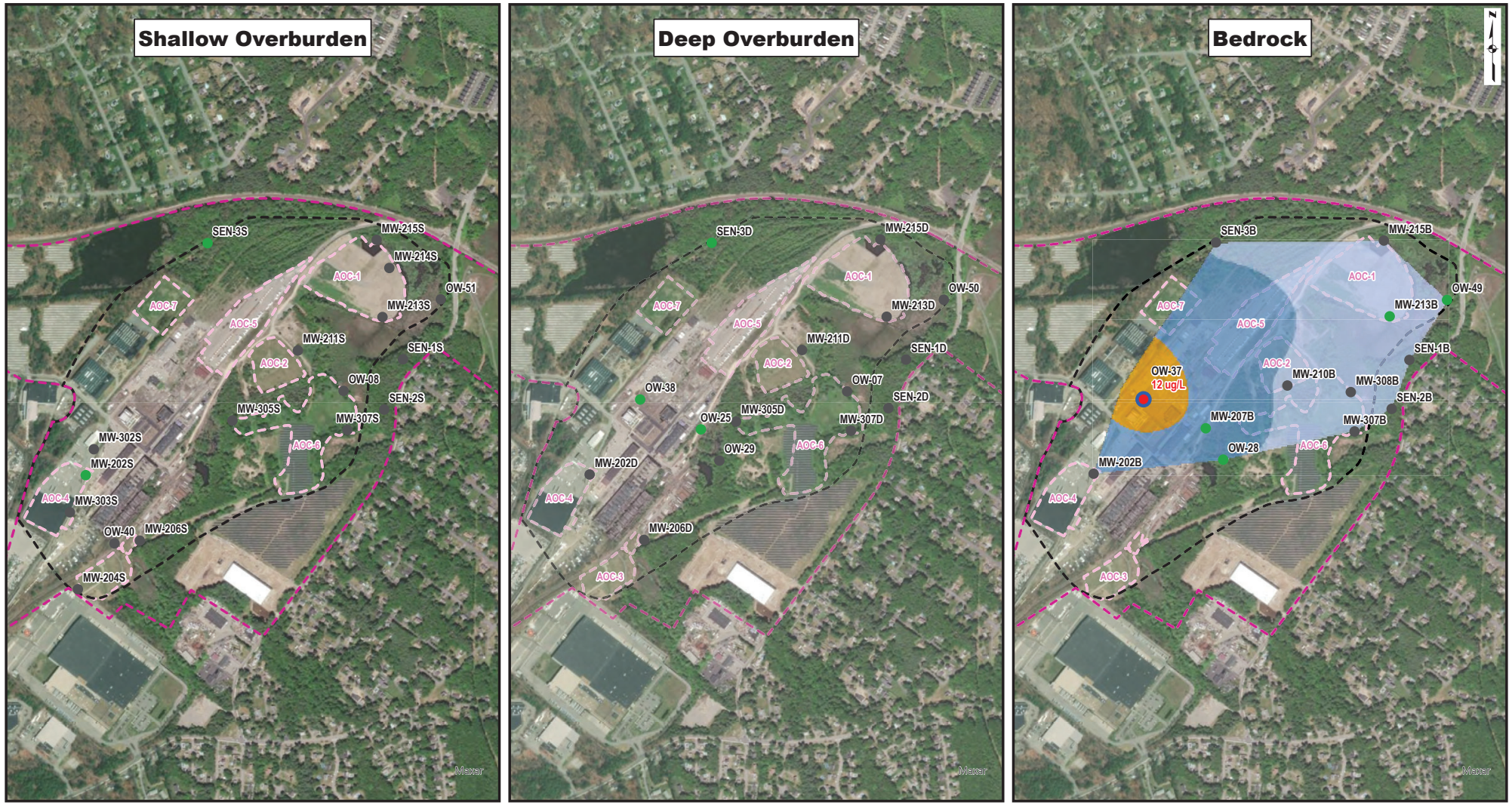

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 7.0
- > 7.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 22: 1,1-Dichloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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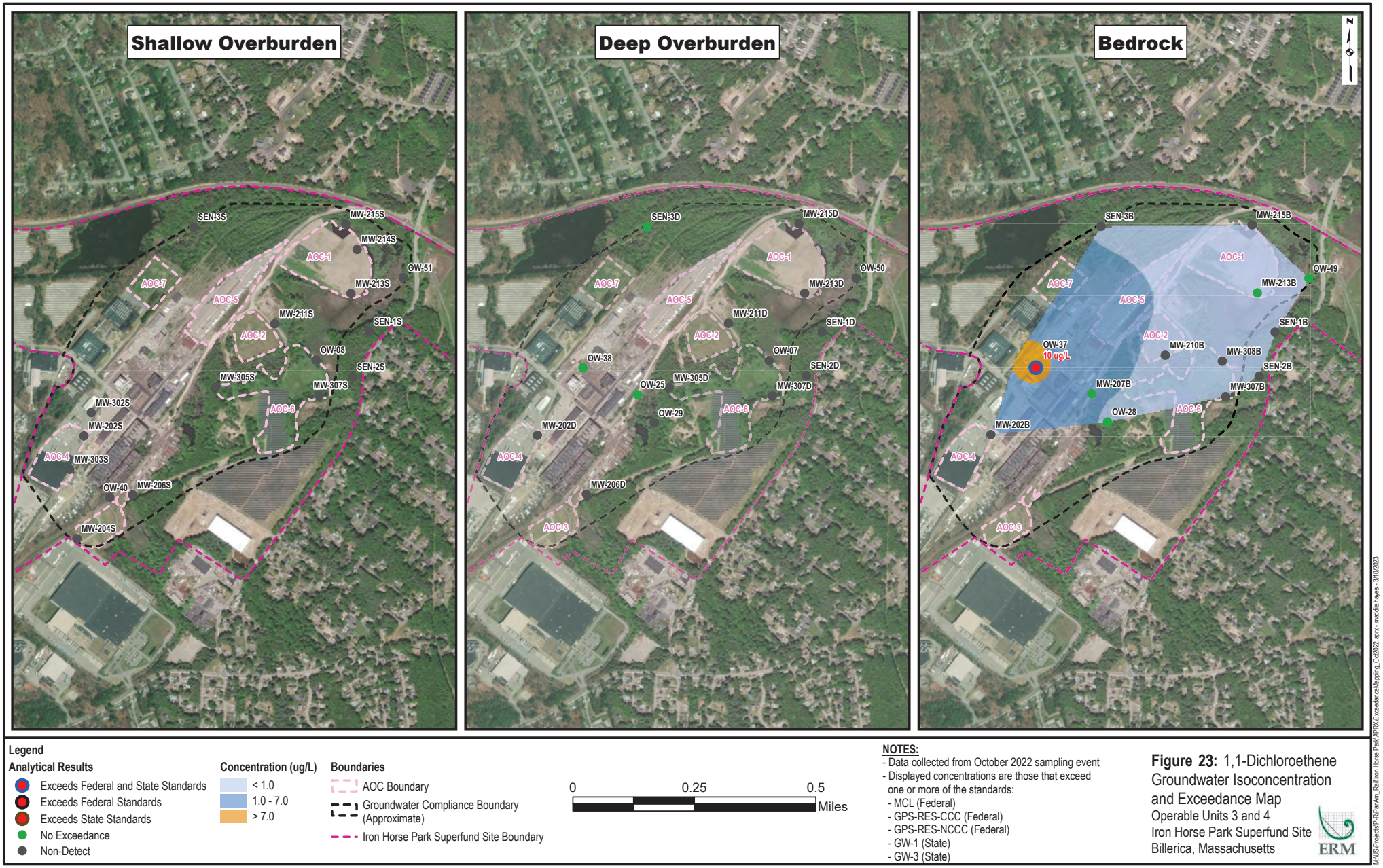

NOTES:

- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 23: 1,1-Dichloroethene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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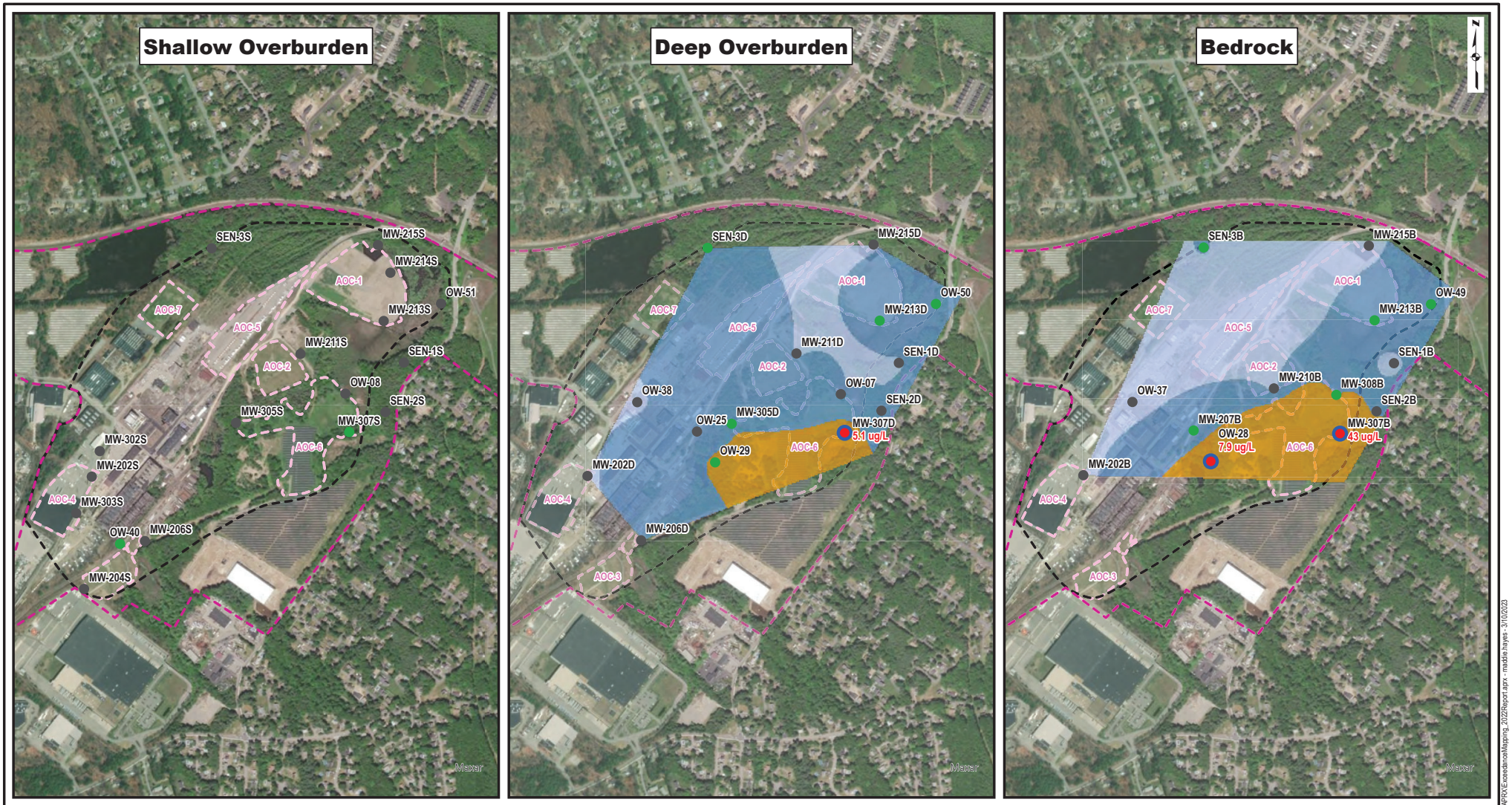

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- > 5.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 24: 1,2-Dichloroethane Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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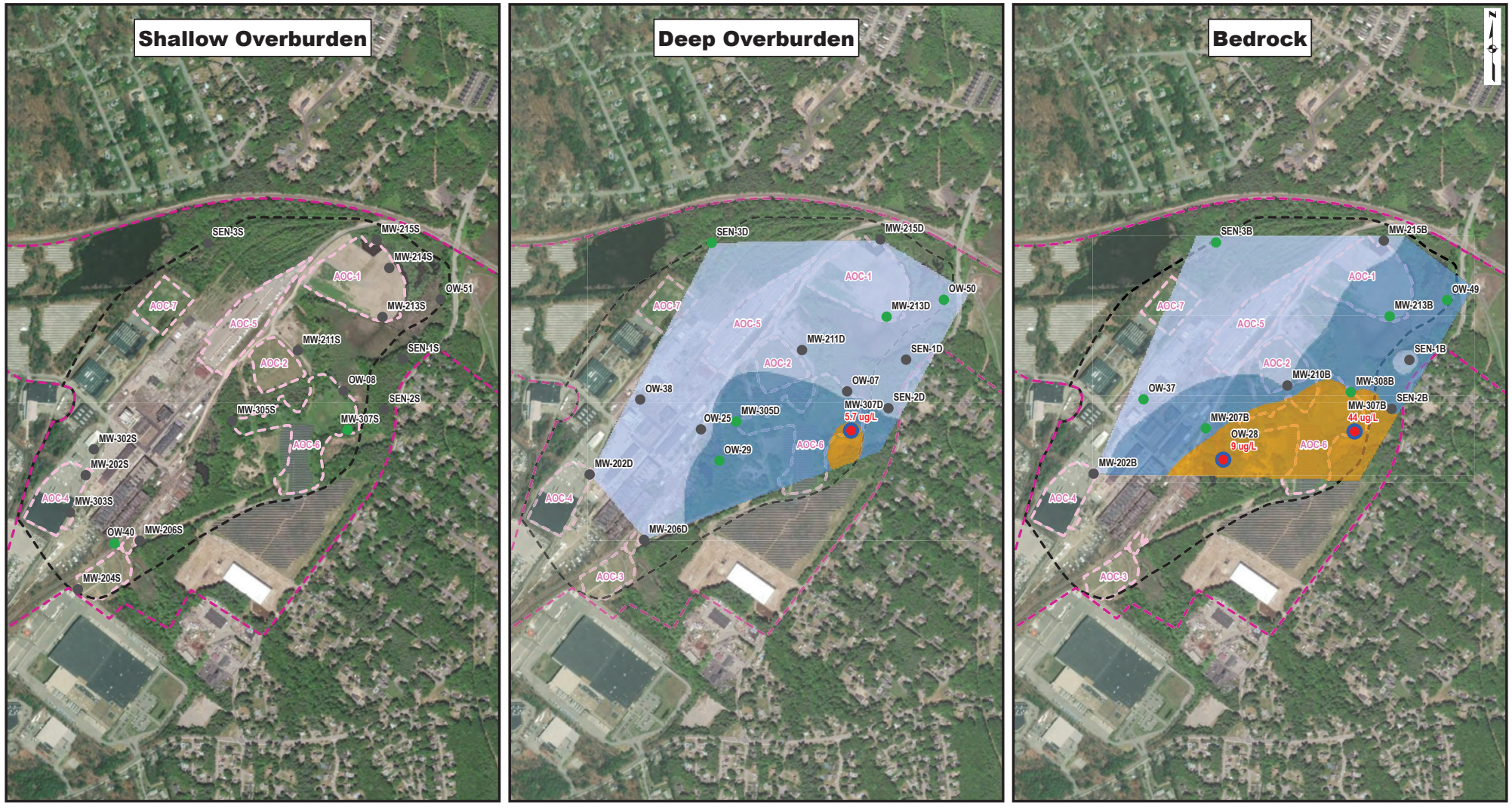

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- > 5.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 25: 1,2-Dichloroethane Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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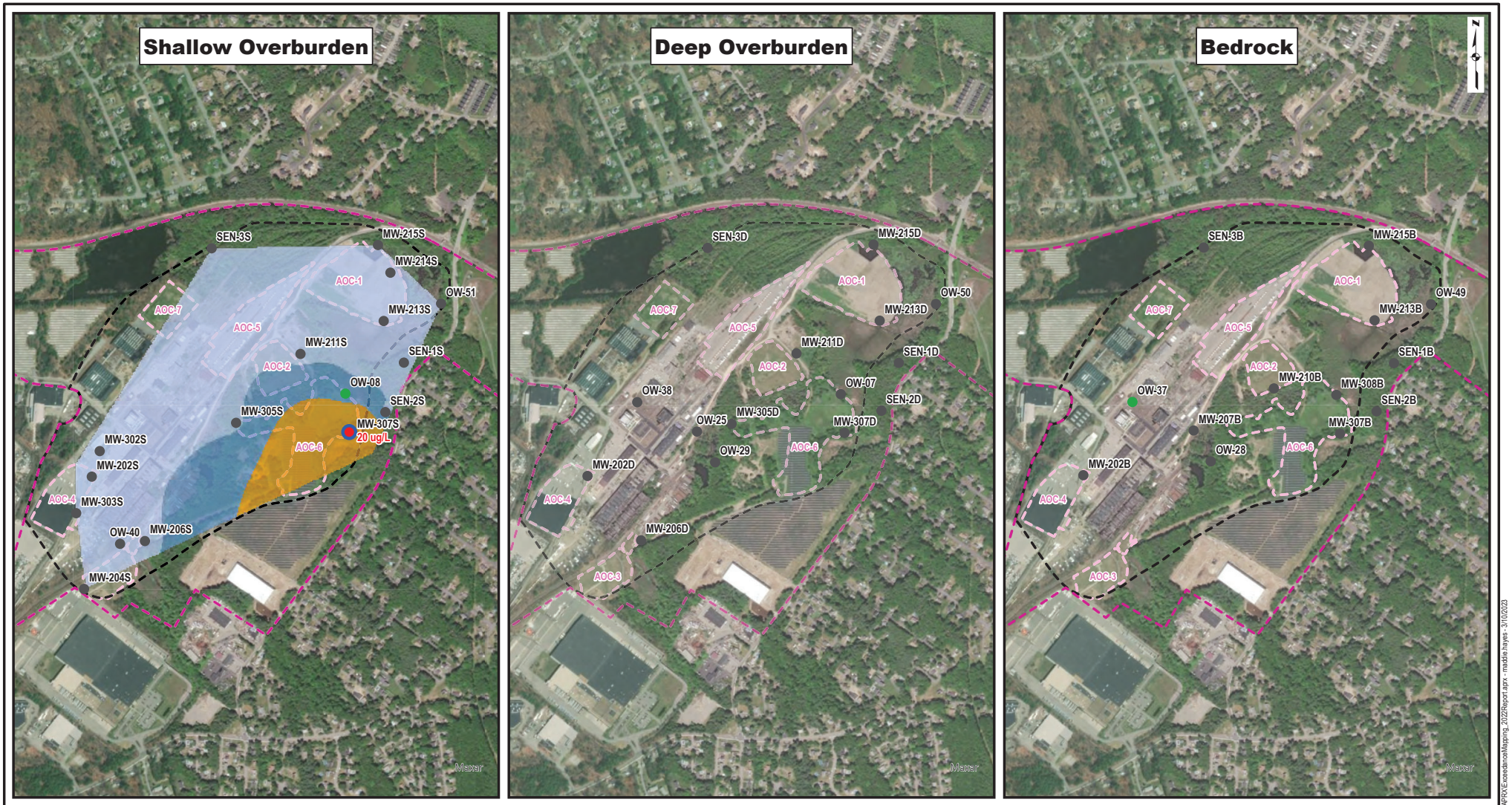

Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- > 5.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 26: Benzene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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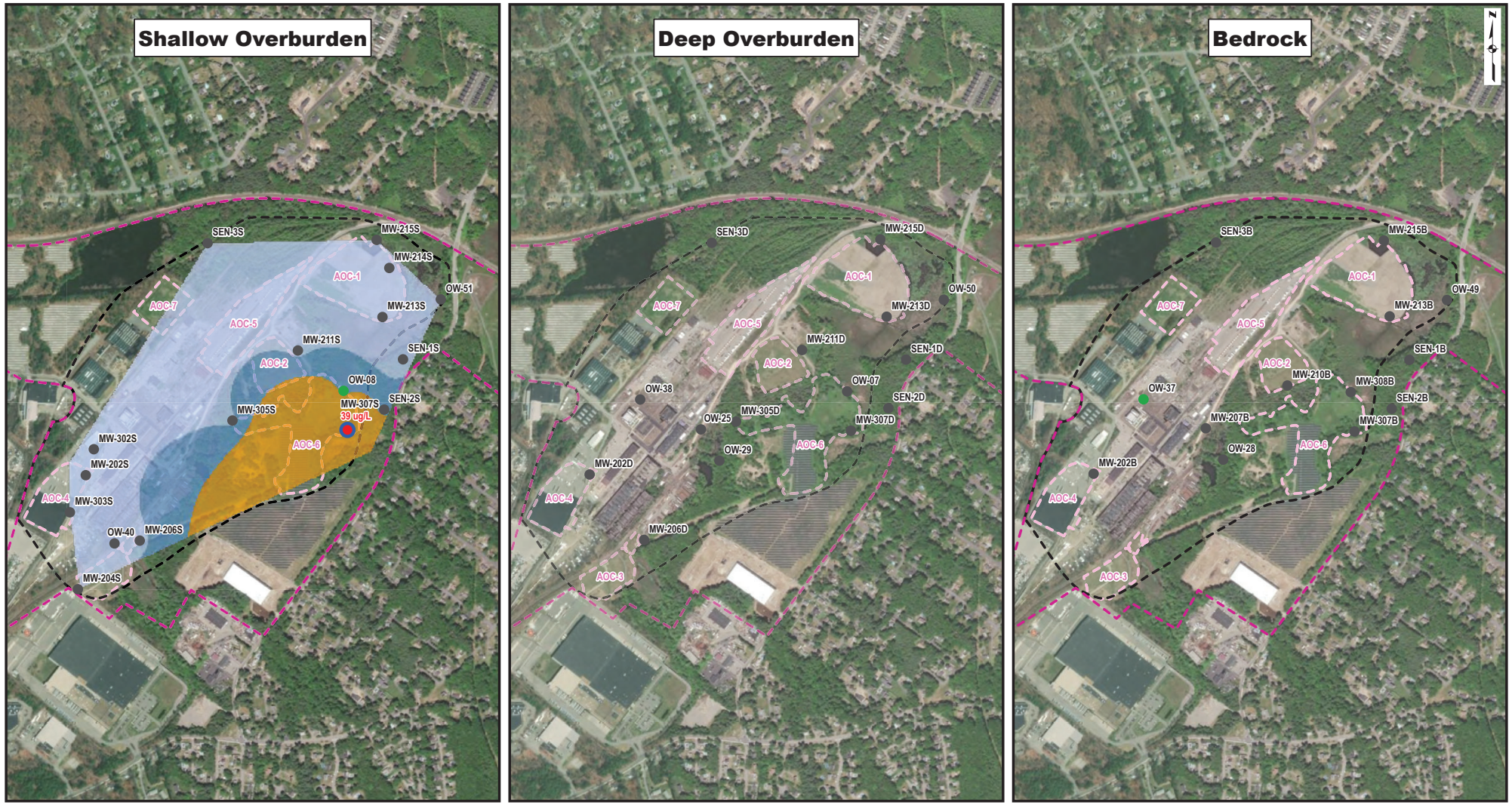

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 5.0
- > 5.0

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 27: Benzene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

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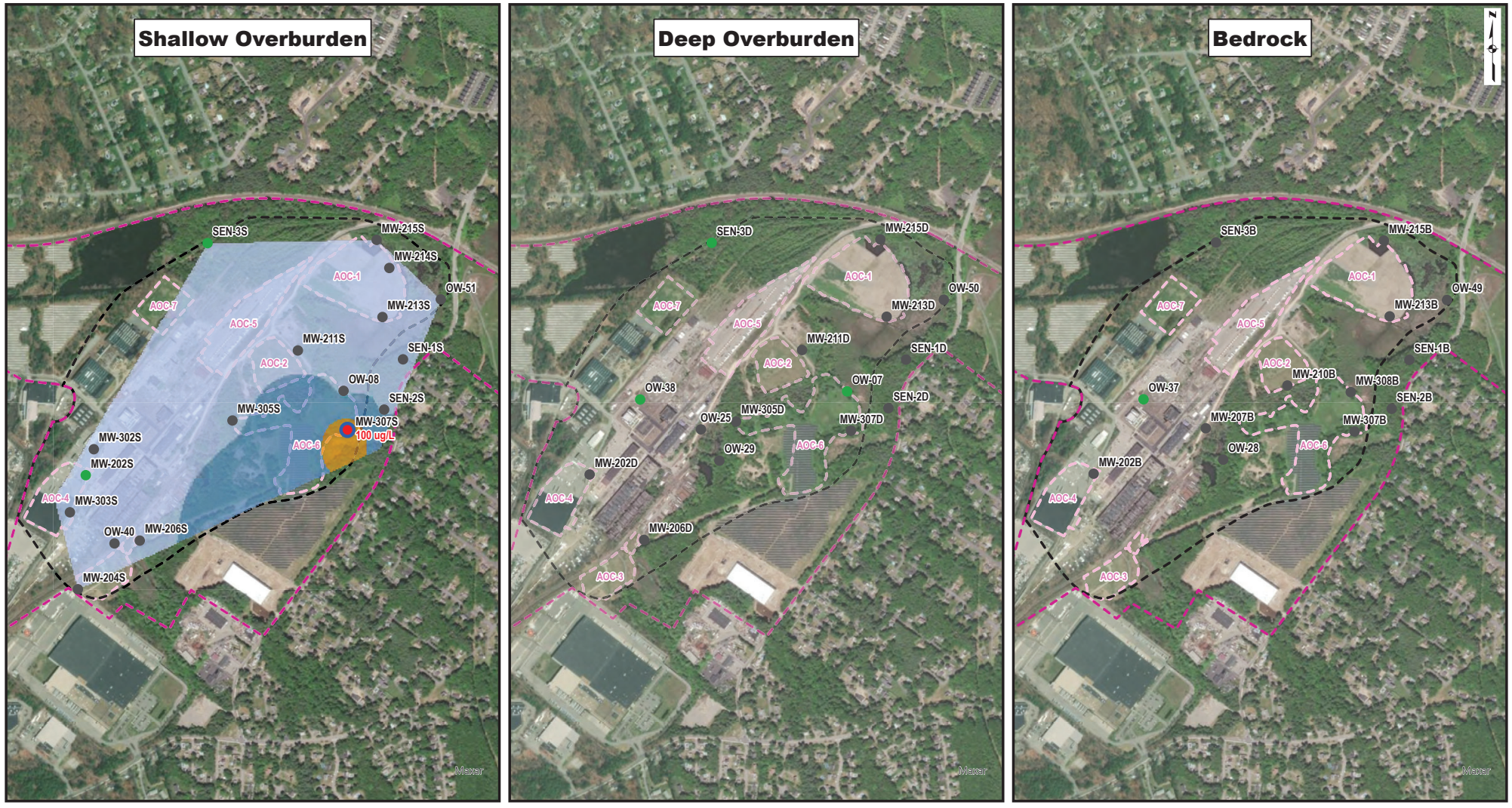

Legend

Results
- Exceedances Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 10
- 10 - 100
- > 100

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 28: Chlorobenzene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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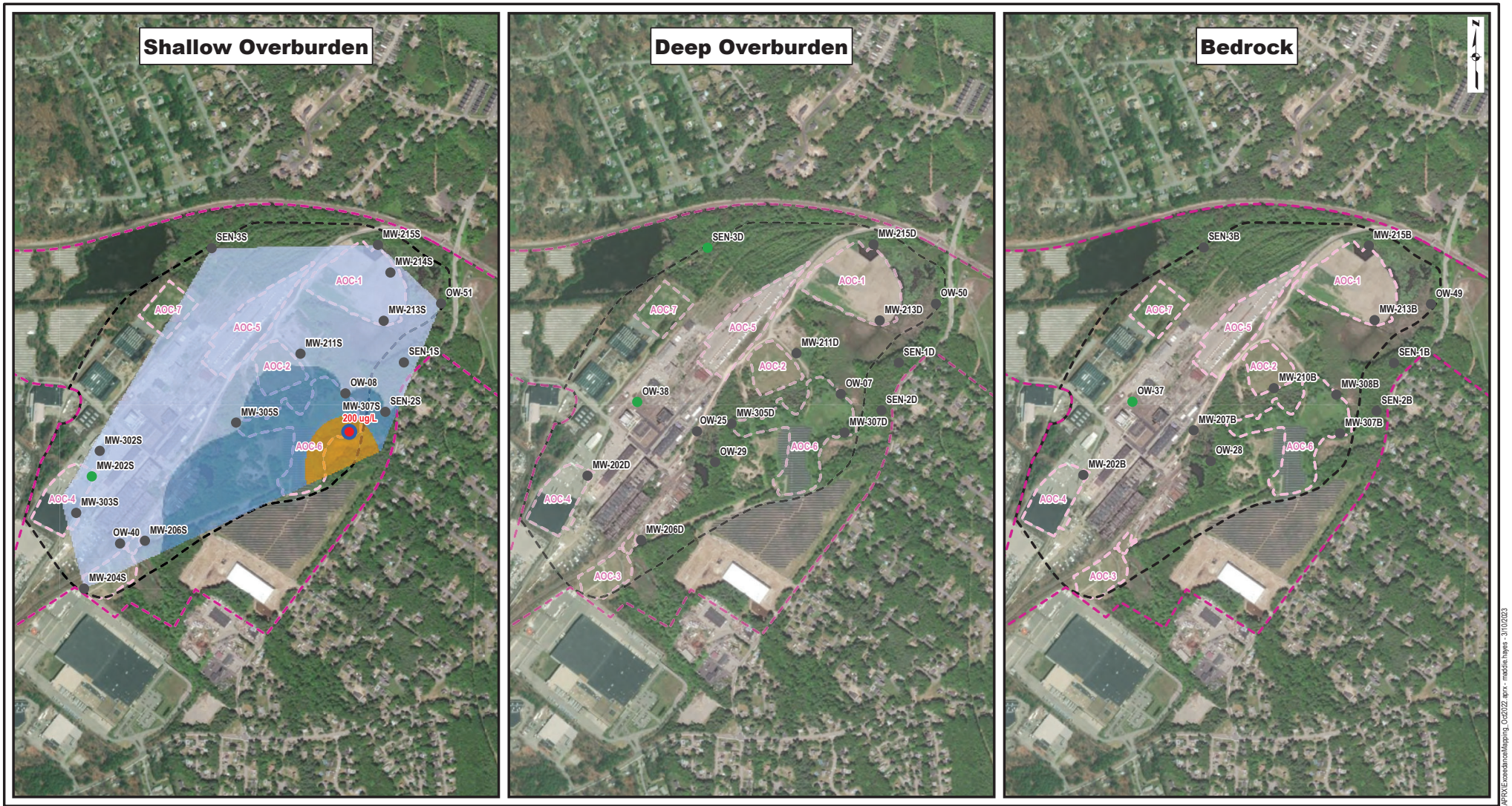

Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 10
- 10 - 100
- > 100

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 29: Chlorobenzene Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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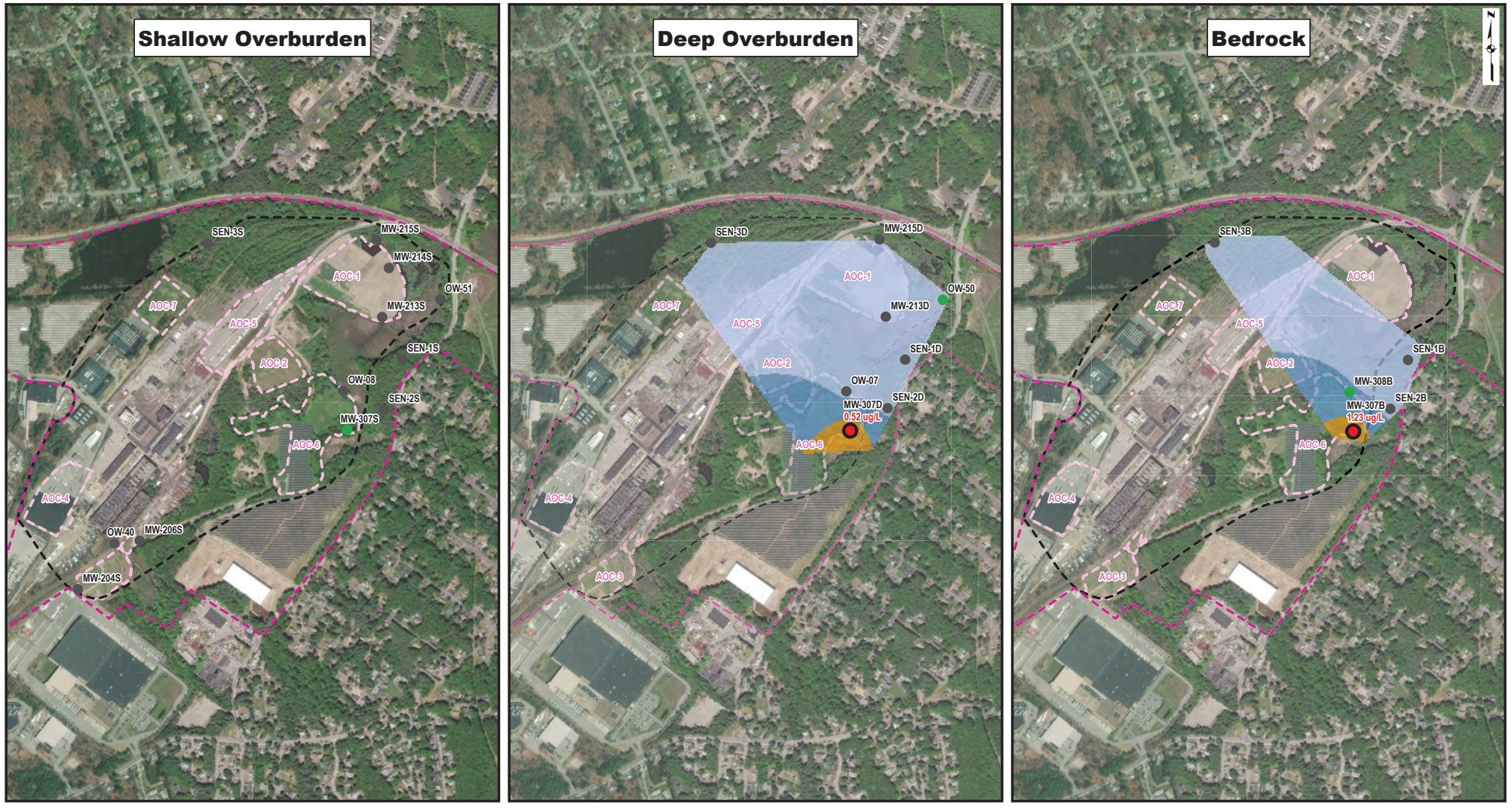


Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 0.1
- 0.1 - 0.5
- > 0.5

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

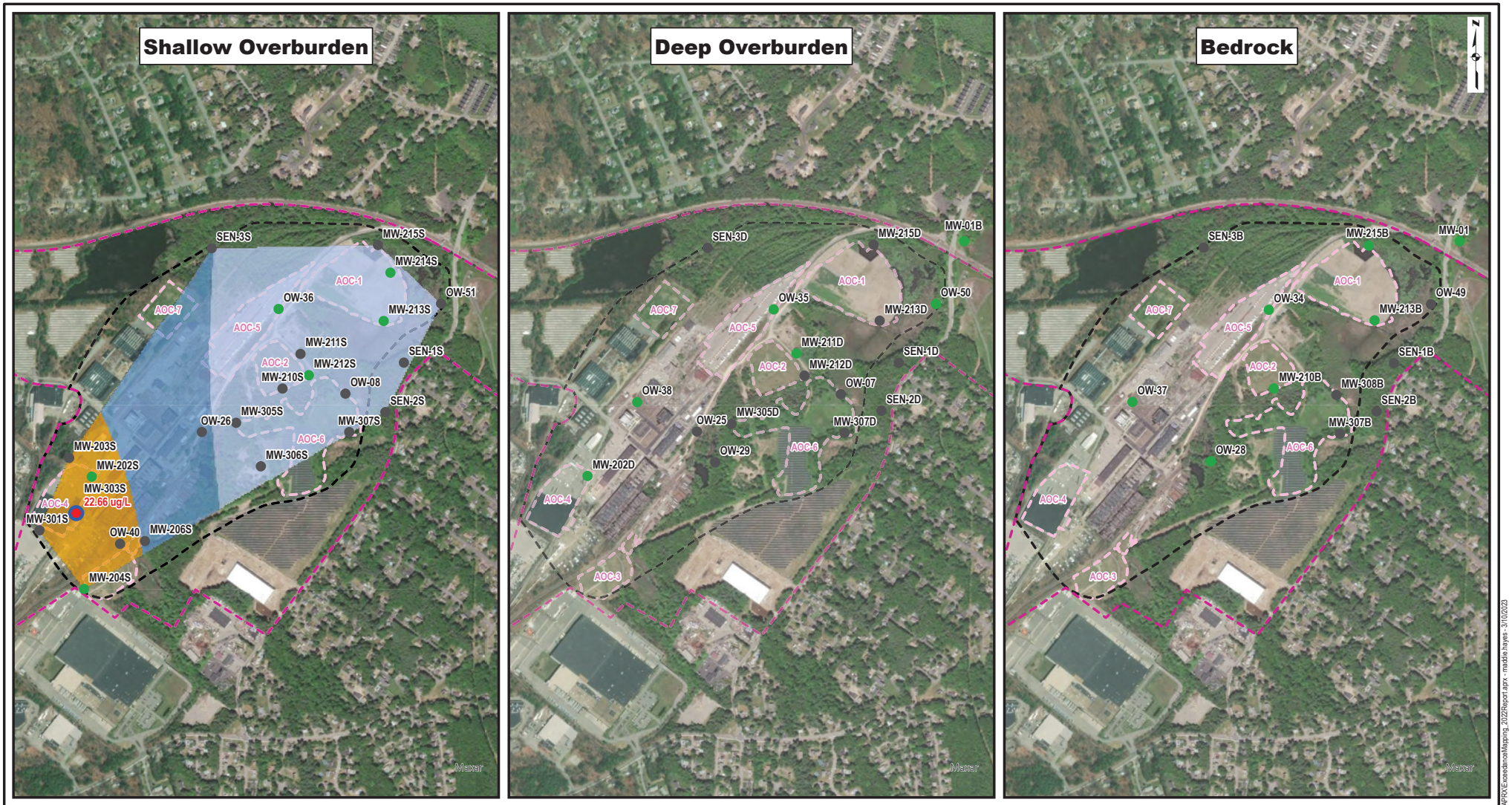
0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 30: Dichloroethyl ether Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\ParkArc_Rail\Iron Horse Park\APR\XE\ExceedanceMapping_Oct2022.aprx - matdie.hayes - 3/10/2023



Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 10
- > 10

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

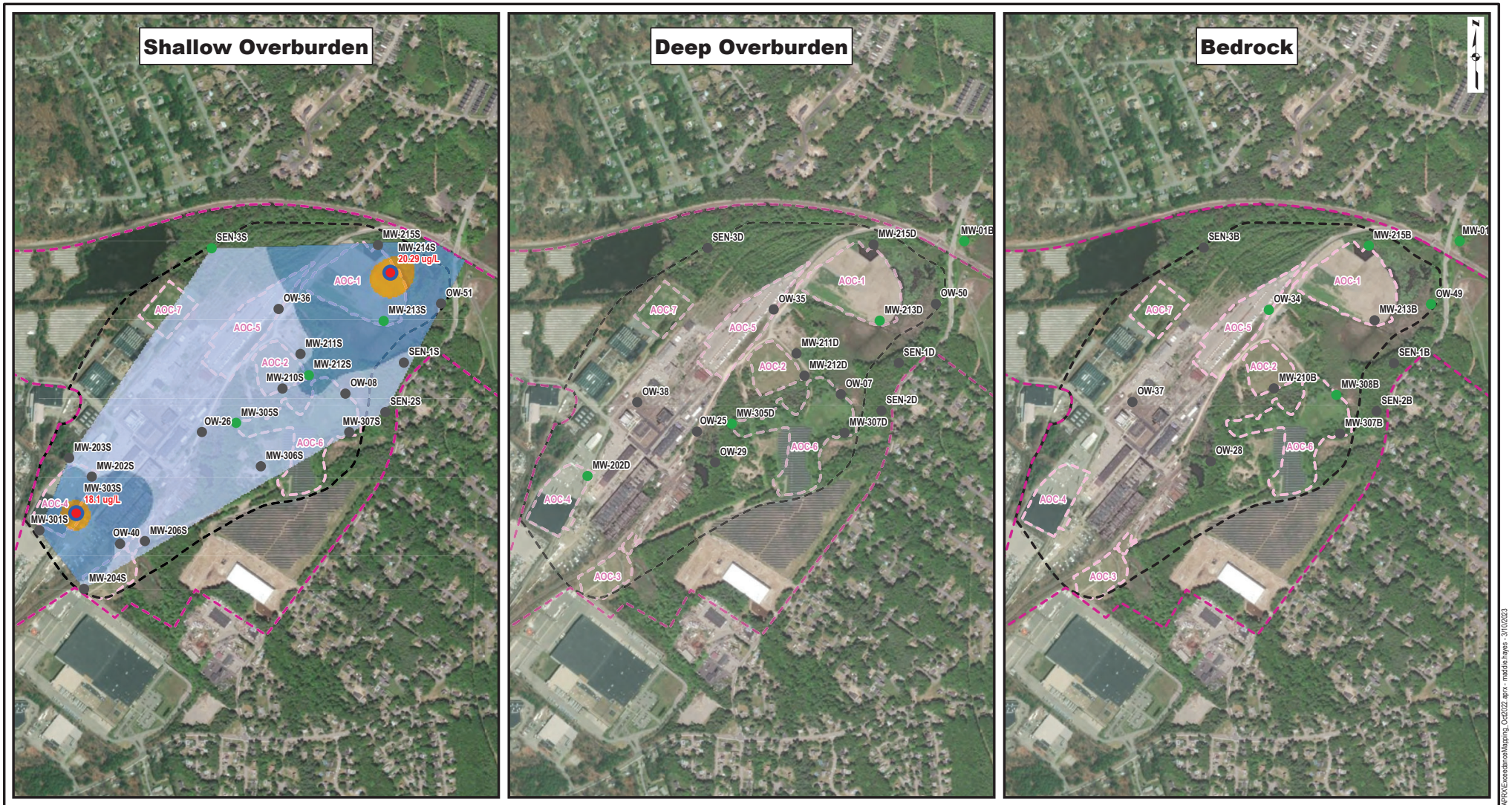
0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 31: Lead Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\ParkArc_Ral\Iron Horse Park\APR\ExceedanceMapping_2022Report.aprx - nadine.hayes - 3/10/2023



Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 1.0
- 1.0 - 10
- > 10

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

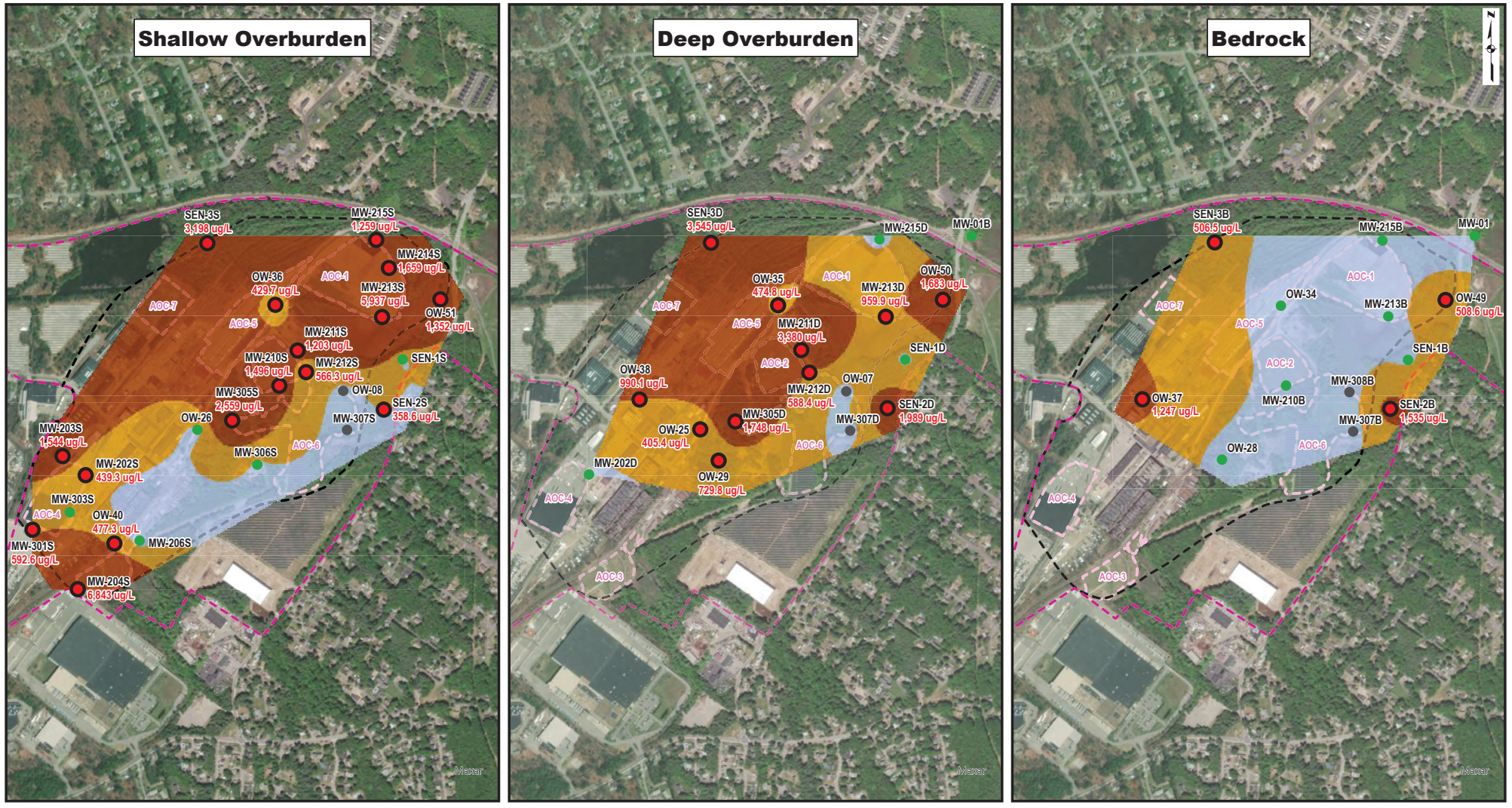
0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 32: Lead Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\ParkArc_Rail\Iron Horse Park\APR\XE\ExceedanceMapping_Oct2022.aprx - matdie.hayes - 3/10/2023



Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 300
- 300 - 1,000
- > 1,000

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

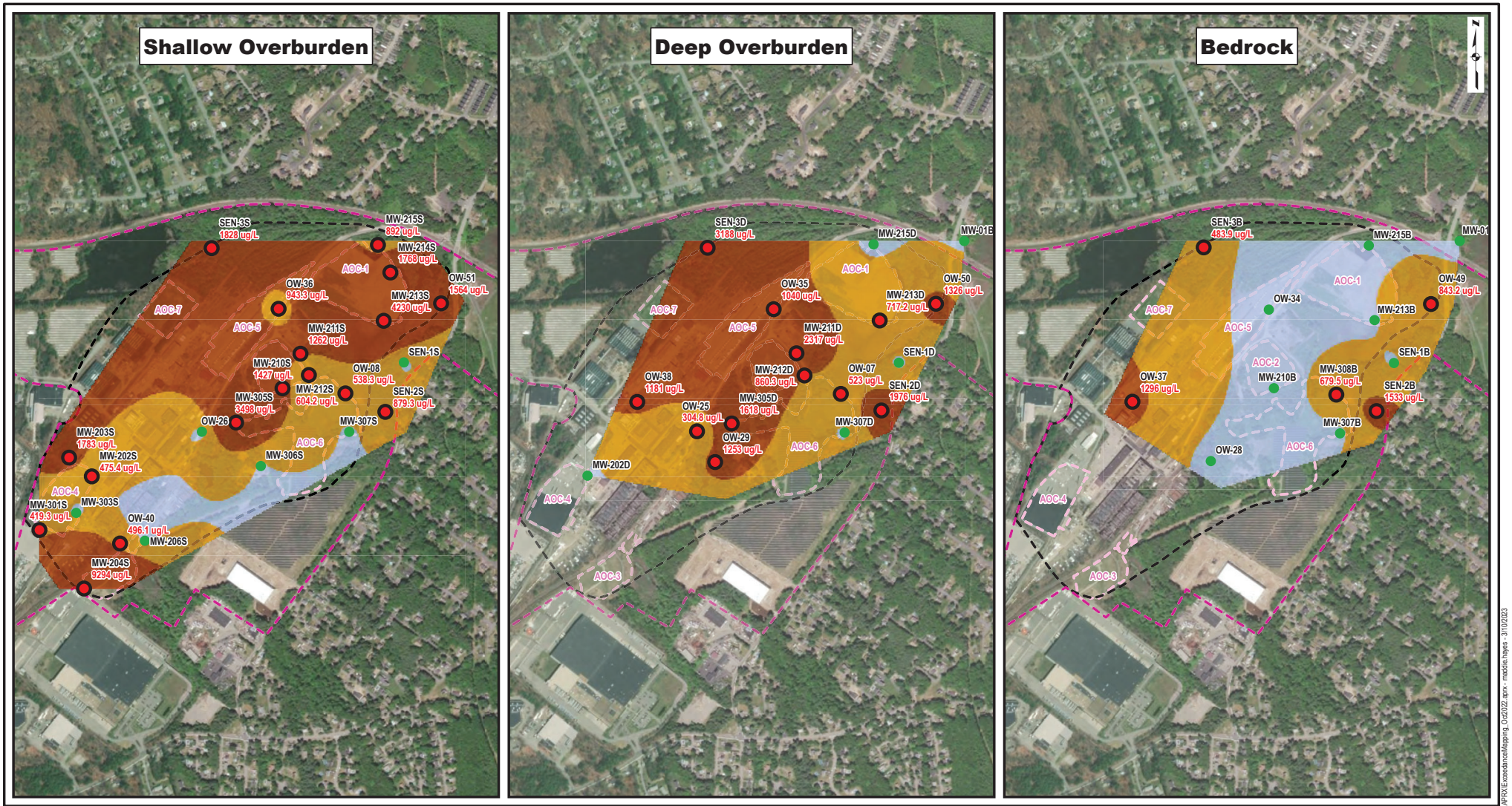
0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 33: Manganese Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\P-R\ParkAm_Rail\Iron Horse Park\APR\Exceedance\Mapping_2022\Report.aprx - maddie.hayes - 3/10/2023



Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 300
- 300 - 1,000
- > 1,000

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 34: Manganese Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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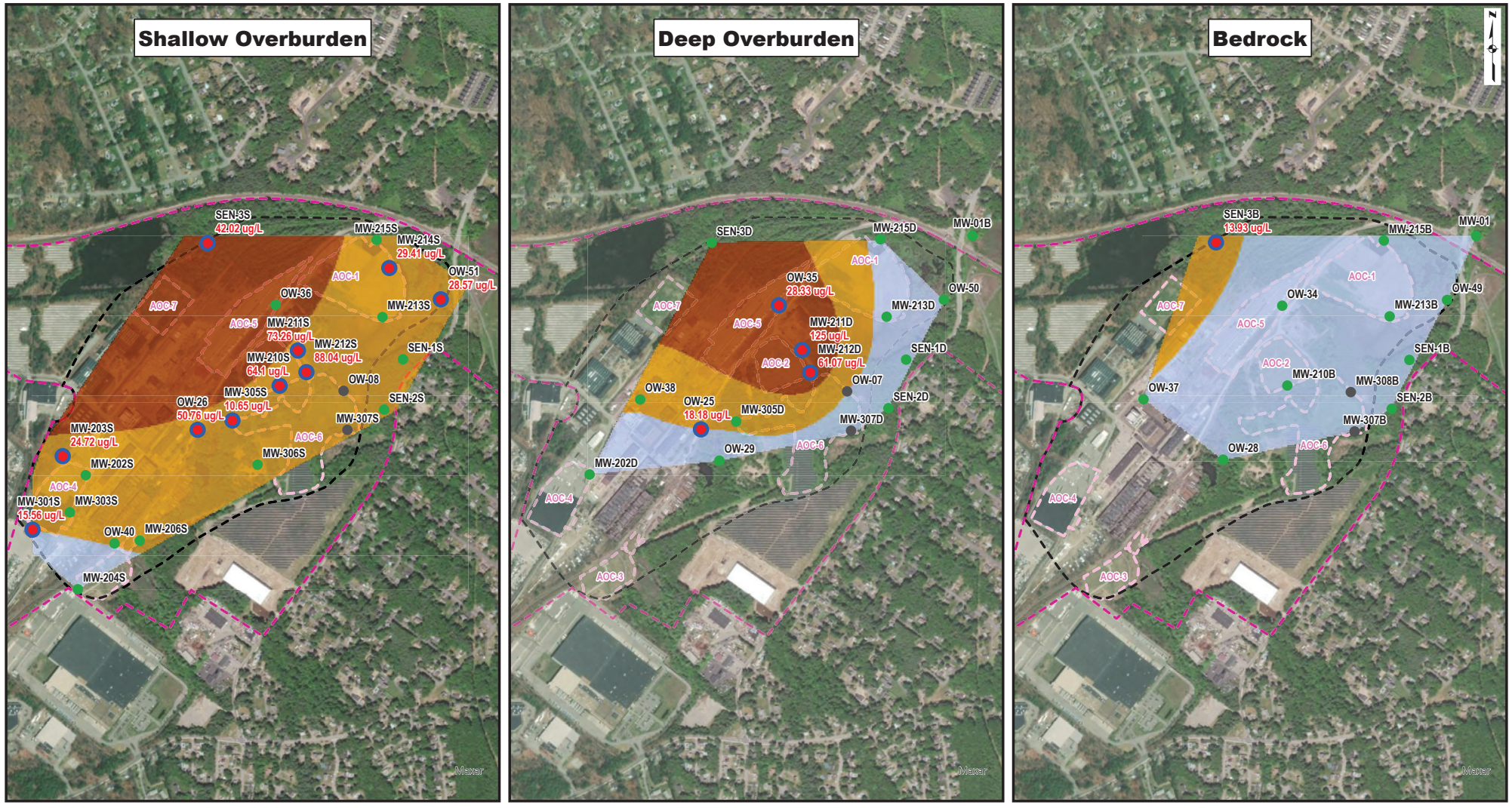


Legend

Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 2.0
- 2.0 - 20
- > 20

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

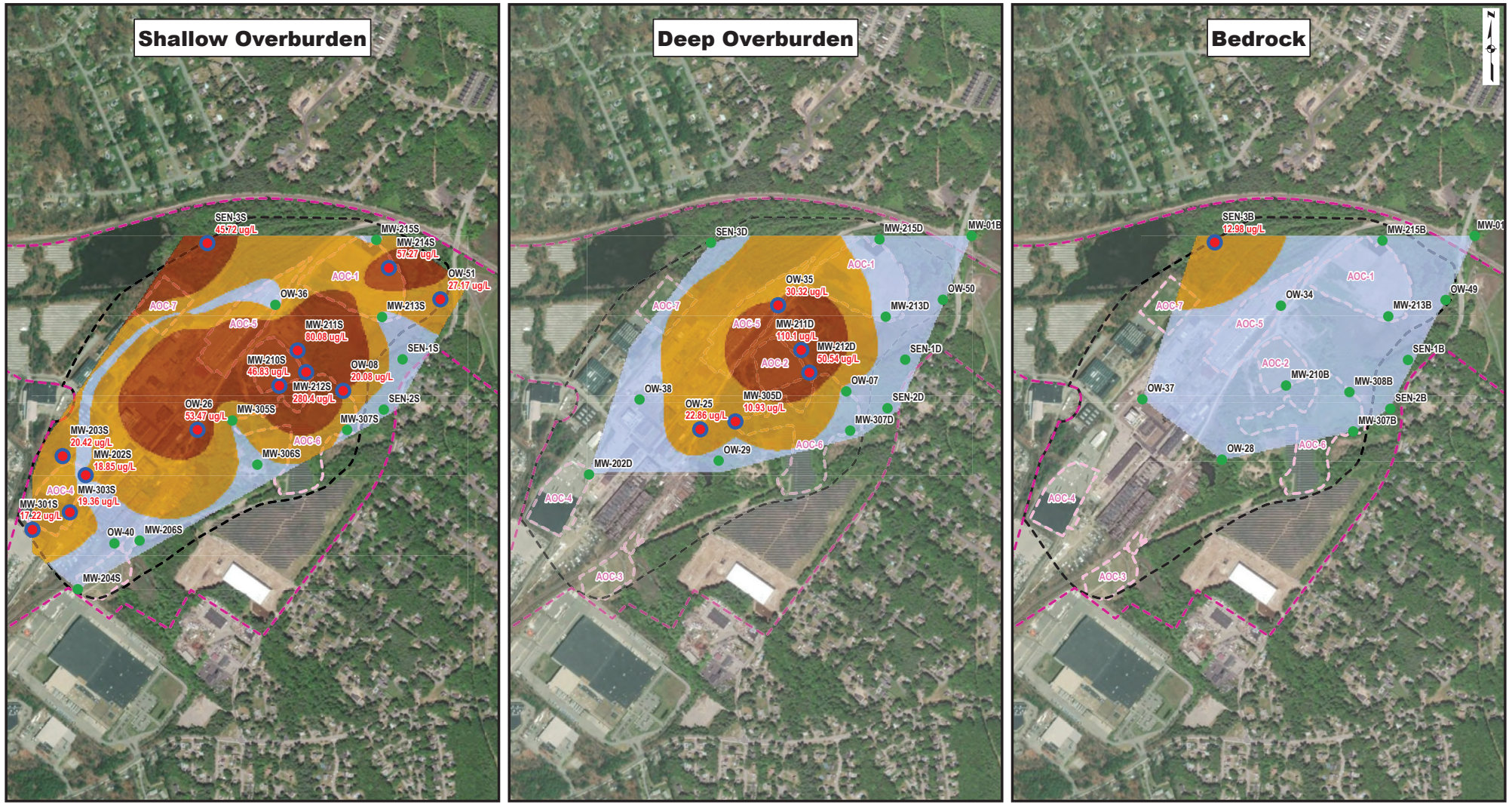
0 0.25 0.5 Miles

NOTES:
- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 35: Arsenic Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\ParkArc_Ral\Iron Horse Park\APR\ExceedanceMapping_2022Report.aprx - nadine.hayes - 3/10/2023



Legend

Analytical Results
- Exceeds Federal and State Standards
- Exceeds Federal Standards
- Exceeds State Standards
- No Exceedance
- Non-Detect

Concentration (ug/L)
- < 10
- 10 - 30
- > 30

Boundaries
- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:
- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - MCL (Federal)
  - GPS-RES-CCC (Federal)
  - GPS-RES-NCCC (Federal)
  - GW-1 (State)
  - GW-3 (State)

Figure 36: Arsenic Groundwater Isoconcentration and Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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Figure 37: Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA Groundwater Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

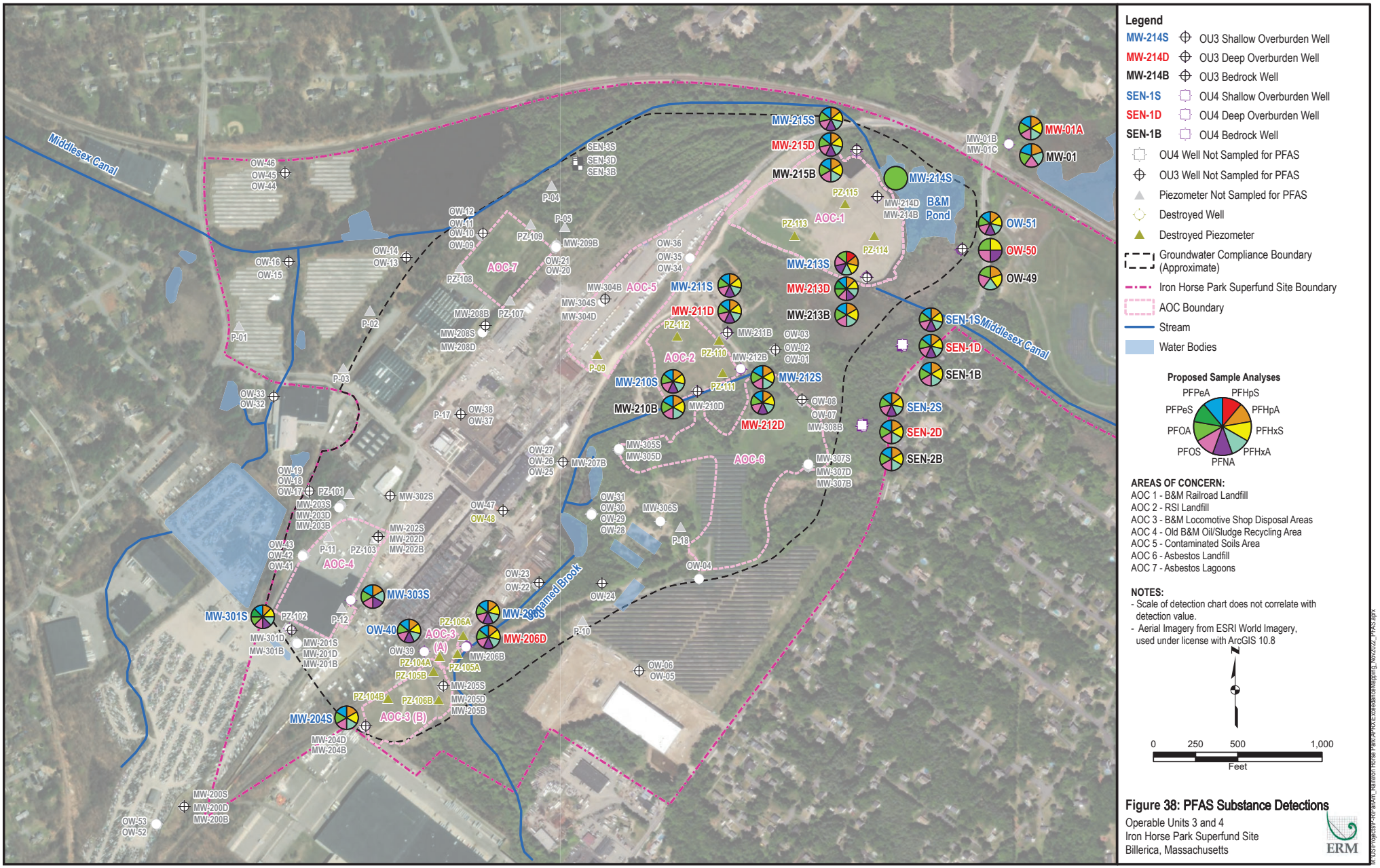

Figure 38: PFAS Substance Detections

Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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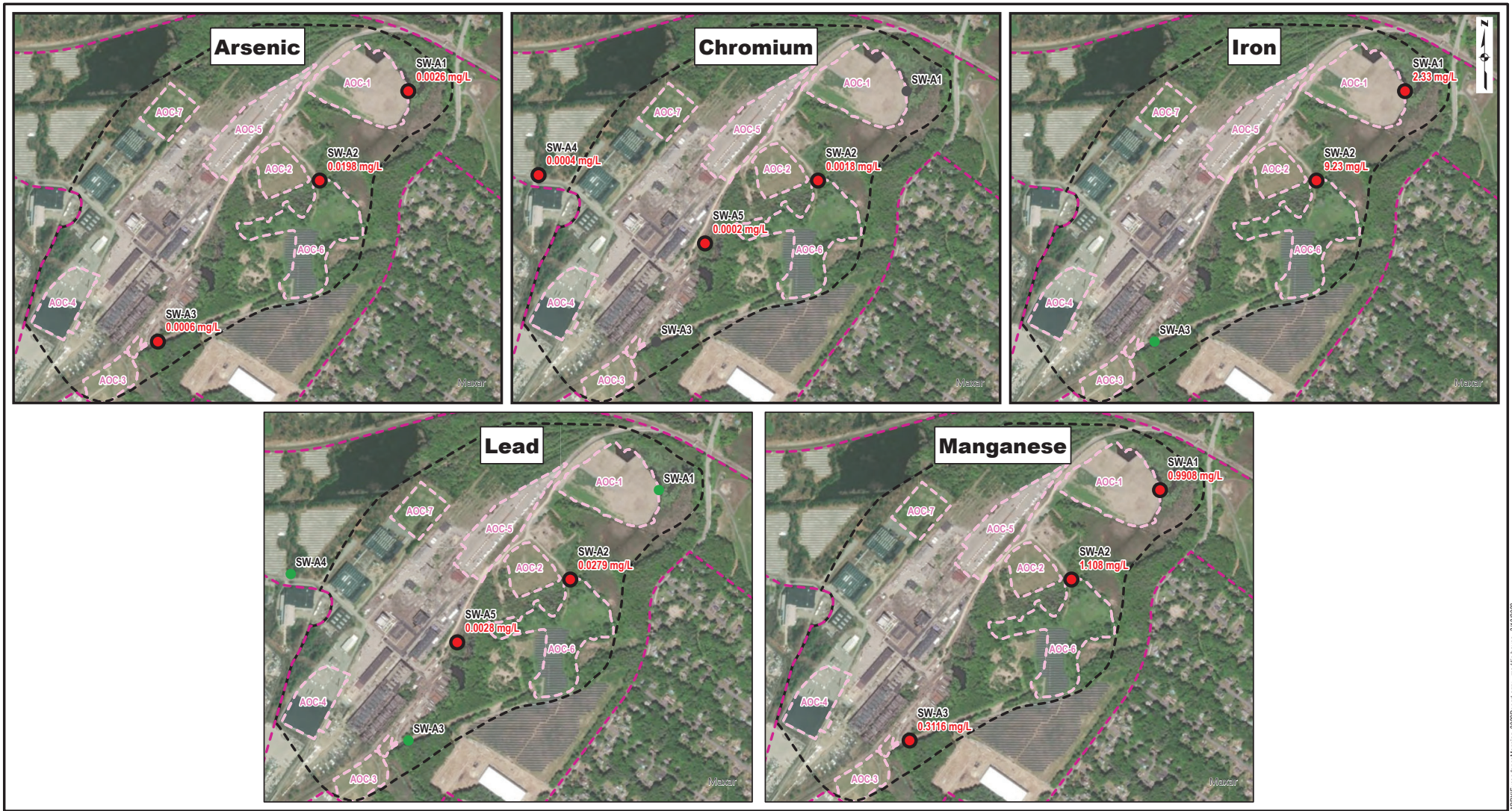

Legend

Results

- Exceeds Federal Standards
- No Exceedance
- Non-Detect

Boundaries

- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:

- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - RWQC FW AALC 2016 (Federal)
  - RWQC FW CALC 2016 (Federal)
  - RWQC HH CCO 2015 (Federal)
  - RWQC HH CCWO 2015 (Federal)

Figure 39: Metals Surface Water Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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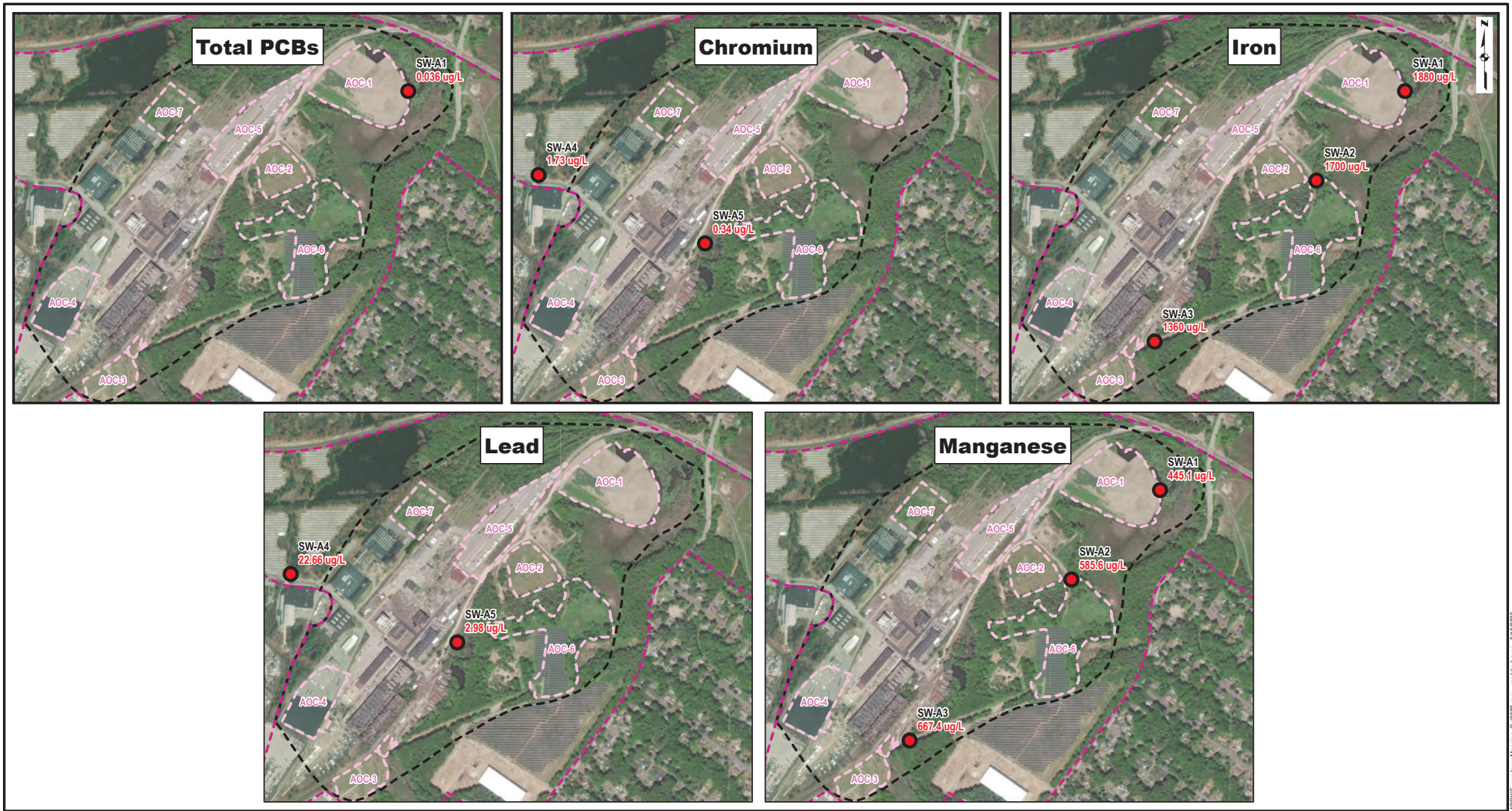

Legend

Analytical Results

- Exceeds Federal Standards
- No Exceedance
- Non-Detect

Boundaries

- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:

- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - RWQC FW AALC 2016 (Federal)
  - RWQC FW CALC 2016 (Federal)
  - RWQC HH CCO 2015 (Federal)
  - RWQC HH CCWO 2015 (Federal)

Figure 40: Metals and PCBs Surface Water Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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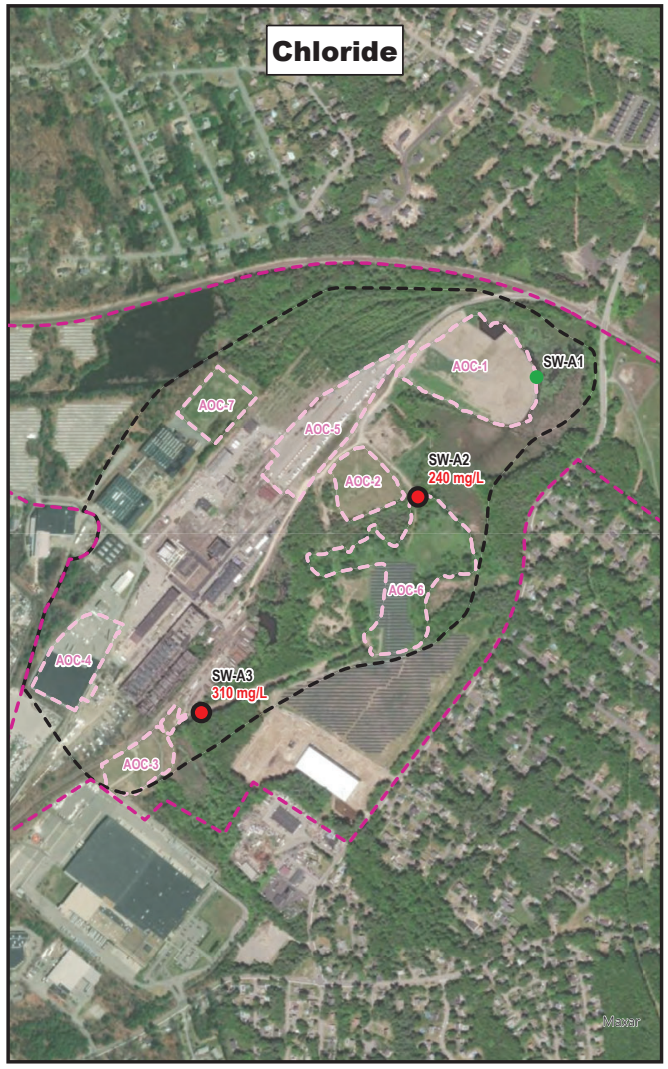

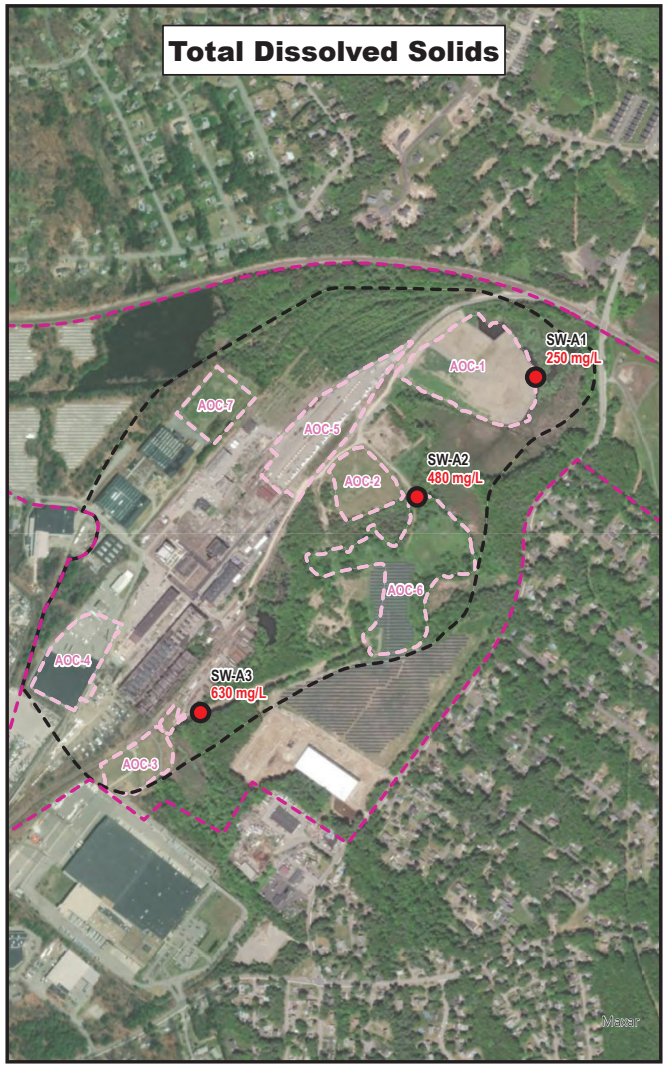

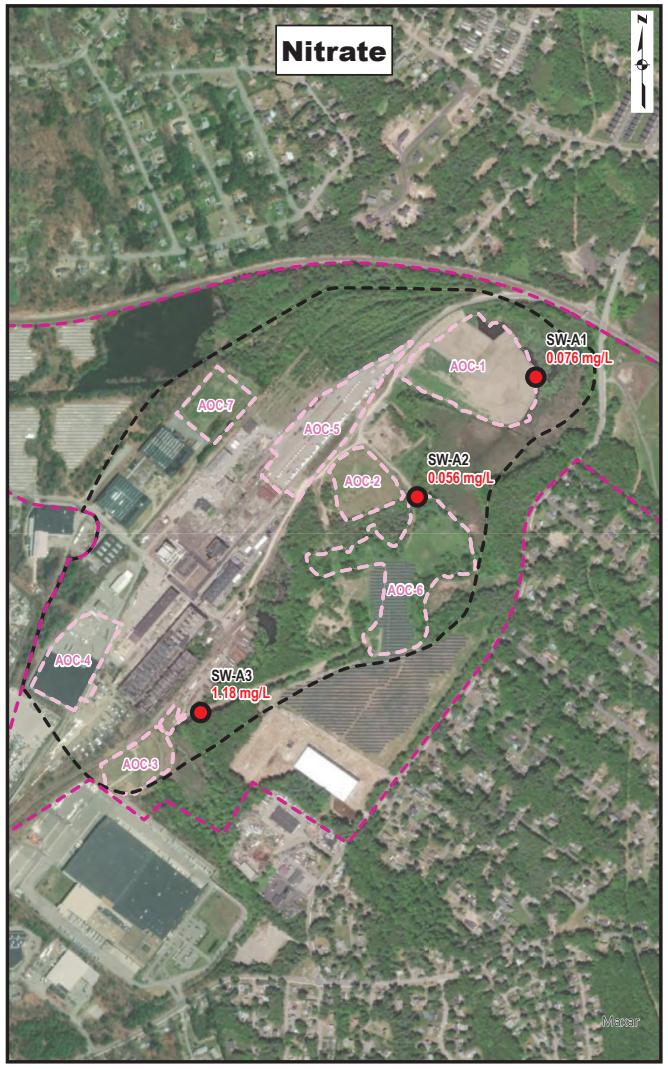

Legend

Results

- Exceeds Federal Standards
- No Exceedance
- Non-Detect

Boundaries

- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

NOTES:

- Data collected from June 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - RWQC FW AALC 2016 (Federal)
  - RWQC FW CALC 2016 (Federal)
  - RWQC HH CCO 2015 (Federal)
  - RWQC HH CCWO 2015 (Federal)

Figure 41: Landfill Parameters Surface Water Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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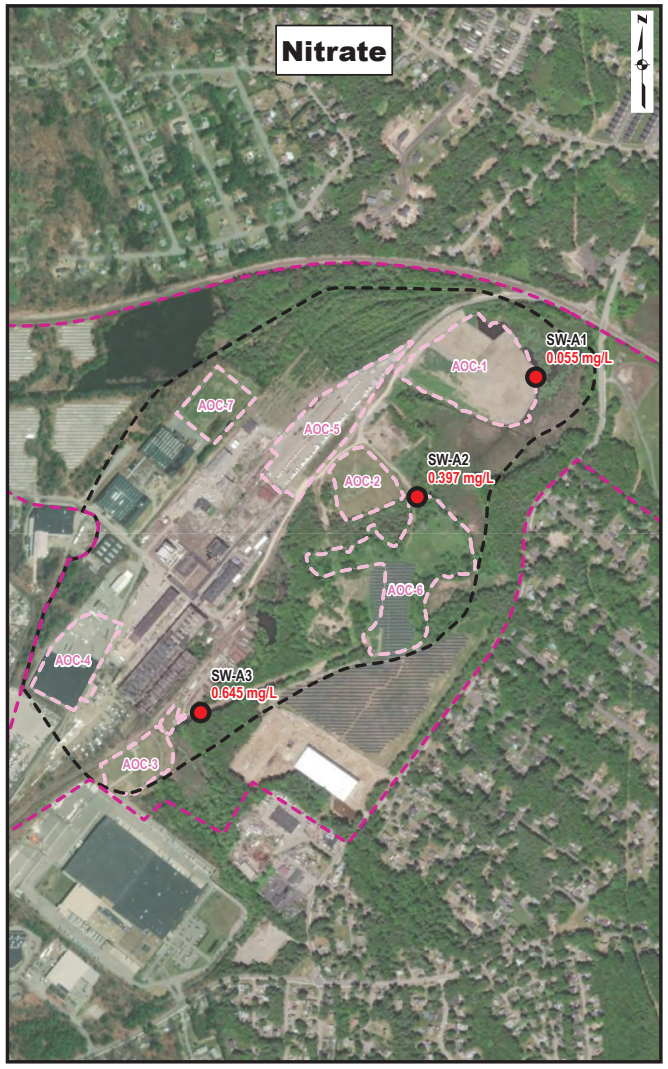


Legend

Analytical Results

- Exceeds Federal Standards
- No Exceedance
- Non-Detect

Boundaries

- AOC Boundary
- Groundwater Compliance Boundary (Approximate)
- Iron Horse Park Superfund Site Boundary

0 0.25 0.5 Miles

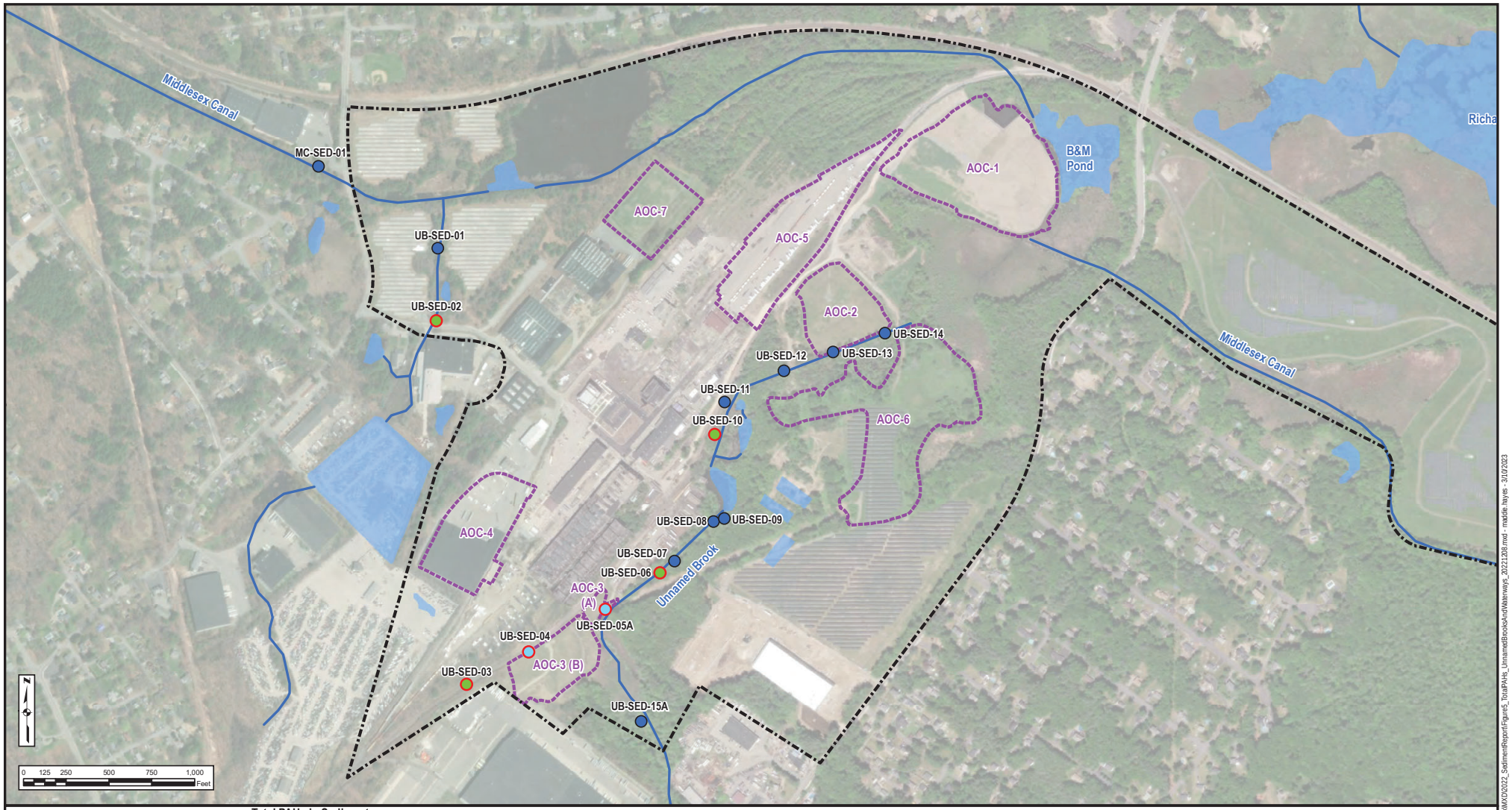
NOTES:

- Data collected from October 2022 sampling event
- Displayed concentrations are those that exceed one or more of the standards:
  - RWQC FW AALC 2016 (Federal)
  - RWQC FW CALC 2016 (Federal)
  - RWQC HH CCO 2015 (Federal)
  - RWQC HH CCWO 2015 (Federal)

Figure 42: Landfill Parameters Surface Water Exceedance Map
Operable Units 3 and 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\ParkArc_Rail\Iron Horse Park\APRX\ExceedanceMapping_Oct2022.aprx - maddie.hayes - 3/10/2023



Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Total PAHs in Sediment

- Non-Detect
- <4.834 mg/kg
- 4.834 - 10 mg/kg
- 10 - 20 mg/kg
- 20 - 30 mg/kg
- 30 - 45 mg/kg
- >45 mg/kg

NOTES

- Data collected from September 2022 sampling event
- 45 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Recod of Decision Cleanup Level of 4.834 mg/kg.

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 43: Total PAHs Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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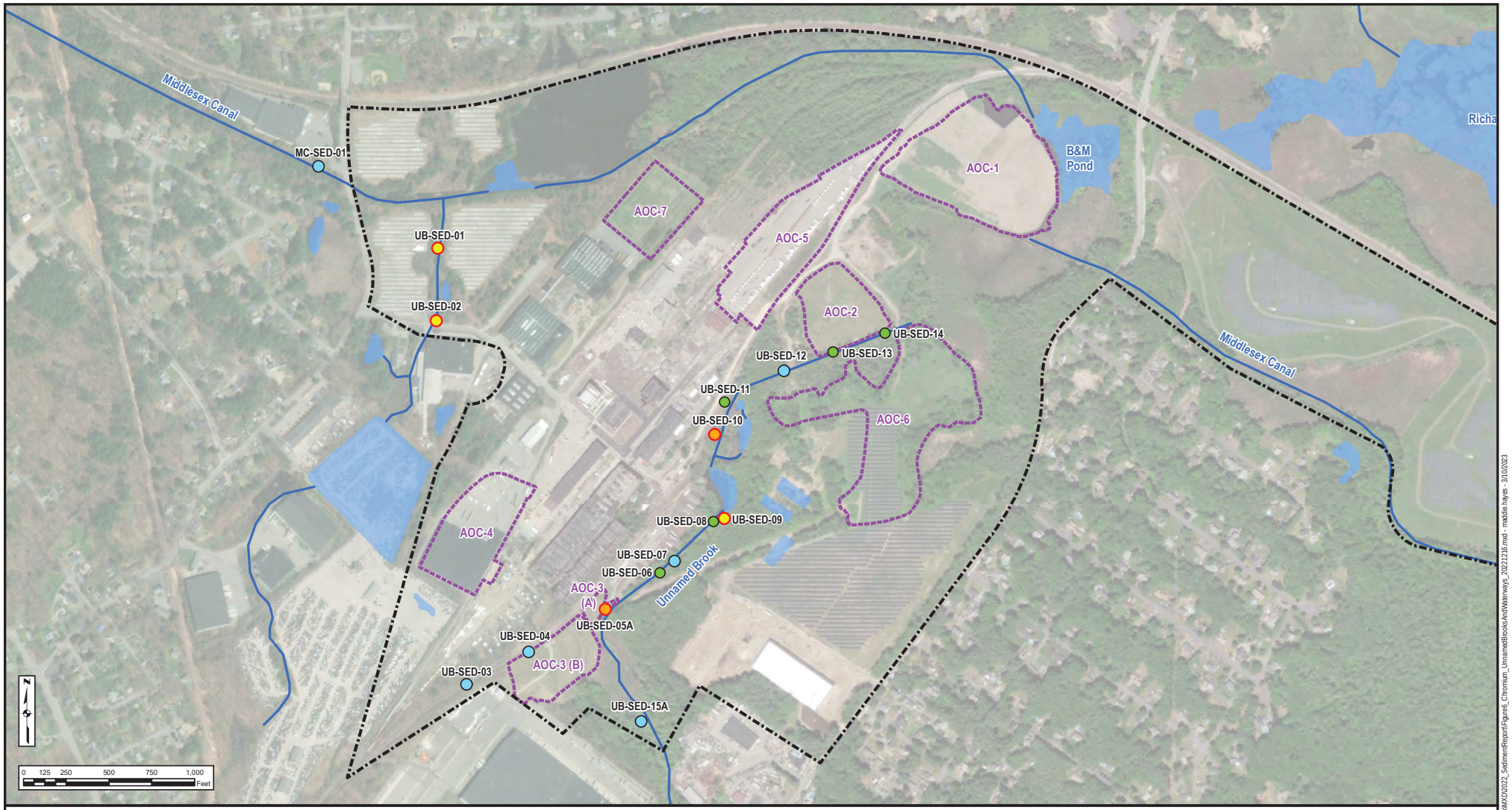

Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Chromium in Sediment

- Non-Detect
- <11 mg/kg
- 11 - 22 mg/kg
- 22 - 44 mg/kg
- 44 - 88 mg/kg
- >88 mg/kg

NOTES

- Data collected from September 2022 sampling event.
- 370 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Record of Decision Cleanup Level of 22 mg/kg.

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 44: Chromium Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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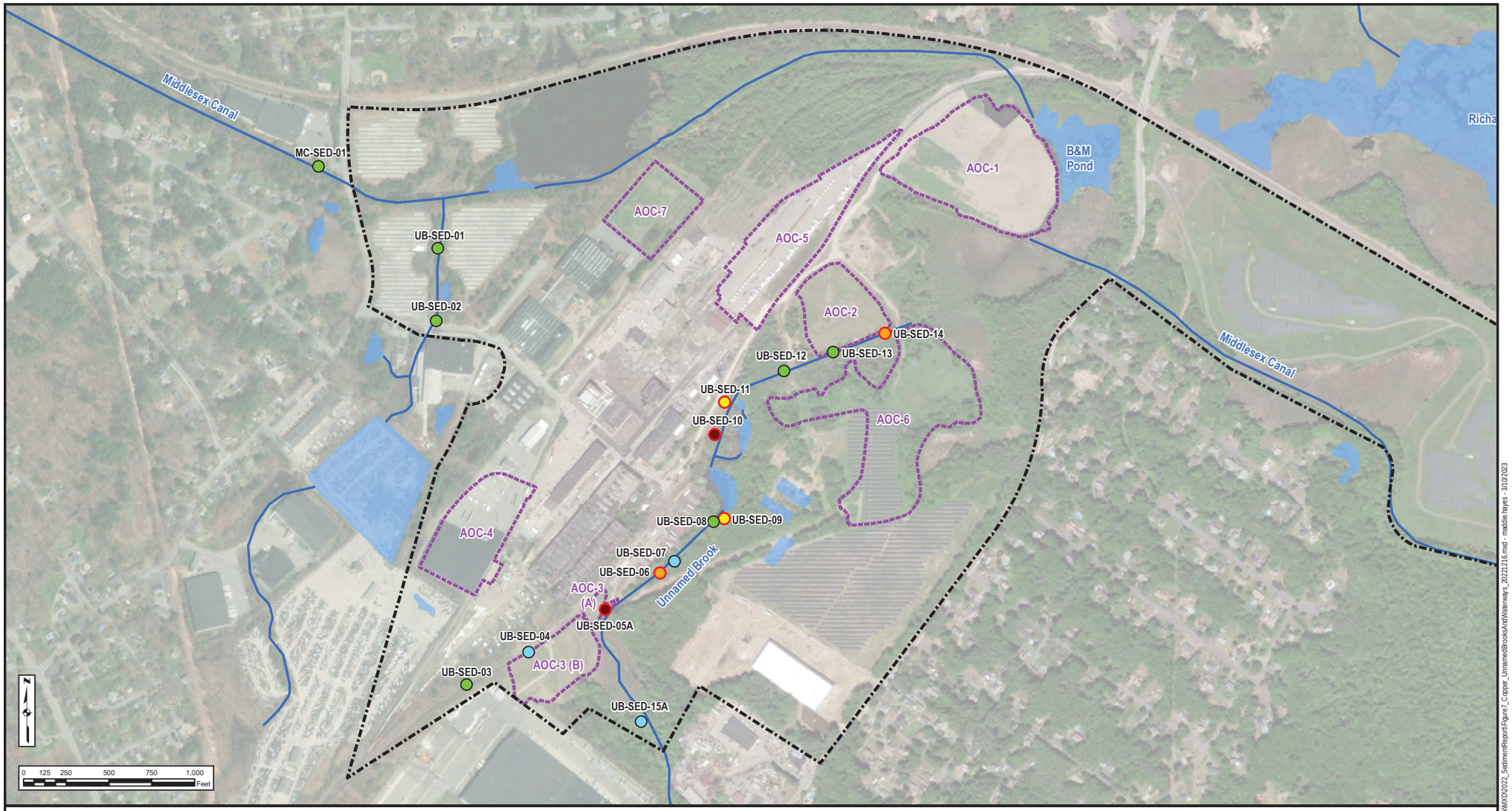

Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Copper in Sediment

- Non-Detect
- <31 mg/kg
- 31 - 63 mg/kg
- 63 - 126 mg/kg
- 126 - 252 mg/kg
- >252 mg/kg

NOTES

- Data collected from September 2022 sampling event
- 270 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Record of Decision Cleanup Level of 63 mg/kg.

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 45: Copper Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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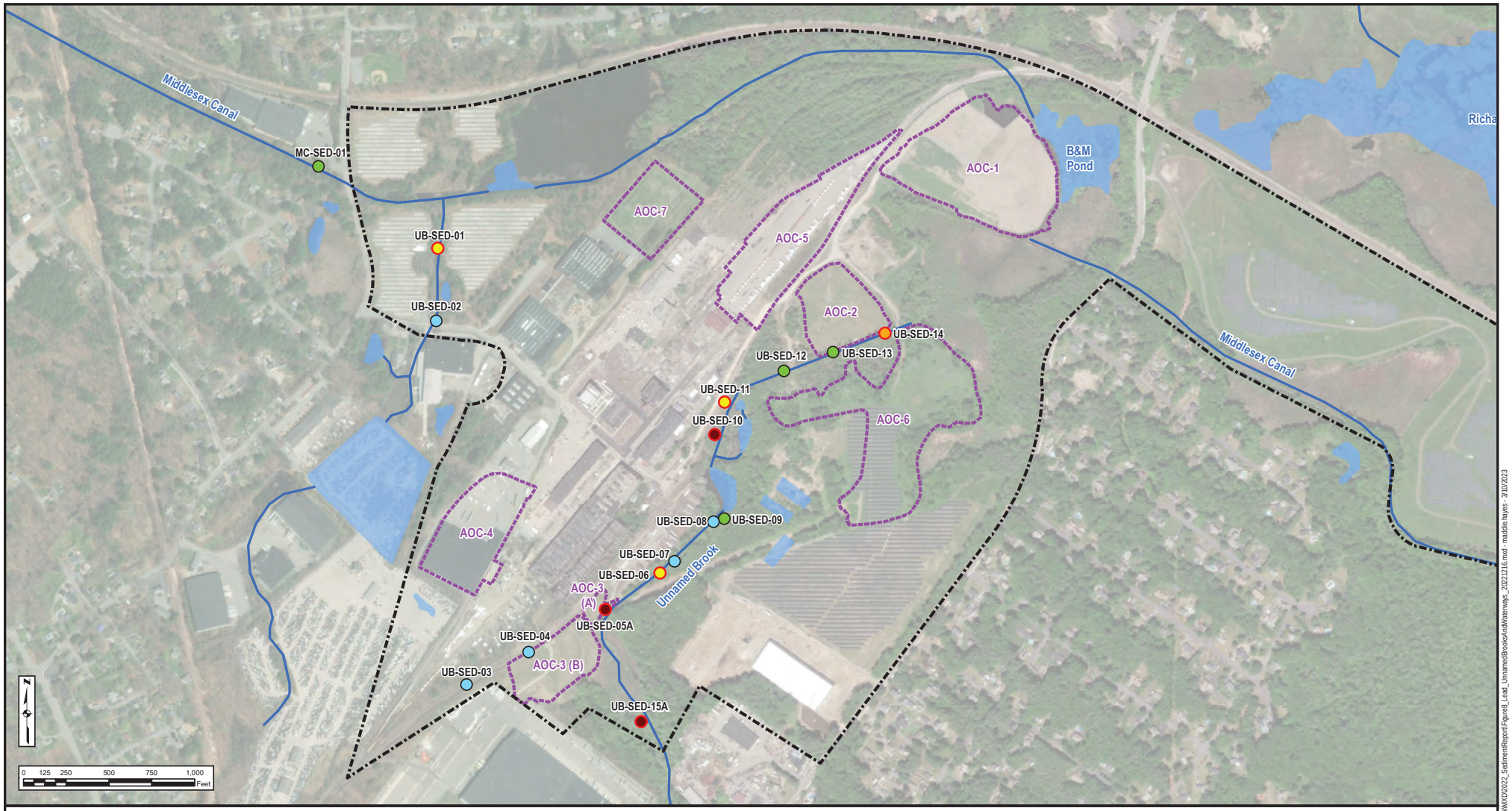


Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Lead in Sediment

- Non-Detect
- <57 mg/kg
- 57 - 115 mg/kg
- 115 - 230 mg/kg
- 230 - 460 mg/kg
- >460 mg/kg

NOTES

- Data collected from September 2022 sampling event.
- 218 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Record of Decision Cleanup Level of 115 mg/kg.

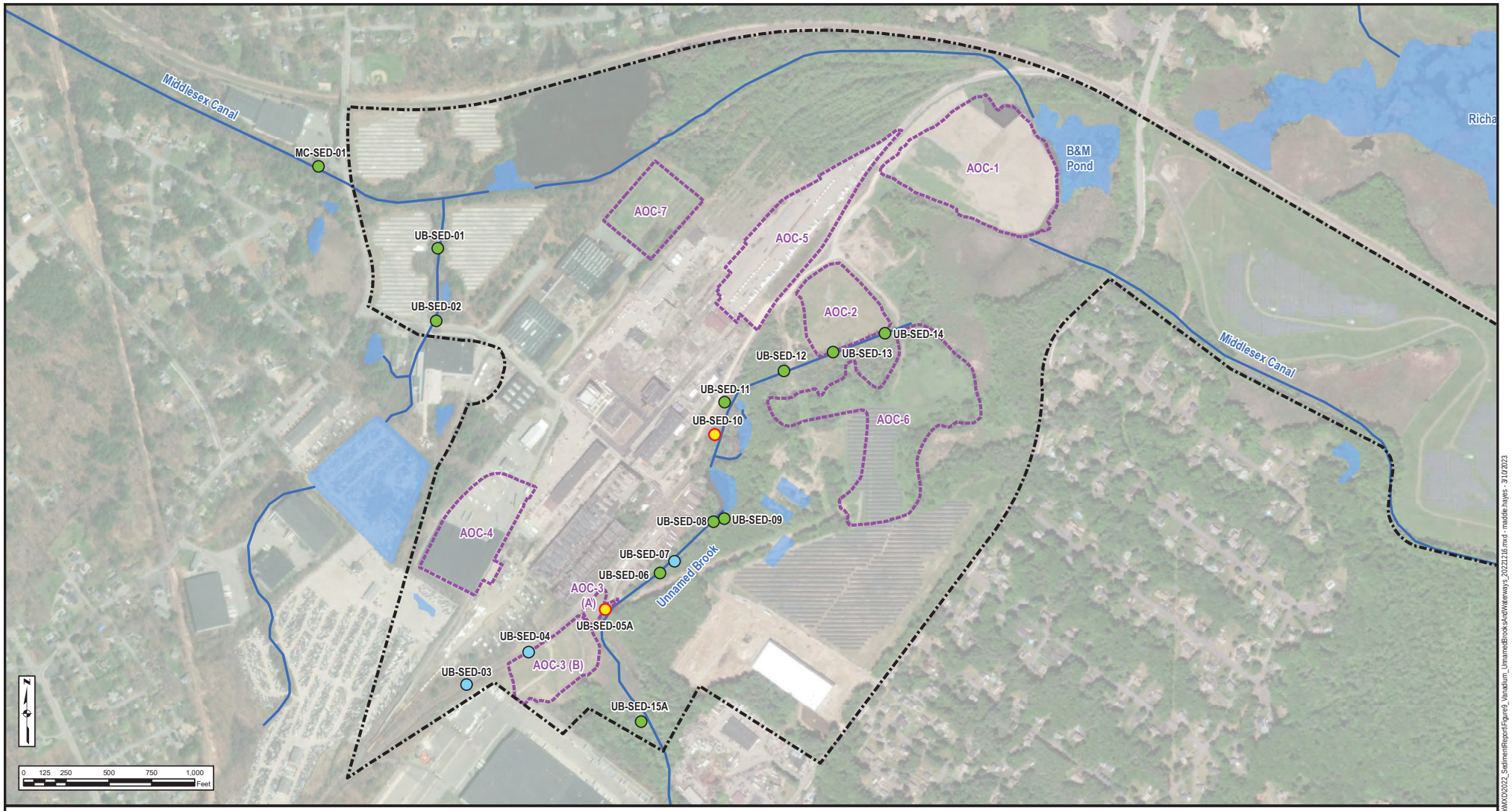
AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 46: Lead Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\P-R\Parw\Am_Rail\Iron Horse Park\MXD\2022_Sediment\Report\Figure8_Lead_UnnamedBrooksAndWaterways_20221216.mxd - maddie.hayes - 3/10/2023



Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Vanadium in Sediment

- Non-Detect
- <11 mg/kg
- 11 - 23 mg/kg
- 23 - 46 mg/kg
- 46 - 92 mg/kg
- >92 mg/kg

NOTES

- Data collected from September 2022 sampling event.
- 57 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Record of Decision Cleanup Level of 23 mg/kg.

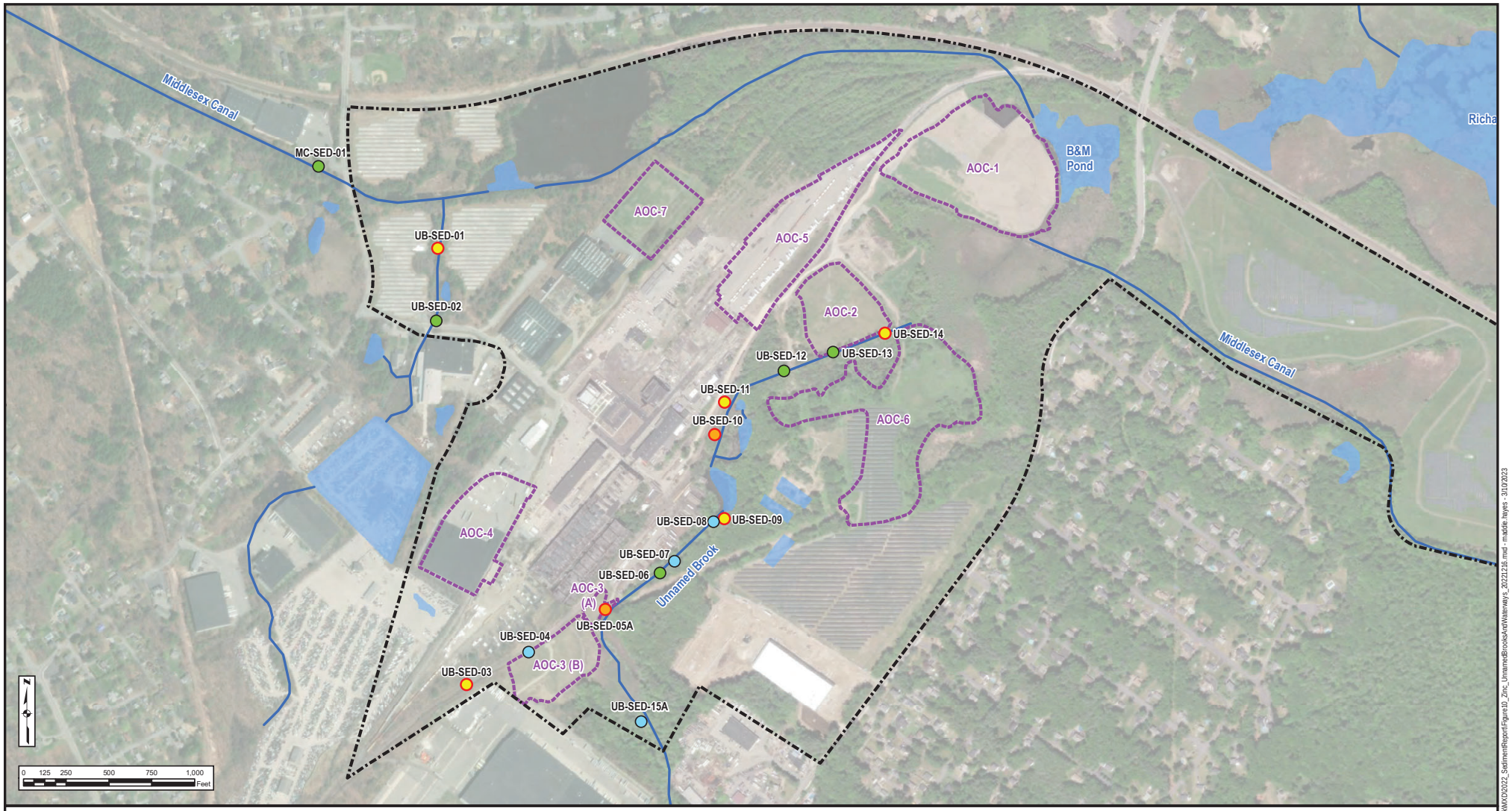
AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 47: Vanadium Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

M:\US\Projects\IP-RI\arvAm_Rail\Iron Horse Park\MXD\2022_Sediment\Report\Figure9_Vanadium_UnnamedBrookAndWaterways_20221216.mxd - maddie.hayes - 3/10/2023



Legend

- Iron Horse Park Site Boundary
- AOC Boundary
- Stream
- Water Bodies

Zinc in Sediment

- Non-Detect
- <64 mg/kg
- 64 - 128 mg/kg
- 128 - 256 mg/kg
- 256 - 512 mg/kg
- >512 mg/kg

NOTES

- Data collected from September 2022 sampling event.
- 410 mg/kg threshold based on Effects Range-Medium (ER-M) guideline value for trace metals (ppm, dry wt.). Value taken from NOAA Screening Quick Reference Table (SQuiRTs).
- Red ring indicates exceedance of the Record of Decision Cleanup Level of 128 mg/kg.

AREAS OF CONCERN

- **AOC 1** B&M Railroad Landfill
- **AOC 2** RSI Landfill
- **AOC 3** B&M Locomotive Shop Disposal Areas (Areas A & B)
- **AOC 4** Old B&M Oil/Sludge Recycling Area
- **AOC 5** Contaminated Soils Area
- **AOC 6** Asbestos Landfill
- **AOC 7** Asbestos Lagoons

Figure 48: Zinc
Sediment Exceedance Map
Unnamed Brooks and Waterways
Operable Unit 4
Iron Horse Park Superfund Site
Billerica, Massachusetts

ERM

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Table 1
Groundwater Sampling Matrix

Iron Horse Park
Billerica, Massachusetts

Well ID	Location	Formation Screened	Water Level Measurements	Sample Analyses								Rationale
				Landfill Indicator[1]/Water Quality Parameters[2]	VOCs	SVOCs	PCBs	Pesticides	1,4-Dioxane	Cyanide	Metals[3]	
OU3 Monitoring Wells												
MW-213B	AOC 1	BR	X	S	S				S		S	Downgradient; VOCs & 1,4-dioxane detected in area wells
MW-213D	AOC 1	DOB	X	S	S	S	S		S		S	Downgradient; VOCs, 1,4-dioxane, and PCBs detected in area wells; SVOCs for post-RA observation.
MW-213S	AOC 1	SOB	X	S	S	S	S	S	S		S	Downgradient; VOCs, 1,4-dioxane, and PCBs detected in area wells; SVOCs and Pesticides for post-RA observation.
MW-214B	AOC 1	BR	X	S	S				S		S	Downgradient; VOCs & 1,4-dioxane detected in area wells.
MW-214D	AOC 1	DOB	X	S	S	S	S		S		S	Downgradient; VOCs and 1,4-dioxane detected in area wells; SVOCs for post-RA observation; PCBs based on elevated detections in shallow OB.
MW-214S	AOC 1	SOB	X	S	S	S	S	S	S		S	Downgradient; VOCs and 1,4-dioxane detected in area wells; SVOCs and Pesticides for post-RA observation; elevated PCBs detected.
MW-215B	AOC 1	BR	X	S	S				S		S	Downgradient; VOCs & 1,4-dioxane detected in area wells
MW-215D	AOC 1	DOB	X	S	S	S	S		S		S	Downgradient; VOCs and 1,4-dioxane detected in area wells; SVOCs for post-RA observation; PCBs based on elevated detections in shallow OB.
MW-215S	AOC 1	SOB	X	S	S	S	S	S	S		S	Downgradient; VOCs and 1,4-dioxane detected in area wells; SVOCs and Pesticides for post-RA observation; elevated PCBs detected.
OW-49	AOC 1	BR	X	S	S				S		S	Downgradient; VOCs & 1,4-dioxane detected in area wells
OW-50	AOC 1	DOB	X	S	S	S	S	S	S		S	Downgradient; VOCs, 1,4-dioxane, and PCBs detected in area wells; SVOCs and Pesticides for post-RA observation
OW-51	AOC 1	SOB	X	S	S	S	S	S	S		S	Downgradient; VOCs, 1,4-dioxane, and PCBs detected in area wells; SVOCs and Pesticides for post-RA observation
PZ-113	AOC 1	SOB										Destroyed during capping.
PZ-114	AOC 1	SOB										Destroyed during capping.
PZ-115	AOC 1	SOB										Destroyed during capping.
MW-210B	AOC 2	BR	X		S						S	Downgradient; Continue VOCs due to upgradient detections in MW-207B. Metals initially.
MW-210S	AOC 2	SOB	X	S							S	Downgradient; No VOC or 1,4-dioxane detections.
MW-211B	AOC 2	BR	X									Only add if a concern in DOB
MW-211D	AOC 2	DOB	X	S	S				S		S	Downgradient; VOC detections; check for 1,4-dioxane due to shallow detect.
MW-211S	AOC 2	SOB	X	S	S				S		S	Downgradient; VOC & 1,4-dioxane detections.
MW-212B	AOC 2	BR	X									Only add if a concern in DOB
MW-212D	AOC 2	DOB	X	S							S	Downgradient; No VOC or 1,4-dioxane detections.
MW-212S	AOC 2	SOB	X	S							S	Downgradient; No VOC or 1,4-dioxane detections.
OW-01	AOC 2	BR	X									Add if MW-210 cluster shows elevated detections
OW-02	AOC 2	DOB	X									Add if MW-210 cluster shows elevated detections
OW-03	AOC 2	SOB	X									Add if MW-210 cluster shows elevated detections
PZ-110	AOC 2	SOB										Destroyed during capping.
PZ-111	AOC 2	SOB										Destroyed during capping.
PZ-112	AOC 2	SOB										Destroyed during capping.
MW-204B	AOC 3	BR	X									Historical results not significant.
MW-204D	AOC 3	DOB	X									Historical results not significant.
MW-204S	AOC 3	SOB	X	S	S	S					S	Upgradient; VOCs detected in area well (OW-40); elevated metals detections; SVOCs for post-RA observation.
MW-205B	AOC 3	BR	X									Historical results not significant.
MW-205D	AOC 3	DOB	X									Historical results not significant.
MW-205S	AOC 3	SOB	X	S	S	S					S	Downgradient; VOCs detected in area well (OW-40); elevated metals detections; SVOCs for post-RA observation.
MW-206B	AOC 3	BR	X									Historical results not significant.
MW-206D	AOC 3	DOB	X		S							Check VOCs for any downward migration due to detections in OW-40; historical metals detections not signficant.
MW-206S	AOC 3	SOB	X	S	S	S			S		S	Downgradient; VOCs detected in area well (OW-40); metals, SVOCs and 1,4-dioxane for post-RA observation.
OW-39	AOC 3	DOB	X									Historical results not significant.
OW-40	AOC 3	SOB	X	S	S	S			S		S	Downgradient; VOCs detected; elevated metals detections; SVOCs and 1,4-dioxane for post-RA observation.
PZ-104A	AOC 3	SOB										Destroyed during capping.
PZ-104B	AOC 3	SOB										Destroyed during capping.
PZ-105A	AOC 3	SOB										Destroyed.
PZ-105B	AOC 3	SOB										Destroyed during capping.
PZ-106A	AOC 3	SOB										Destroyed during capping.
PZ-106B	AOC 3	SOB										Destroyed during capping.
MW-202B	AOC 4	BR	X		S				S			Most directly downgradient; check BR for VOCs and 1,4-dioxane to confirm no downward migration
MW-202D	AOC 4	DOB	X		S				S		S	Most directly downgradient; elevated metals in shallow well; check DOB for VOCs and 1,4-dioxane due to chlorinated VOC detections in area.
MW-202S	AOC 4	SOB	X		S				S		S	Most directly downgradient; elevated metals and VOCs; check for 1,4-dioxane due to chlorinated VOC detections in area.
MW-203B	AOC 4	BR	X									Historical results not significant.
MW-203D	AOC 4	DOB	X									Historical results not significant.
MW-203S	AOC 4	SOB	X								S	Down/side gradient; no VOCs detected; elevated metals.
MW-301B	AOC 4	BR	X									Upgradient; Historical results not significant
MW-301D	AOC 4	DOB	X									Upgradient; Historical results not significant
MW-301S	AOC 4	SOB	X								S	Upgradient; had minor VOC detections one round, but not site contaminants; elevated metals.
MW-302S	AOC 4	SOB	X		S							Downgradient; monitor source area for VOC migration
MW-303S	AOC 4	SOB	X		S						S	Down/side gradient; elevated metals; monitor source area for VOC migration.

Table 1
Groundwater Sampling Matrix

Iron Horse Park
Billerica, Massachusetts

Well ID	Location	Formation Screened	Water Level Measurements	Sample Analyses								Rationale
				Landfill Indicator[1]/Water Quality Parameters[2]	VOCs	SVOCs	PCBs	Pesticides	1,4-Dioxane	Cyanide	Metals[3]	
OU3 Monitoring Wells												
PZ-102	AOC 4	SOB										Historical results not significant.
PZ-103	AOC 4	SOB										Historical results not significant.
MW-207B	AOC 5	BR	X		S					S		Upgradient for AOC 2 (possibly AOC 6); elevated CN and VOCs
MW-304B	AOC 5	BR	X									Historical results not significant.
MW-304D	AOC 5	DOB	X									Historical results not significant.
MW-304S	AOC 5	SOB	X									Metals results not significant.
OW-25	AOC 5	DOB	X		S				S	S	S	Upgradient for AOC 2 (possibly AOC 6); elevated CN, metals and VOCs; 1,4-dioxane due to detections in MW-305D and detections of chlorinated VOCs in cluster
OW-26	AOC 5	SOB	X								S	Upgradient for AOC 2 (possibly AOC 6); elevated metals
OW-27	AOC 5	SOB										Duplicate shallow overburden well
OW-34	AOC 5	BR	X								S	Upgradient for AOC 1; elevated metals
OW-35	AOC 5	DOB	X								S	Upgradient for AOC 1; elevated metals
OW-36	AOC 5	SOB	X								S	Upgradient for AOC 1; elevated metals
OW-37	AOC 5	BR	X		S						S	Upgradient; elevated VOCs and metals
OW-38	AOC 5	DOB	X		S						S	Upgradient; elevated VOCs and metals. Look for 1,4-dioxane if found upgradient.
OW-47	AOC 5	DOB	X									Historical results not significant.
OW-48	AOC 5	SOB	X									Historical results not significant.
P-17	AOC 5	SOB	X									Historical results not significant.
P-9	AOC 5	SOB	X									Historical results not significant.
MW-305D	AOC 6	DOB	X		S				S		S	Upgradient; elevated 1,4-dioxane, VOCs, and metals in area wells.
MW-305S	AOC 6	SOB	X	S	S				S		S	Upgradient; elevated 1,4-dioxane, VOCs, and metals in area wells; Water quality parameters for OU4 GW discharge purposes.
MW-306S	AOC 6	SOB	X						S		S	Upgradient ; no VOC detections in 4 rounds; elevated 1,4-dioxane and metals in area wells
MW-307B	AOC 6	BR	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, and metals in area wells; elevated SVOCs
MW-307D	AOC 6	DOB	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, and metals in area wells; elevated SVOCs
MW-307S	AOC 6	SOB	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, and metals in area wells; elevated SVOCs in DOB and BR
MW-308B	AOC 6	BR	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, SVOCs, and metals in area wells
OW-07	AOC 6	DOB	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, SVOCs, and metals in area wells
OW-08	AOC 6	SOB	X		S	S			S		S	Downgradient; elevated 1,4-dioxane, VOCs, SVOCs, and metals in area wells
OW-28	AOC 6	BR	X		S				S		S	Upgradient bedrock; elevated 1,4-dioxane, VOCs, and metals in area wells
OW-29	AOC 6	DOB	X		S				S		S	Upgradient DOB; elevated 1,4-dioxane, VOCs, and metals in area wells
OW-30	AOC 6	SOB										Upgradient, but closer SOB well (MW-306S) is more appropriate for monitoring
OW-31	AOC 6	SOB										Upgradient, but closer SOB well (MW-306S) is more appropriate for monitoring
MW-208B	AOC 7	BR	X									Part of AOC 7 monitoring program, being performed by others.
MW-208D	AOC 7	DOB	X									Part of AOC 7 monitoring program, being performed by others.
MW-208S	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
MW-209B	AOC 7	BR	X									Part of AOC 7 monitoring program, being performed by others.
OW-09	AOC 7	BR	X									Part of AOC 7 monitoring program, being performed by others.
OW-10	AOC 7	DOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-11	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-12	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-13	AOC 7	DOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-14	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-20	AOC 7	DOB	X									Part of AOC 7 monitoring program, being performed by others.
OW-21	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
P-5	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
PZ-107	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
PZ-108	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.
PZ-109	AOC 7	SOB	X									Part of AOC 7 monitoring program, being performed by others.

Table 1
Groundwater Sampling Matrix

Iron Horse Park
Billerica, Massachusetts

Well ID	Location	Formation Screened	Water Level Measurements	Sample Analyses								Rationale
				Landfill Indicator[1]/Water Quality Parameters[2]	VOCs	SVOCs	PCBs	Pesticides	1,4-Dioxane	Cyanide	Metals[3]	
OU4 Monitoring Wells												
MW-01	DG	BR	X								S	Metals above performance standards
MW-01A	DG	DOB										Historical results not significant.
MW-01B	DG	DOB	X								S	Metals above performance standards
MW-01C	DG	SOB										Historical results not significant.
SEN-1S	DG	SOB	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-1D	DG	DOB	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-1B	DG	BR	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-2S	DG	SOB	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-2D	DG	DOB	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-2B	DG	BR	X		Q	Q		Q			Q	Sentinel well along eastern Site boundary to monitor groundwater near residential area. Pesticide analysis to next be conducted in 2028.
SEN-3S	DG	SOB	X		Q	Q		Q			Q	Sentinel well along northern Site boundary to monitor groundwater migrating offsite. Pesticide analysis to next be conducted in 2028.
SEN-3D	DG	DOB	X		Q	Q		Q			Q	Sentinel well along northern Site boundary to monitor groundwater migrating offsite. Pesticide analysis to next be conducted in 2028.
SEN-3B	DG	BR	X		Q	Q		Q			Q	Sentinel well along northern Site boundary to monitor groundwater migrating offsite. Pesticide analysis to next be conducted in 2028.
Other site monitoring wells not being sampled												
OW-04	OU1	DOB										No ongoing monitoring program for OU1.
OW-05	OU1	BR										No ongoing monitoring program for OU1.
OW-06	OU1	DOB										No ongoing monitoring program for OU1.
OW-22	OU1	BR										No ongoing monitoring program for OU1.
OW-23	OU1	DOB										No ongoing monitoring program for OU1.
OW-24	OU1	DOB										No ongoing monitoring program for OU1.
P-10	OU1	SOB										No ongoing monitoring program for OU1.
P-18	OU1	SOB										No ongoing monitoring program for OU1.
MW-200B	UG	BR										Historical results not significant.
MW-200D	UG	DOB										Historical results not significant.
MW-200S	UG	SOB										Historical results not significant.
OW-15	UG	DOB										Historical results not significant.
OW-16	UG	SOB										Historical results not significant.
OW-32	UG	DOB										Historical results not significant.
OW-33	UG	SOB										Historical results not significant.
OW-44	UG	BR										Historical results not significant.
OW-45	UG	DOB										Historical results not significant.
OW-46	UG	SOB										Historical results not significant.
OW-52	UG	BR										Historical results not significant.
OW-53	UG	DOB										Historical results not significant.
P-1	UG	SOB										Historical results not significant.
P-2	UG	SOB										Historical results not significant.
		Total:	**98**	**22**	**48**	**27**	**8**	**14**	**31**	**2**	**56**	

Notes:

1. Landfill Indicators include alkalinity, nitrate nitrogen, total dissolved solids, chloride, calcium, sodium, iron, manganese, sulfate, and chemical oxygen demand.
2. Water quality parameters include pH, temperature, specific conductance, oxidation-reduction potential, dissolved oxygen, and turbidity.
3. Total metals include arsenic, barium, cadmium, chromium, copper, lead, selenium, silver, zinc, manganese, and mercury.

S = Well to be sampled semiannually pending future updates to sampling plan.
Q = Well to be sampled quarterly pending future updates to sampling plan.
Shaded cells indicate that a monitoring well location has been destroyed

AOC = Area of Concern
OU = Operable Unit
DG = Downgradient
UG = Upgradient
SOB = Shallow Overburden
DOB = Deep Overburden
BR = Bedrock
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls

Table 2
Surface Water Sampling Matrix

Iron Horse Park
Billerica, Massachusetts

Location ID	Location Description	Sample Analysis								Rationale
		Water Level Measurements	Landfill Indicator[1]/Water Quality Parameters[2]	VOCs	SVOCs	PCBs	Pesticides	1,4-Dioxane	Metals	
SW-A1	Western shoreline of B&M Pond	X	X	X	X	X	X	X	X[3]	Based on Pre-Design investigation results
SW-A2	Northern edge of AOC-6	X	X	X					X[3]	Based on Pre-Design investigation results
SW-A3	Northeast of AOC-3	X	X	X	X			X	X[3]	Based on Pre-Design investigation results
SW-A4	Unnamed Stream	X			X				X[4]	OU4 Sediment Parameters
SW-A5	Unnamed Brook	X			X				X[4]	OU4 Sediment Parameters

Notes:

1. Landfill Indicator analyses include: alkalinity, hardness, nitrate nitrogen, total dissolved solids, chloride, metals (calcium, iron, manganese, sodium) sulfate, and chemical oxygen demand.
2. Water quality parameters include pH, dissolved oxygen, specific conductivity, temperature, and turbidity.
3. Total metals include: arsenic, cadmium, chromium, copper, lead, vanadium, and zinc.
4. Total metals include: chromium, copper, lead, vanadium, and zinc.
5. If below standards for two rounds, surface water sampling for VOCs will be evaluated and may be discontinued, pending USEPA/MassDEP review and approval.

OU = Operable Unit
AOC = Area of Concern
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls

Table 3
Per- and Polyfluoroalkyl Substances (PFAS) Sampling Well Locations

Iron Horse Park Superfund Site
Billerica, Massachusetts

Well ID	Location	Formation Screened	Rationale	Depth to Top of Screen (feet)	Depth to Bottom of Screen (feet)
MW-01	DG	BR	Confirmation of Site Containment	63	65
MW-01B	DG	DOB	Confirmation of Site Containment	34	36
MW-204S	AOC 3	SOB	Investigate Presence of PFAS at AOC 3	13.8	23.8
MW-205S	AOC 3	SOB	Investigate Presence of PFAS at AOC 3	10	20
MW-206D	AOC 3	DOB	Investigate Presence of PFAS at AOC 3	12.9	22.9
MW-206S	AOC 3	SOB	Investigate Presence of PFAS at AOC 3	6.9	16.9
MW-210B	AOC 2	BR	Investigate Presence of PFAS at AOC 2	23.5	43.5
MW-210S	AOC 2	SOB	Investigate Presence of PFAS at AOC 2	4.5	9.5
MW-211D	AOC 2	DOB	Investigate Presence of PFAS at AOC 2	15.6	25.6
MW-211S	AOC 2	SOB	Investigate Presence of PFAS at AOC 2	5	15
MW-212D	AOC 2	DOB	Investigate Presence of PFAS at AOC 2	14.7	24.7
MW-212S	AOC 2	SOB	Investigate Presence of PFAS at AOC 2	5.1	15.1
MW-213B	AOC 1	BR	Investigate Presence of PFAS at AOC 1	64.1	84.1
MW-213D	AOC 1	DOB	Investigate Presence of PFAS at AOC 1	41.3	51.3
MW-213S	AOC 1	SOB	Investigate Presence of PFAS at AOC 1	7.4	17.4
MW-214B	AOC 1	BR	Investigate Presence of PFAS at AOC 1	68.6	88.6
MW-214D	AOC 1	DOB	Investigate Presence of PFAS at AOC 1	42.5	52.5
MW-214S	AOC 1	SOB	Investigate Presence of PFAS at AOC 1	15.1	25.1
MW-215B	AOC 1	BR	Investigate Presence of PFAS at AOC 1	66.1	86.1
MW-215D	AOC 1	DOB	Investigate Presence of PFAS at AOC 1	39.6	49.6
MW-215S	AOC 1	SOB	Investigate Presence of PFAS at AOC 1	10	20
MW-301S	AOC 4	SOB	Establish Upgradient PFAS Concentrations	4.1	14.1
MW-303S	AOC 4	SOB	Establish Upgradient PFAS Concentrations	1.3	11.3
OW-40	AOC 3	SOB	Investigate Presence of PFAS at AOC 3	3.91	8.91
OW-49	AOC 1	BR	Confirmation of Site Containment	50	70
OW-50	AOC 1	DOB	Confirmation of Site Containment	28	43
OW-51	AOC 1	SOB	Confirmation of Site Containment	4	19
SEN-1B	DG	BR	Confirmation of Site Containment	44	49
SEN-1D	DG	DOB	Confirmation of Site Containment	32	37
SEN-1S	DG	SOB	Confirmation of Site Containment	15	20
SEN-2B	DG	BR	Confirmation of Site Containment	41	46
SEN-2D	DG	DOB	Confirmation of Site Containment	26	31
SEN-2S	DG	SOB	Confirmation of Site Containment	15	20

Notes:
AOC = Area of Concern
DG = Downgradient
SOB = Shallow Overburden
DOB = Deep Overburden
BR = Bedrock
UG = Upgradient
OU = Operable Unit
USEPA = United States Environmental Protection Agency
USEPA Letter listed monitoring well MW-210D which does not exist. The well screen in Table 1 of the USEPA Letter was the screen interval for MW-210B, which has been corrected herein. Two upgradient locations (MW-301S and MW-303S) have been included as additional sample locations to the USEPA Letter.

Table
Se iment Sampling Matrix

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Analysis		
	Target COCs[1]	TOC	Grain Size
UB-SED-01	X	X	X
UB-SED-02	X	X	X
UB-SED-03	X	X	X
UB-SED-04	X	X	X
UB-SED-05	X	X	X
UB-SED-06	X	X	X
UB-SED-07	X	X	X
UB-SED-08	X	X	X
UB-SED-09	X	X	X
UB-SED-10	X	X	X
UB-SED-11	X	X	X
UB-SED-12	X	X	X
UB-SED-13	X	X	X
UB-SED-14	X	X	X
UB-SED-15	X	X	X
UB-SED-16	X	X	X

Notes:
1. Target COCs include total polycyclic aromatic hydrocarbons, 4,4'-dichlorodiphenyldichloroethane, total polychlorinated biphenyls, chromium, copper, lead, vanadium and zinc

COC = Contaminant of Concern

TOC = total organic carbon

Table 7

Summary of Groundwater Exceedances - June 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Volatile Organic Compounds						
OW-37	5	Bedrock	1,1-Dichloroethene	EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307B	6	Bedrock	1,2-Dichloroethane	5006-GPS-RES-CCC	Yes	
MW-307D	6	Deep Overburden		5006-GPS-RES-NCCC	Yes	
OW-28	6	Bedrock		EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307S	6	Shallow Overburden	Benzene	5006-GPS-RES-CCC 5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307S	6	Shallow Overburden	Chlorobenzene	EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	Has been above standard once previously in December 2020, has been trending upwards since Nov 2021
MW-207B	5	Bedrock	Tetrachloroethene	5006-GPS-RES-CCC 5006-GPS-RES-NCCC	Yes	
OW-37	5	Bedrock		EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
OW-38	5	Deep Overburden			Yes	
MW-207B	5	Bedrock	Trichloroethene	5006-GPS-RES-CCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-213B	1	Bedrock			No	Was above standard initially, has been below standard since 2018
MW-308B	6	Bedrock			Yes	
OW-37	5	Bedrock			Yes	
OW-49	1	Bedrock			Yes	
Semivolatile Organic Compounds						
MW-213B	1	Bedrock	1,4-Dioxane	MA-GW-1-2020	Yes	
MW-213D	1	Deep Overburden			Yes	
MW-213S	1	Shallow Overburden			Yes	
MW-305D	6	Deep Overburden			Yes	
MW-307B	6	Bedrock			Yes	
MW-307D	6	Deep Overburden			Yes	
MW-307S	6	Shallow Overburden			Yes	
MW-308B	6	Bedrock			Yes	
OW-28	6	Bedrock			Yes	
OW-29	6	Deep Overburden			Yes	
OW-49	1	Bedrock			Yes	
OW-50	1	Deep Overburden			Yes	

Table 7

Summary of Groundwater Exceedances - June 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Landfill Indicator Parameters						
MW-202S	4	Shallow Overburden			Yes	
MW-203S	4	Shallow Overburden			Yes	
MW-204S	3B	Shallow Overburden			Yes	
MW-210S	2	Shallow Overburden			Yes	
MW-211D	2	Deep Overburden			Yes	
MW-211S	2	Shallow Overburden			Yes	
MW-212D	2	Deep Overburden			Yes	
MW-212S	2	Shallow Overburden			Yes	
MW-213D	1	Deep Overburden			Yes	
MW-213S	1	Shallow Overburden			Yes	
MW-214S	1	Shallow Overburden			Yes	Above applicable standards since 2016
MW-215S	1	Shallow Overburden			Yes	
MW-301S	4	Shallow Overburden			Yes	
MW-305D	6	Deep Overburden			Yes	
MW-305S	6	Shallow Overburden	Manganese	5006-GPS-RES-NCCC	Yes	
OW-25	5	Deep Overburden			Yes	
OW-29	6	Deep Overburden			Yes	
OW-35	5	Deep Overburden			Yes	
OW-36	5	Shallow Overburden			No	Below standards in previous events
OW-37	5	Bedrock			Yes	
OW-38	5	Deep Overburden			Yes	
OW-40	3A	Shallow Overburden			Yes	
OW-49	1	Bedrock			Yes	
OW-50	1	Deep Overburden			Yes	
OW-51	1	Shallow Overburden			Yes	
SEN-2B	DG	Bedrock			Yes	
SEN-2D	DG	Deep Overburden			Yes	
SEN-2S	DG	Shallow Overburden			Yes	
SEN-3B	DG	Bedrock			Yes	
SEN-3D	DG	Deep Overburden			Yes	
SEN-3S	DG	Shallow Overburden			Yes	

Table 7

Summary of Groundwater Exceedances - June 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Cyanide						
MW-207B	5	Bedrock	Cyanide	MA-GW-3-2020	Yes	
Metals						
MW-203S	4	Shallow Overburden			Yes	
MW-210S	2	Shallow Overburden			Yes	
MW-211D	2	Deep Overburden			Yes	
MW-211S	2	Shallow Overburden			Yes	
MW-212D	2	Deep Overburden		5006-GPS-RES-CCC	Yes	
MW-212S	2	Shallow Overburden	Arsenic	5006-GPS-RES-NCCC	Yes	
MW-214S	1	Shallow Overburden		EPA-RSL-MCL-WG-THQ1.0	Yes	Above applicable standards since 2016
MW-301S	4	Shallow Overburden		MA-GW-1-2020	Yes	
MW-305S	6	Shallow Overburden			Yes	Has been on decreasing trend since December 2020
OW-25	5	Deep Overburden			Yes	
OW-26	5	Shallow Overburden			Yes	
OW-35	5	Deep Overburden			Yes	Has been above standard previously, dipped under in November of 2021 event
OW-51	1	Shallow Overburden			Yes	
SEN-3B	DG	Bedrock			Yes	
SEN-3S	DG	Shallow Overburden			Yes	
MW-303S	4	Shallow Overburden	Lead	5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020 MA-GW-3-2020	Yes	

Notes:

AOC is Area of Concern.
DG is downgradient.
GPS is Groundwater Performance Standard.
CCC is Carcinogenic Chemicals of Concern.
NCCC is Non-Carcinogenic Chemicals of Concern.
MCL is Maximum Contaminant Level.
GW-1 & GW-3 are Massachusetts Contingency Plan Groundwater Standards, Categories GW-1 & GW-3.

Table 8
Summary of Groundwater Exceedances - October 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Volatile Organic Compounds						
OW-37	5	Bedrock	1,1-Dichloroethene	EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307B	6	Bedrock	1,2-Dichloroethane	5006-GPS-RES-CCC 5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307D	6	Deep Overburden			Yes	
OW-28	6	Bedrock			Yes	
MW-307S	6	Shallow Overburden	Benzene	5006-GPS-RES-CCC 5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-307S	6	Shallow Overburden	Chlorobenzene	EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-207B	5	Bedrock	Tetrachloroethene	5006-GPS-RES-CCC 5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
OW-37	5	Bedrock			Yes	
OW-38	5	Deep Overburden			Yes	
MW-213B	1	Bedrock	Trichloroethene	5006-GPS-RES-CCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	
MW-308B	6	Bedrock			Yes	
OW-37	5	Bedrock			Yes	
OW-49	1	Bedrock			Yes	
Semivolatile Organic Compounds						
MW-213B	1	Bedrock	1,4-Dioxane	MA-GW-1-2020	Yes	
MW-213D	1	Deep Overburden			Yes	
MW-213S	1	Shallow Overburden			Yes	
MW-305D	6	Deep Overburden			Yes	
MW-307B	6	Bedrock			Yes	
MW-307D	6	Deep Overburden			Yes	
MW-307S	6	Shallow Overburden			Yes	
MW-308B	6	Bedrock			Yes	
OW-08	6	Shallow Overburden			Yes	Observed in May of 2021, did not exceed in two prior events
OW-28	6	Bedrock			Yes	
OW-29	6	Deep Overburden			Yes	
OW-49	1	Bedrock			Yes	
OW-50	1	Deep Overburden			Yes	
MW-307B	6	Bedrock	Dichloroethyl ether	5006-GPS-RES-CCC 5006-GPS-RES-NCCC	Yes	Below applicable standards in May event, above standards historically
MW-307D	6	Deep Overburden			Yes	Below applicable standards in May event, above standards historically

Table 8
Summary of Groundwater Exceedances - October 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Landfill Indicator Parameters						
MW-202S	4	Shallow Overburden			Yes	
MW-203S	4	Shallow Overburden			Yes	
MW-204S	3B	Shallow Overburden			Yes	
MW-210S	2	Shallow Overburden			Yes	
MW-211D	2	Deep Overburden			Yes	
MW-211S	2	Shallow Overburden			Yes	
MW-212D	2	Deep Overburden			Yes	
MW-212S	2	Shallow Overburden			Yes	
MW-213D	1	Deep Overburden			Yes	
MW-213S	1	Shallow Overburden			Yes	
MW-214S	1	Shallow Overburden			Yes	
MW-215S	1	Shallow Overburden			Yes	
MW-301S	4	Shallow Overburden			Yes	
MW-305D	6	Deep Overburden			Yes	
MW-305S	6	Shallow Overburden			Yes	
MW-308B	6	Bedrock			Yes	Historically above standard, was below standard in June of 2022
OW-07	6	Deep Overburden	Manganese	5006-GPS-RES-NCCC	Yes	Historically above standard, was below standard in June of 2022
OW-08	6	Shallow Overburden			Yes	Historically above standard, was below standard in June of 2022
OW-25	5	Deep Overburden			Yes	
OW-29	6	Deep Overburden			Yes	
OW-35	5	Deep Overburden			Yes	
OW-36	5	Shallow Overburden			Yes	
OW-37	5	Bedrock			Yes	
OW-38	5	Deep Overburden			Yes	
OW-40	3A	Shallow Overburden			Yes	
OW-49	1	Bedrock			Yes	
OW-50	1	Deep Overburden			Yes	
OW-51	1	Shallow Overburden			Yes	
SEN-2B	DG	Bedrock			Yes	
SEN-2D	DG	Deep Overburden			Yes	
SEN-2S	DG	Shallow Overburden			Yes	
SEN-3B	DG	Bedrock			Yes	
SEN-3D	DG	Deep Overburden			Yes	
SEN-3S	DG	Shallow Overburden			Yes	

Table 8
Summary of Groundwater Exceedances - October 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Geologic Unit	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Cyanide						
MW-207B	5	Bedrock	Cyanide	MA-GW-3-2020	Yes	
Metals						
MW-202S	4	Shallow Overburden	Arsenic	5006-GPS-RES-CCC 5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	Yes	Historically below standards in the summer and above in the winter
MW-203S	4	Shallow Overburden			Yes	
MW-210S	2	Shallow Overburden			Yes	
MW-211D	2	Deep Overburden			Yes	
MW-211S	2	Shallow Overburden			Yes	
MW-212D	2	Deep Overburden			Yes	
MW-212S	2	Shallow Overburden			Yes	
MW-214S	1	Shallow Overburden			Yes	
MW-301S	4	Shallow Overburden			Yes	
MW-303S	4	Shallow Overburden			No	Below applicable standards in previous events.
MW-305D	6	Deep Overburden			Yes	Below standards in previous two events
OW-08	6	Shallow Overburden			No	Historically above standard, was below standard in June of 2022
OW-25	5	Deep Overburden			Yes	
OW-26	5	Shallow Overburden			Yes	
OW-35	5	Deep Overburden			Yes	
OW-51	1	Shallow Overburden			Yes	
SEN-3B	DG	Bedrock			Yes	
SEN-3S	DG	Shallow Overburden			Yes	
MW-214S	1	Shallow Overburden	Lead	5006-GPS-RES-NCCC EPA-RSL-MCL-WG-THQ1.0 MA-GW-1-2020	No	Below applicable standards in previous events.
MW-303S	4	Shallow Overburden		MA-GW-3-2020	Yes	

Notes:

AOC is Area of Concern.
DG is downgradient.
GPS is Groundwater Performance Standard.
CCC is Carcinogenic Chemicals of Concern.
NCCC is Non-Carcinogenic Chemicals of Concern.
MCL is Maximum Contaminant Level.
GW-1 & GW-3 are Massachusetts Contingency Plan Groundwater Standards, Categories GW-1 & GW-3.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals, PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Bedrock MW-213B 26-Jun-17 N	AOC1 Bedrock MW-213B 10-Jan-18 N	AOC1 Bedrock MW-213B 16-Dec-20 N	AOC1 Bedrock MW-213B 11-May-21 N	AOC1 Bedrock MW-213B 04-Nov-21 N	AOC1 Bedrock MW-213B 29-Jun-22 N	AOC1 Bedrock MW-213B 26-Oct-22 N	AOC1 Deep Overburden MW-213D 27-Jun-17 N	AOC1 Deep Overburden MW-213D 10-Jan-18 N	AOC1 Deep Overburden MW-213D 10-Dec-20 N	AOC1 Deep Overburden MW-213D 04-Nov-21 N	AOC1 Deep Overburden MW-213D 29-Jun-22 N	AOC1 Deep Overburden MW-213D 26-Oct-22 N	AOC1 Shallow Overburden MW-213S 26-Jun-17 N	AOC1 Shallow Overburden MW-213S 26-Jun-17 FD	AOC1 Shallow Overburden MW-213S 10-Jan-18 N	AOC1 Shallow Overburden MW-213S 10-Jan-18 FD	AOC1 Shallow Overburden MW-213S 10-Dec-20 N	AOC1 Shallow Overburden MW-213S 10-Dec-20 FD	AOC1 Shallow Overburden MW-213S 11-May-21 N	AOC1 Shallow Overburden MW-213S 11-May-21 FD	AOC1 Shallow Overburden MW-213S 04-Nov-21 N
Cyanide, µg/L																											
Cyanide	µg/L	NS	NS	200	200	**30**								*< 5*	*< 5*					*7*	6	*< 5*	*< 5*					
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS			165,000 J	155,000 J	140,000	141,000	126,000	110,000	88,500	124,000 J	123,000	128,000	126,000	623,000	709,000	718,000 J	225,000 J	862,000	845,000	773,000 J	773,000 J	362,000
Nitrate as N	µg/L	NS	NS	10,000	NS	NS			*< 100*	*< 100*	*< 100*	45 J	*< 100*	*< 100*	*< 100*	571	23 J	*< 100*	*< 100*	372	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	38 J	*< 100*	28 J
Chloride	µg/L	NS	NS	NS	NS	NS			110,000	89,000	110,000	94,000	89,000	140,000	160,000	170,000	170,000	160,000	180,000	88,000	86,000	110,000	110,000	130,000	130,000	85,000	84,000	130,000
Sulfate	µg/L	NS	NS	NS	NS	NS			14,000	*< 10,000*	12,000	16,000	10,000	10,000	15,000	11,000	11,000	12,000	16,000	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	20,000	*< 10,000*	*< 10,000*
Total dissolved solids	µg/L	NS	NS	NS	NS	NS			380,000	350,000	350,000	370,000	300,000	390,000	420,000	440,000	460,000	520,000	490,000	1,000,000	1,000,000	1,000,000	980,000	1,200,000	1,200,000	1,100,000	1,100,000	700,000
Calcium	µg/L	NS	NS	NS	NS	NS				56,400	64,000	58,600	50,700	52,000	60,600 J	64,100	65,300	70,000	68,400	63,600	63,900	53,400 J	55,900 J	40,600	39,700	46,600	47,800	34,100
Iron	µg/L	NS	NS	NS	NS	NS				1,530	1,280	819	736 J	242	213	314	342	199	137 J	14,800	14,600	20,600	21,400	16,700	16,400	11,900	11,900	30,700
Manganese	µg/L	NS	**300**	NS	NS	NS			**375.3**	**349.1**	**339.1**	255.5	249.8	**432.7**	**622.0**	**942.3**	**861.8**	**959.9**	**717.2**	**1,182**	**1,164**	**2,296**	**2,421**	**1,064**	**1,032**	**782.1**	**756.7**	**5,443**
Sodium	µg/L	NS	NS	NS	NS	NS		59,600 J		49,900	64,500	52,200	49,300 J	75,600 J	75,900 J	74,200	74,100	67,200	71,400 J	260,000 J	266,000 J	251,000 J	259,000 J	363,000	351,000	294,000	296,000	186,000
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS			*< 20,000*	27,000	9,500 J	*< 20,000*	*< 20,000*	21,000	*< 20,000*	44,000	18,000 J	*< 20,000*	10,000 J	230,000	210,000	200,000	190,000	260,000	260,000	200,000	210,000	120,000
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	4.40	3.94	3.41	3.90	2.67	2.14	2.27	0.38 J	0.34 J	0.51	0.58	0.18 J	0.30 J	1.00	0.90	0.82	0.91	2.56	2.25	1.48	1.67	1.37
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	5.41	11.18			11.56	8.78	7.40	72.81	67.60		78.06	75.13	87.31	**2,559**	**2,610**	**2,214**	**2,221**	**2,180**	**2,136**			975.2
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.13 J	0.22	0.25	0.24	0.09 J	0.08 J	*< 0.20*	0.14 J	*< 0.20*	*< 0.20*	0.12 J	0.07 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.08 J	0.08 J	0.10 J
Calcium	µg/L	NS	NS	NS	NS	NS				56,400	64,000	58,600	50,700	52,000	60,600 J	64,100	65,300	70,000	68,400	63,600	63,900	53,400 J	55,900 J	40,600	39,700	46,600	47,800	34,100
Chromium	µg/L	NS	NS	100	100	300	0.76 J	*< 1.00*			*< 1.09*	*< 1.00*	0.26 J	0.48 J	*< 1.00*		*< 1.22*	*< 1.00*	0.34 J	6.80	6.78	*< 6.7*	*< 6.84*	7.57	7.67			4.09
Cobalt	µg/L	NS	NS	NS	NS	NS																		1.32	1.26			
Copper	µg/L	NS	NS	1,300	NS	NS	*< 3.57*	*< 1.85*			1.93	2.99	*< 1.00*	*< 2.45*	*< 1.00*		2.14	1.17	0.81 J	*< 1.04*	*< 1.00*	*< 1.22*	*< 1.00*	1.62	1.27			3.91
Iron	µg/L	NS	NS	NS	NS	NS				1,530	1,280	819	736 J	242	213	314	342	199	137 J	14,800	14,600	20,600	21,400	16,700	16,400	11,900	11,900	30,700
Lead	µg/L	NS	**15**	**15**	**15**	**10**	1.01	1.27	2.30	3.00	1.11	0.89 J	*< 1.00*	1.35	*< 1.00*	*< 1.00*	1.34	*< 1.00*	0.47 J	3.94	3.94	4.66	4.80	**10.96**	9.81	7.09	6.55	8.43
Manganese	µg/L	NS	**300**	NS	NS	NS			**375.3**	**349.1**	**339.1**	255.5	249.8	**432.7**	**622.0**	**942.3**	**861.8**	**959.9**	**717.2**	**1,182**	**1,164**	**2,296**	**2,421**	**1,064**	**1,032**	**782.1**	**756.7**	**5,443**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS		59,600 J		49,900	64,500	52,200	49,300 J	75,600 J	75,900 J	74,200	74,100	67,200	71,400 J	260,000 J	266,000 J	251,000 J	259,000 J	363,000	351,000	294,000	296,000	186,000
Zinc	µg/L	NS	NS	NS	5,000	900	8.26 J	9.67 J			*< 17.04*	9.96 J	*< 11.25*	8.76 J	4.26 J		*< 15.68*	5.01 J	*< 15.01*	44.56	42.72	19.62	19.01	211.4 J	148.7 J			130.3
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1221	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1232	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1248	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1254	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	0.055 J
Aroclor 1260	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1262	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1268	µg/L	NS	NS	NS	0.5	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10										*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	0.055 J
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
4,4'-DDE	µg/L	NS	NS	NS	0.05	400														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
4,4'-DDT	µg/L	NS	NS	NS	0.3	1														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Aldrin	µg/L	NS	NS	NS	0.5	30														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
alpha-Chlordane	µg/L	NS	NS	NS	2	2														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
trans-Chlordane	µg/L	NS	NS	NS	NS	NS														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
Chlordane	µg/L	NS	NS	NS	2	2														*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Endrin	µg/L	NS	NS	2	2	5														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Heptachlor	µg/L	NS	NS	0.4	0.4	1														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4														*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Endrin ketone	µg/L	NS	NS	NS	NS	NS														*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS														*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*
Methoxychlor	µg/L	NS	NS	40	40	10														*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Shallow Overburde MW-213S 04-Nov-21 FD	AOC1 Shallow Overburde MW-213S 22-Jun-22 N	AOC1 Shallow Overburde MW-213S 22-Jun-22 FD	AOC1 Shallow Overburde MW-213S 27-Oct-22 N	AOC1 Shallow Overburde MW-213S 27-Oct-22 FD	AOC1 Bedrock MW-214B 10-Dec-20 N	AOC1 Bedrock MW-214B 12-May-21 N	AOC1 Bedrock MW-214B 04-Nov-21 N	AOC1 Deep Overburde MW-214D 28-Jun-17 N	AOC1 Deep Overburde MW-214D 11-Jan-18 N	AOC1 Deep Overburde MW-214D 10-Dec-20 N	AOC1 Deep Overburde MW-214D 11-May-21 N	AOC1 Shallow Overburde MW-214S 28-Jun-17 N	AOC1 Shallow Overburde MW-214S 11-Jan-18 N	AOC1 Shallow Overburde MW-214S 15-Dec-20 N	AOC1 Shallow Overburde MW-214S 11-May-21 N	AOC1 Shallow Overburde MW-214S 22-Jun-22 N	AOC1 Shallow Overburde MW-214S 28-Oct-22 N	AOC1 Bedrock MW-215B 04-Nov-21 N	AOC1 Bedrock MW-215B 22-Jun-22 N	AOC1 Bedrock MW-215B 26-Oct-22 N	AOC1 Deep Overburde MW-215D 29-Jun-17 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**									*< 5*	2 J			3 J	4 J								4 J
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS	367,000	354,000	375,000	505,000	501,000	55,500	48,600 J	62,300	54,800	32,800	46,800	50,000 J	89,200	120,000	80,000 J	54,700 J	28,400	27,200	50,000	58,200	57,800	23,700
Nitrate as N	µg/L	NS	NS	10,000	NS	NS	60 J	24 J	24 J	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	104	*< 100*	*< 100*	*< 500*	104	*< 100*	267	55 J	56 J	326	313	284	439
Chloride	µg/L	NS	NS	NS	NS	NS	140,000	150,000	140,000	150,000 J	140,000	26,000	19,000	18,000	100,000	130,000	210,000	160,000	28,000	27,000	25,000	32,000	28,000	33,000	19,000	30,000	41,000	84,000
Sulfate	µg/L	NS	NS	NS	NS	NS	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	1,400 J	14,000	*< 10,000*	9,800 J	17,000	16,000	20,000	*< 10,000*	1,600 J	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	2,300 J	8,100 J	10,000	12,000	9,200 J
Total dissolved solids	µg/L	NS	NS	NS	NS	NS	680,000	670,000	730,000	860,000	860,000	96,000	110,000	110,000	270,000	270,000	440,000	400,000	120,000	130,000	120,000	140,000	140,000	160,000	120,000	140,000	130,000	210,000
Calcium	µg/L	NS	NS	NS	NS	NS	33,700	29,700 J	30,000 J	40,000	39,700	23,500	21,800	21,100	21,600	25,400 J	43,000	31,700	9,090	9,810 J		8,240	7,720 J	8,090	19,200	18,800 J	23,000	20,800
Iron	µg/L	NS	NS	NS	NS	NS	30,400	30,000	29,800	32,300	32,700	4,580	2,980	899	220	68.0	534	109	68,700	56,500		51,200	28,100	34,000	548	340	166 J	37.5 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**5,315**	**5,937**	**5,843**	**4,230**	**4,345**	**342.1**	291.1	31.46	92.86	127.1	228.1	177.6	**4,415**	**5,909**	**3,861 J**	**3,704**	**1,659**	**1,768**	204.9	59.32	96.28	17.80
Sodium	µg/L	NS	NS	NS	NS	NS	179,000	182,000	185,000	194,000	197,000	14,100	14,700	13,200	62,700 J	73,700 J	99,200	88,000	11,200 J	10,000 J		14,000	9,760	10,500	15,300	14,500	16,400 J	40,800 J
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS	69,000	120,000	150,000	200,000	160,000	*< 20,000*	11,000 J	9,500 J	16,000 J	10,000 J	23,000	*< 20,000*	21,000	20,000	26,000	29,000	24,000	28,000	9,500 J	*< 20,000*	*< 20,000*	12,000 J
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	1.25	2.26	2.15	1.66	1.54	**13.52**	**10.18**	**12.54**	0.57	0.28 J	0.50	0.31 J	**186.4**	**108.3**	**125.0 J**	**98.84**	**29.41**	**57.27**	3.67	3.44	3.21	0.28 J
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	983.6	901.1	906.3	1,517	1,565	28.20		9.37	34.76	43.08	74.70		39.37	37.38			28.87	28.66	5.77	2.84	3.26	22.78
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.07 J	0.08 J	0.09 J	0.06 J	*< 0.20*	0.94	0.19 J	0.08 J	0.08 J	0.09 J	*< 0.20*	0.11 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.09 J	0.42	0.18 J	0.08 J	0.58	0.08 J
Calcium	µg/L	NS	NS	NS	NS	NS	33,700	29,700 J	30,000 J	40,000	39,700	23,500	21,800	21,100	21,600	25,400 J	43,000	31,700	9,090	9,810 J		8,240	7,720 J	8,090	19,200	18,800 J	23,000	20,800
Chromium	µg/L	NS	NS	100	100	300	3.68	3.41	3.45	5.04	4.98	4.20		5.68	0.27 J	*< 1.00*	*< 1.00*		0.23 J	*< 1.00*			0.40 J	1.77	*< 1.47*	0.53 J	1.36	0.29 J
Cobalt	µg/L	NS	NS	NS	NS	NS						1.30						1.17										
Copper	µg/L	NS	NS	1,300	NS	NS	2.37	1.91	2.02	1.40	1.76	47.81			*< 1.3*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*			3.44	17.72	1.04	1.30	1.22	*< 1.00*
Iron	µg/L	NS	NS	NS	NS	NS	30,400	30,000	29,800	32,300	32,700	4,580	2,980	899	220	68.0	534	109	68,700	56,500		51,200	28,100	34,000	548	340	166 J	37.5 J
Lead	µg/L	NS	**15**	**15**	**15**	**10**	7.17	8.16	7.69	5.91	6.35	**36.38**	7.86	6.44	0.53 J	*< 1.00*	*< 1.00*	0.49 J	0.50 J	0.40 J	1.64	1.32	5.26	**20.29**	1.27	0.67 J	0.43 J	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS	**5,315**	**5,937**	**5,843**	**4,230**	**4,345**	**342.1**	291.1	31.46	92.86	127.1	228.1	177.6	**4,415**	**5,909**	**3,861 J**	**3,704**	**1,659**	**1,768**	204.9	59.32	96.28	17.80
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.66 J*	*< 0.51 J*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*			*< 0.57 J*	*< 0.20*	*< 0.20*	*< 0.67 J*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS	179,000	182,000	185,000	194,000	197,000	14,100	14,700	13,200	62,700 J	73,700 J	99,200	88,000	11,200 J	10,000 J		14,000	9,760	10,500	15,300	14,500	16,400 J	40,800 J
Zinc	µg/L	NS	NS	NS	5,000	900	117.7	124.6	110.2	*< 59.41*	*< 62.33*	149.3		*< 23.26*	7.60 J	3.52 J	*< 10.00*		155.3	55.82			157.8	479.9	*< 33.24*	13.27	*< 25.20*	*< 10.00*
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1221	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1232	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	0.372	*< 0.250*	*< 0.250*	*< 0.250*	0.257				
Aroclor 1248	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1254	µg/L	NS	NS	NS	0.5	10	0.040 J	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	0.066 J				
Aroclor 1260	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1262	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Aroclor 1268	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*				
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10	0.040 J	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*						*< 0.250*	*< 0.250*	*< 0.250*	0.372	*< 0.250*	*< 0.250*	0.066 J	0.408 J				
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
4,4'-DDE	µg/L	NS	NS	NS	0.05	400	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
4,4'-DDT	µg/L	NS	NS	NS	0.3	1	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Aldrin	µg/L	NS	NS	NS	0.5	30	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
alpha-Chlordane	µg/L	NS	NS	NS	2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
trans-Chlordane	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
Chlordane	µg/L	NS	NS	NS	2	2	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*								*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Endrin	µg/L	NS	NS	2	2	5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Heptachlor	µg/L	NS	NS	0.4	0.4	1	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*								*< 0.020*	*< 0.020*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Endrin ketone	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*								*< 0.040*	*< 0.040*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*								*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				
Methoxychlor	µg/L	NS	NS	40	40	10	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*								*< 0.200*	*< 0.200*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1
							Geologic Unit	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde
							Location ID	MW-215D	MW-215D	MW-215D	MW-215D	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	OW-49	OW-49	OW-49	OW-49	OW-49	OW-49	OW-49	OW-50	OW-50	OW-50	OW-50
							Sample Date	11-Jan-18	11-Nov-21	22-Jun-22	26-Oct-22	28-Jun-17	28-Jun-17	11-Jan-18	11-Jan-18	09-Nov-21	22-Jun-22	26-Oct-22	30-Jun-17	11-Jan-18	14-Dec-20	18-May-21	04-Nov-21	23-Jun-22	25-Oct-22	14-Dec-20	13-May-21	04-Nov-21	21-Jun-22
							Sample Type	N	N	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**		*< 5*				*< 5*		3 J					*< 5*	*< 5*								
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS		24,600	22,000 J	22,400	26,600	48,200		38,100		17,000	20,600	26,700	125,000	114,000	99,400	105,000	101,000	105,000	106,000	67,800	61,400	65,700	70,200
Nitrate as N	µg/L	NS	NS	10,000	NS	NS		464	2,680	1,900	1,490	*< 100*		66 J		*< 100*	300	125	*< 100*	59 J	*< 100*	*< 100*	*< 100*	40 J	*< 100*	205	*< 100*	*< 100*	32 J
Chloride	µg/L	NS	NS	NS	NS	NS		87,000	120,000	100,000	120,000	84,000		76,000		65,000	78,000	89,000	88,000	91,000	110,000	120,000	120,000	110,000	150,000	160,000	170,000	180,000	190,000
Sulfate	µg/L	NS	NS	NS	NS	NS		13,000	11,000 J	11,000	15,000	6,100 J		10,000		9,400 J	9,200 J	12,000	17,000	21,000	18,000	19,000	17,000	18,000	19,000	16,000	12,000	12,000	17,000
Total dissolved solids	µg/L	NS	NS	NS	NS	NS		180,000	280,000	330,000	290,000	220,000		170,000		110,000	230,000	250,000	320,000	290,000	400,000	360,000	340,000	400,000	410,000	440,000	440,000	430,000	630,000
Calcium	µg/L	NS	NS	NS	NS	NS		21,500	32,000	27,500 J	28,600	22,400		18,200		10,600	10,400 J	14,500	51,300	50,700	*< 56,700*	61,000	55,600	54,200 J	66,500	*< 55,400*	56,400	55,600	66,200
Iron	µg/L	NS	NS	NS	NS	NS		214	*< 62.7*	59.1	96.1 J	376		172		291	97.1	5,100 J	414	259	*< 386*	472	685	232	536	3,140	4,790	957	1,980
Manganese	µg/L	NS	**300**	NS	NS	NS		19.70	*< 7.03*	5.09	3.92	**1,019**		**714.9**		**1,213**	**1,259**	**892.0**	**572.4**	**471.5**	**510.5**	**430.8**	**490.8**	**508.6**	**843.2**	**1,747**	**2,449**	**1,491**	**1,683**
Sodium	µg/L	NS	NS	NS	NS	NS		40,500	53,300	47,600	54,400 J	46,200 J		38,900		42,200	47,800	45,000 J	43,600 J	41,300	*< 43,700*	40,800	44,300	40,200	52,300	*< 57,400*	57,900	62,200	65,000
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS		8,300 J	16,000 J	17,000 J	*< 20,000*	12,000 J		*< 20,000*		26,000	*< 20,000*	12,000 J	26,000	8,300 J	*< 20,000*	6,400 J	16,000 J	7,800 J	12,000 J	*< 20,000*	18,000 J	16,000 J	*< 20,000*
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		0.50	0.51	0.23 J	0.31 J	2.54	2.43	1.41	1.47	0.79	0.41 J	3.20	0.36 J	2.89	*< 0.50*	0.46 J	1.26	0.66	0.85	**21.15**	**20.39**	3.73	9.43
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		26.06	34.39	31.11	33.75	48.71	49.12	46.90	47.65	43.74	46.84	40.53	29.37	26.69	27.01		23.92	24.17	33.72	47.33		33.55	40.68
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		0.06 J	0.12 J	0.07 J	0.07 J	*< 0.20*	*< 0.20*	*< 0.20*	0.07 J	0.07 J	0.13 J	*< 0.20*	0.37	0.61	*< 0.20*	*< 0.20*	0.09 J	0.42	0.21	0.34	0.19 J	0.17 J	0.19 J
Calcium	µg/L	NS	NS	NS	NS	NS		21,500	32,000	27,500 J	28,600	22,400		18,200		10,600	10,400 J	14,500	51,300	50,700	*< 56,700*	61,000	55,600	54,200 J	66,500	*< 55,400*	56,400	55,600	66,200
Chromium	µg/L	NS	NS	100	100	300		*< 1.00*	0.27 J	0.18 J	0.40 J	0.21 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.30 J	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	0.62 J
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS		*< 1.00*	0.72 J	0.49 J	0.60 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	2.17		0.40 J	*< 1.00*	1.07	2.94		1.85	2.20
Iron	µg/L	NS	NS	NS	NS	NS		214	*< 62.7*	59.1	96.1 J	376		172		291	97.1	5,100 J	414	259	*< 386*	472	685	232	536	3,140	4,790	957	1,980
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.34	*< 1.00*	*< 1.00*	*< 1.00*	0.75 J	1.11	1.54	0.39 J	0.75 J
Manganese	µg/L	NS	**300**	NS	NS	NS		19.70	*< 7.03*	5.09	3.92	**1,019**		**714.9**		**1,213**	**1,259**	**892.0**	**572.4**	**471.5**	**510.5**	**430.8**	**490.8**	**508.6**	**843.2**	**1,747**	**2,449**	**1,491**	**1,683**
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.44 J*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.64 J*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 1.80 J*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS		40,500	53,300	47,600	54,400 J	46,200 J		38,900		42,200	47,800	45,000 J	43,600 J	41,300	*< 43,700*	40,800	44,300	40,200	52,300	*< 57,400*	57,900	62,200	65,000
Zinc	µg/L	NS	NS	NS	5,000	900		3.83 J	*< 10.31*	3.63 J	*< 14.02*	*< 10.00*	*< 10.00*	*< 10.00*	*< 10.00*	*< 12.93*	*< 10.00*	*< 10.99*	*< 10.00*	*< 10.00*	10.33		*< 13.17*	4.27 J	*< 13.04*	*< 10.00*		*< 10.54*	*< 10.00*
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1221	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1232	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		**0.528 J**		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1248	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1254	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1260	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	0.048 J								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1262	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Aroclor 1268	µg/L	NS	NS	NS	0.5	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		*< 0.250*		*< 0.250*	*< 0.250*	*< 0.250*								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10			*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*		**0.528 J**		*< 0.250*	*< 0.250*	0.144 J								*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
4,4'-DDE	µg/L	NS	NS	NS	0.05	400						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
4,4'-DDT	µg/L	NS	NS	NS	0.3	1						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Aldrin	µg/L	NS	NS	NS	0.5	30						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
alpha-Chlordane	µg/L	NS	NS	NS	2	2						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
trans-Chlordane	µg/L	NS	NS	NS	NS	NS						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
Chlordane	µg/L	NS	NS	NS	2	2						*< 0.200*		*< 0.200*		*< 0.143*	*< 0.143*	*< 0.143*								*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143 J*
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Endrin	µg/L	NS	NS	2	2	5						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Heptachlor	µg/L	NS	NS	0.4	0.4	1						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4						*< 0.020*		*< 0.020*		*< 0.014*	*< 0.014*	*< 0.014*								*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014 J*
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Endrin ketone	µg/L	NS	NS	NS	NS	NS						*< 0.040*		*< 0.040*		*< 0.029*	*< 0.029*	*< 0.029*								*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029 J*
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS						*< 0.200*		*< 0.200*		*< 0.143*	*< 0.143*	*< 0.143*								*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143 J*
Methoxychlor	µg/L	NS	NS	40	40	10						*< 0.200*		*< 0.200 J*		*< 0.143*	*< 0.143*	*< 0.143*								*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143 J*

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Deep Overburde OW-50 20-Oct-22 N	AOC1 Shallow Overburde OW-51 14-Dec-20 N	AOC1 Shallow Overburde OW-51 13-May-21 N	AOC1 Shallow Overburde OW-51 04-Nov-21 N	AOC1 Shallow Overburde OW-51 21-Jun-22 N	AOC1 Shallow Overburde OW-51 20-Oct-22 N	AOC2 Shallow Overburde MW-210S 14-Jun-17 N	AOC2 Shallow Overburde MW-210S 14-Jun-17 FD	AOC2 Shallow Overburde MW-210S 05-Dec-17 N	AOC2 Shallow Overburde MW-210S 05-Dec-17 FD	AOC2 Shallow Overburde MW-210S 09-Dec-20 N	AOC2 Shallow Overburde MW-210S 10-May-21 N	AOC2 Shallow Overburde MW-210S 09-Nov-21 N	AOC2 Shallow Overburde MW-210S 29-Jun-22 N	AOC2 Shallow Overburde MW-210S 27-Oct-22 N	AOC2 Bedrock MW-210B 16-Dec-20 N	AOC2 Bedrock MW-210B 10-May-21 N	AOC2 Bedrock MW-210B 09-Nov-21 N	AOC2 Bedrock MW-210B 29-Jun-22 N	AOC2 Bedrock MW-210B 27-Oct-22 N	AOC2 Shallow Overburde MW-211S 07-Jun-17 N	AOC2 Shallow Overburde MW-211S 04-Dec-17 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**							1 J	*< 5*	*< 5*	*< 5*											2 J	*< 5*
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS	71,500	38,000	34,800	52,800	62,600	72,300	40,800	40,700	39,400	40,000	54,900	108,000 J	50,100	56,400	55,700						171,000	206,000
Nitrate as N	µg/L	NS	NS	10,000	NS	NS	*< 100*	*< 100*	*< 100*	*< 100*	29 J	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	190	143	48 J	283	*< 100*						*< 100*	98 J
Chloride	µg/L	NS	NS	NS	NS	NS	210,000	59,000	81,000	61,000	66,000	76,000	210,000	210,000	220,000	210,000	160,000	78,000	160,000	230,000	240,000 J						21,000	98,000
Sulfate	µg/L	NS	NS	NS	NS	NS	22,000	30,000	*< 10,000*	*< 10,000*	*< 10,000*	*< 10,000*	12,000	12,000	16,000	12,000	12,000	19,000	8,000 J	6,200 J	29,000						56,000	78,000 J
Total dissolved solids	µg/L	NS	NS	NS	NS	NS	480,000	170,000	180,000	150,000	190,000	240,000	440,000	440,000	410,000	410,000	350,000	340,000	320,000	490,000	480,000						310,000	480,000
Calcium	µg/L	NS	NS	NS	NS	NS	66,900	*< 13,700*	14,400	14,000	18,200	21,400	25,200 J	24,900 J	27,000 J	28,000 J	22,900	23,400	24,200 J	23,200	24,400						57,700 J	74,500 J
Iron	µg/L	NS	NS	NS	NS	NS	676	4,730	3,920	5,220	9,080	10,200	11,600	11,400	9,440	10,300	14,400	29,600	16,000	12,600	9,130						20,800 J	68,000 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**1,326**	**666.9**	**566.6**	**560.8**	**1,352**	**1,564**	**854.6**	**851.8**	**1,135**	**1,212**	**1,879**	**2,357**	**1,458**	**1,496**	**1,427**	167.7	**761.5**	**322.7**	190.7	53.65	**946.4 J**	**1,556 J**
Sodium	µg/L	NS	NS	NS	NS	NS	61,500 J	*< 36,100*	42,800	40,000	38,700	37,500 J	118,000 J	118,000 J	117,000 J	119,000 J	96,300	54,000	101,000	133,000	107,000						15,100 J	46,000 J
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS	17,000 J	20,000	31,000	26,000	39,000	12,000 J	*< 20,000*	*< 20,000*	20,000	20,000	20,000	6,400 J	16,000 J	19,000 J	28,000						16,000 J	20,000
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	3.56	**24.29**	**14.78**	**20.10**	**28.57**	**27.17**	**64.95**	**63.03**	**41.81**	**45.14**	**66.16**	**104.8**	**75.02**	**64.10**	**46.83**	2.59	4.50	4.18	2.32	2.11	**83.06**	**208.9**
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	37.17	17.40		16.82	21.40	23.37	33.82	35.05	34.04	35.25	39.55		32.76	38.52	51.79			8.40	*< 5.52*	4.49	69.39	137.0 J
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.11 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.13 J	0.21	0.59	0.28	0.17 J	0.16 J	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS	66,900	*< 13,700*	14,400	14,000	18,200	21,400	25,200 J	24,900 J	27,000 J	28,000 J	22,900	23,400	24,200 J	23,200	24,400						57,700 J	74,500 J
Chromium	µg/L	NS	NS	100	100	300	*< 1.00*	*< 1.00*		*< 1.00*	0.47 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	0.36 J			*< 1.00*	*< 1.00*	0.25 J	*< 1.08*	*< 1.44*
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS	1.08	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*			0.86 J	0.89 J	0.67 J	2.80	1.81
Iron	µg/L	NS	NS	NS	NS	NS	676	4,730	3,920	5,220	9,080	10,200	11,600	11,400	9,440	10,300	14,400	29,600	16,000	12,600	9,130						20,800 J	68,000 J
Lead	µg/L	NS	**15**	**15**	**15**	**10**	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.95	1.47	0.64 J	*< 1.00*	*< 1.00*	0.86 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**1,326**	**666.9**	**566.6**	**560.8**	**1,352**	**1,564**	**854.6**	**851.8**	**1,135**	**1,212**	**1,879**	**2,357**	**1,458**	**1,496**	**1,427**	167.7	**761.5**	**322.7**	190.7	53.65	**946.4 J**	**1,556 J**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS	61,500 J	*< 36,100*	42,800	40,000	38,700	37,500 J	118,000 J	118,000 J	117,000 J	119,000 J	96,300	54,000	101,000	133,000	107,000						15,100 J	46,000 J
Zinc	µg/L	NS	NS	NS	5,000	900	*< 11.74*	*< 10.00*		*< 10.00*	*< 10.00*	*< 12.98*	3.81 J	*< 10.00*	*< 10.00*	*< 10.00*	*< 10.00*		*< 12.94*	4.11 J	*< 14.61*			*< 30.10*	6.61 J	*< 13.02*	*< 10.00*	7.23 J
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1221	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1232	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1248	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1254	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1260	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1262	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Aroclor 1268	µg/L	NS	NS	NS	0.5	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*	*< 0.250*																
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
4,4'-DDE	µg/L	NS	NS	NS	0.05	400	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
4,4'-DDT	µg/L	NS	NS	NS	0.3	1	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Aldrin	µg/L	NS	NS	NS	0.5	30	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
alpha-Chlordane	µg/L	NS	NS	NS	2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
trans-Chlordane	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
Chlordane	µg/L	NS	NS	NS	2	2	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											*< 0.200*	*< 0.200*
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Endrin	µg/L	NS	NS	2	2	5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Heptachlor	µg/L	NS	NS	0.4	0.4	1	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											*< 0.020*	*< 0.020*
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Endrin ketone	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											*< 0.040*	*< 0.040*
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											*< 0.200*	*< 0.200*
Methoxychlor	µg/L	NS	NS	40	40	10	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											*< 0.200*	*< 0.200*

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC2 Shallow Overburden MW-211S 04-Dec-17 FD	AOC2 Shallow Overburden MW-211S 15-Dec-20 N	AOC2 Shallow Overburden MW-211S 10-May-21 N	AOC2 Shallow Overburden MW-211S 09-Nov-21 N	AOC2 Shallow Overburden MW-211S 28-Jun-22 N	AOC2 Shallow Overburden MW-211S 27-Oct-22 N	AOC2 Deep Overburden MW-211D 07-Jun-17 N	AOC2 Deep Overburden MW-211D 07-Jun-17 FD	AOC2 Deep Overburden MW-211D 04-Dec-17 N	AOC2 Deep Overburden MW-211D 15-Dec-20 N	AOC2 Deep Overburden MW-211D 10-May-21 N	AOC2 Deep Overburden MW-211D 09-Nov-21 N	AOC2 Deep Overburden MW-211D 28-Jun-22 N	AOC2 Deep Overburden MW-211D 27-Oct-22 N	AOC2 Shallow Overburden MW-212S 12-Jun-17 N	AOC2 Shallow Overburden MW-212S 04-Dec-17 N	AOC2 Shallow Overburden MW-212S 15-Dec-20 N	AOC2 Shallow Overburden MW-212S 10-May-21 N	AOC2 Shallow Overburden MW-212S 11-Nov-21 N	AOC2 Shallow Overburden MW-212S 28-Jun-22 N	AOC2 Shallow Overburden MW-212S 27-Oct-22 N	AOC2 Deep Overburden MW-212D 13-Jun-17 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**	*< 5*						*< 5*	*< 5*	*< 5*							*< 5*	*< 5*						4 J
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS	204,000	137,000 J	85,600 J	89,000	34,300	58,800	306,000	305,000	205,000	152,000 J	129,000 J	87,700	81,800	61,300 J	40,000	65,800	40,000 J	70,500 J	41,000 J	43,800	37,900	36,800
Nitrate as N	µg/L	NS	NS	10,000	NS	NS	206	*< 100*	127	33 J	*< 100*	29 J	*< 100*	*< 100*	201	*< 100*	192	49 J	29 J	175	464	*< 100*	354	34 J	*< 100*	*< 100*	27 J	42 J
Chloride	µg/L	NS	NS	NS	NS	NS	110,000	25,000	8,800	120,000	260,000	140,000 J	71,000	72,000	110,000	110,000	92,000	170,000	220,000	220,000	180,000	230,000	230,000	140,000	200,000	250,000	220,000	200,000
Sulfate	µg/L	NS	NS	NS	NS	NS	16,000 J	69,000	80,000	36,000 J	14,000	52,000	8,100 J	8,600 J	17,000	36,000	50,000	21,000 J	16,000	14,000	80,000	12,000	11,000	35,000	10,000 J	8,400 J	16,000	9,800 J
Total dissolved solids	µg/L	NS	NS	NS	NS	NS	420,000	360,000	230,000	380,000	480,000	430,000	410,000	400,000	420,000	450,000	380,000	440,000	600,000	570,000	490,000	500,000	490,000	600,000	360,000	470,000	450,000	460,000
Calcium	µg/L	NS	NS	NS	NS	NS	79,300 J	*< 60,500*	39,500	33,800 J	22,000	21,200	81,700 J	79,900 J	78,400 J	*< 61,600*	54,900	59,800 J	63,400	41,300	38,600 J	26,700 J	22,700	16,200	19,200	16,800	17,400	22,000 J
Iron	µg/L	NS	NS	NS	NS	NS	36,400 J	38,800	19,200	22,500	11,200	19,400	47,600 J	45,600 J	37,400	32,900	32,600	23,300	19,000	15,600	10,600 J	9,170	18,600	4,560	5,730	10,300	28,100	12,800 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**3,919 J**	**2,664 J**	**1,182**	**1,203**	**1,203**	**1,262**	**4,265 J**	**4,056 J**	**4,041**	**3,573 J**	**3,570**	**3,132**	**3,380**	**2,317**	**3,783 J**	**1,178**	**756.5 J**	**436.8**	**590.1**	**566.3**	**604.2**	**779.8 J**
Sodium	µg/L	NS	NS	NS	NS	NS	41,700 J	*< 30,900*	12,000	88,400	156,000	110,000	37,500 J	35,700 J	44,200 J	*< 56,400*	41,900	74,900	90,800	76,200	106,000 J	131,000 J	159,000	108,000	127,000	169,000	115,000	133,000 J
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS	24,000	24,000	8,700 J	24,000	17,000 J	17,000 J	25,000	27,000	33,000	20,000	86,000	35,000	28,000	19,000 J	*< 20,000*	26,000	51,000	200,000	24,000	33,000	37,000	*< 20,000*
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	**250.8**	**106.5 J**	**41.86**	**81.25**	**73.26**	**80.08**	**207.2**	**199.6**	**255.2**	**279.2 J**	**179.7**	**148.6**	**125.0**	**110.1**	**13.65**	**37.41**	**196.8 J**	**17.36**	**26.91**	**88.04**	**280.4**	**43.80**
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	43.88 J			66.18	47.18	36.52	46.88	45.76	44.47			34.24	35.34	28.07	98.22	118.0			52.80	64.40	73.45	75.61 J
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.19 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS	79,300 J	*< 60,500*	39,500	33,800 J	22,000	21,200	81,700 J	79,900 J	78,400 J	*< 61,600*	54,900	59,800 J	63,400	41,300	38,600 J	26,700 J	22,700	16,200	19,200	16,800	17,400	22,000 J
Chromium	µg/L	NS	NS	100	100	300	*< 1.00*			*< 1.00*	0.27 J	0.39 J	*< 1.00*	*< 1.00*	*< 1.01*			*< 1.22*	0.46 J	0.34 J	0.39 J	*< 1.00*			0.31 J	0.46 J	1.28	0.39 J
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS	0.99 J			*< 1.00*	1.05	0.71 J	*< 1.00*	*< 1.00*	1.23			*< 1.00*	0.43 J	*< 1.00*	1.38	0.72 J			*< 1.00*	1.33	5.16	*< 1.00*
Iron	µg/L	NS	NS	NS	NS	NS	36,400 J	38,800	19,200	22,500	11,200	19,400	47,600 J	45,600 J	37,400	32,900	32,600	23,300	19,000	15,600	10,600 J	9,170	18,600	4,560	5,730	10,300	28,100	12,800 J
Lead	µg/L	NS	**15**	**15**	**15**	**10**	0.99 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.40	2.03	*< 1.00*	*< 1.00*	0.42 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.68 J	2.46	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS	**3,919 J**	**2,664 J**	**1,182**	**1,203**	**1,203**	**1,262**	**4,265 J**	**4,056 J**	**4,041**	**3,573 J**	**3,570**	**3,132**	**3,380**	**2,317**	**3,783 J**	**1,178**	**756.5 J**	**436.8**	**590.1**	**566.3**	**604.2**	**779.8 J**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	2.81 J	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS	41,700 J	*< 30,900*	12,000	88,400	156,000	110,000	37,500 J	35,700 J	44,200 J	*< 56,400*	41,900	74,900	90,800	76,200	106,000 J	131,000 J	159,000	108,000	127,000	169,000	115,000	133,000 J
Zinc	µg/L	NS	NS	NS	5,000	900	*< 10.00*			*< 11.28*	*< 10.00*	*< 10.24*	*< 10.00*	*< 10.00*	*< 10.00*			*< 10.69*	7.05 J	*< 10.00*	33.64	19.56			*< 12.64*	6.37 J	*< 12.46*	6.10 J
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50															*< 0.040*	*< 0.040*						
4,4'-DDE	µg/L	NS	NS	NS	0.05	400															*< 0.040*	*< 0.040*						
4,4'-DDT	µg/L	NS	NS	NS	0.3	1															*< 0.040*	*< 0.040*						
Aldrin	µg/L	NS	NS	NS	0.5	30															*< 0.020*	*< 0.020*						
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS															*< 0.020*	*< 0.020*						
alpha-Chlordane	µg/L	NS	NS	NS	2	2															*< 0.020*	*< 0.020*						
trans-Chlordane	µg/L	NS	NS	NS	NS	NS															*< 0.020*	*< 0.020*						
Chlordane	µg/L	NS	NS	NS	2	2															*< 0.200*	*< 0.200*						
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS															*< 0.020*	*< 0.020*						
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS															*< 0.020*	*< 0.020*						
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5															*< 0.040*	*< 0.040*						
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2															*< 0.020*	*< 0.020*						
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2															*< 0.040*	*< 0.040*						
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS															*< 0.040*	*< 0.040*						
Endrin	µg/L	NS	NS	2	2	5															*< 0.040*	*< 0.040*						
Heptachlor	µg/L	NS	NS	0.4	0.4	1															*< 0.020*	*< 0.020*						
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2															*< 0.020*	*< 0.020*						
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4															*< 0.020*	*< 0.020*						
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS															*< 0.040*	*< 0.040*						
Endrin ketone	µg/L	NS	NS	NS	NS	NS															*< 0.040*	*< 0.040*						
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS															*< 0.200*	*< 0.200*						
Methoxychlor	µg/L	NS	NS	40	40	10															*< 0.200*	*< 0.200*						

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
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Units are in µg/L = micrograms per liter
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EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC2 Deep Overburde MW-212D 04-Dec-17 N	AOC2 Deep Overburde MW-212D 15-Dec-20 N	AOC2 Deep Overburde MW-212D 10-May-21 N	AOC2 Deep Overburde MW-212D 11-Nov-21 N	AOC2 Deep Overburde MW-212D 28-Jun-22 N	AOC2 Deep Overburde MW-212D 27-Oct-22 N	AOC3A Shallow Overburde MW-206S 13-Jun-17 N	AOC3A Shallow Overburde MW-206S 08-Jan-18 N	AOC3A Shallow Overburde MW-206S 18-Dec-20 N	AOC3A Shallow Overburde MW-206S 18-May-21 N	AOC3A Shallow Overburde MW-206S 05-Nov-21 N	AOC3A Shallow Overburde MW-206S 20-Jun-22 N	AOC3A Shallow Overburde MW-206S 25-Oct-22 N	AOC3A Shallow Overburde OW-40 29-Jun-17 N	AOC3A Shallow Overburde OW-40 05-Dec-17 N	AOC3A Shallow Overburde OW-40 20-May-21 N	AOC3A Shallow Overburde OW-40 10-Nov-21 N	AOC3A Shallow Overburde OW-40 21-Jun-22 N	AOC3A Shallow Overburde OW-40 21-Oct-22 N	AOC3B Shallow Overburde MW-204S 22-Jan-16 N	AOC3B Shallow Overburde MW-204S 23-Jun-17 N	AOC3B Shallow Overburde MW-204S 29-Sep-17 N
Cyanide, µg/L																											
Cyanide	µg/L	NS	NS	200	200	**30**	*< 5*						3 J	*< 5*						1 J	*< 5*					1 J	*< 5*	8
Landfill Indicator Parameters, µg/L																											
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS	44,000	95,300 J	72,000 J	64,100 J	56,800	29,600	65,700	82,300	132,000	176,000	50,700	64,800	125,000	88,800	124,000	102,000	115,000 J	91,400	106,000	14,700	6,200	12,200
Nitrate as N	µg/L	NS	NS	10,000	NS	NS	*< 100*	*< 100*	83 J	*< 100*	*< 100*	36 J	276	617	587	63 J	352	449	141	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	*< 100*	30 J	42 J	1,200
Chloride	µg/L	NS	NS	NS	NS	NS	220,000	220,000	190,000	230,000	260,000	260,000	290,000	410,000	440,000	250,000	220,000	120,000	680,000	8,900	9,900	6,800	5,200	20,000	20,000	1,600,000	1,600,000	1,700,000
Sulfate	µg/L	NS	NS	NS	NS	NS	13,000	*< 10,000*	20,000	1,700 J	11,000	16,000	14,000	30,000	37,000	56,000	16,000	17,000	40,000	11,000	12,000	3,600 J	4,000 J	1,400 J	15,000	26,000	29,000	25,000
Total dissolved solids	µg/L	NS	NS	NS	NS	NS	470,000	500,000	440,000	440,000	510,000	520,000	700,000	830,000	1,000,000	700,000	480,000	340,000	1,400,000	150,000	180,000	140,000	150,000	180,000	170,000	2,800,000	3,100,000	3,100,000
Calcium	µg/L	NS	NS	NS	NS	NS	30,300 J	*< 18,800*	25,000	27,500	11,500	20,100	74,100 J	88,400 J	107,000	97,900	46,500	32,000	108,000	28,000	41,900 J	31,700	40,000	36,900	39,500	186,000 J	217,000	185,000 J
Iron	µg/L	NS	NS	NS	NS	NS	11,100	6,570	13,100	11,300	9,200	12,200	98.7 J	941 J	6,300	4,800	1,840	328	829	5,310	9,060	8,340	10,300	10,800	11,700	21,600	14,700	7,910 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**724.9**	**560.1 J**	**716.0**	**1,136**	**588.4**	**860.3**	284.6 J	222.1 J	**649.2**	**313.6**	95.18	29.30	164.7	212.6	**338.1**	**339.3**	**498.0**	**477.3**	**496.1**	**14,750**	**13,340**	**12,810 J**
Sodium	µg/L	NS	NS	NS	NS	NS	130,000 J	172,000	118,000	146,000	195,000	127,000	137,000 J	230,000 J	241,000	147,000	124,000	76,600	313,000	12,300 J	14,000 J	8,410	7,760	10,200	15,900	642,000 J	745,000	801,000 J
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS	13,000 J	44,000	11,000 J	24,000	37,000	32,000	*< 20,000*	26,000	33,000	24,000	24,000	21,000	23,000	12,000 J	*< 20,000*	13,000 J	16,000 J	*< 20,000*	30,000	170,000	100,000	180,000
Metals, µg/L																											
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	**49.40**	**46.23 J**	**66.47**	**44.40**	**61.07**	**50.54**	0.96	1.76	8.52	7.12	3.70	0.89	2.36	5.00	3.79	3.66	4.24	5.05	5.14	2.44	0.81	1.73
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	77.12			65.70	46.80	62.20	71.96 J	101.2			41.84	24.10	159.2	148.3	186.8		191.0	181.7	200.6	1,209	1,097	1,052
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.19 J	0.23	0.99	0.10 J	0.07 J	*< 0.20*	0.10 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	2.15 J	2.42	2.52
Calcium	µg/L	NS	NS	NS	NS	NS	30,300 J	*< 18,800*	25,000	27,500	11,500	20,100	74,100 J	88,400 J	107,000	97,900	46,500	32,000	108,000	28,000	41,900 J	31,700	40,000	36,900	39,500	186,000 J	217,000	185,000 J
Chromium	µg/L	NS	NS	100	100	300	*< 1.00*			0.26 J	0.24 J	*< 1.00*	0.44 J	*< 1.00*			*< 1.00*	*< 1.00*	*< 1.00*	0.18 J	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.38*	*< 1.00*	*< 1.17*
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS	1.17			*< 1.00*	0.43 J	*< 1.00*	0.99 J	*< 1.74*			0.65 J	0.39 J	0.56 J	*< 1.00*	0.50 J		*< 1.00*	0.42 J	*< 1.00*	5.81 J	38.72	38.78
Iron	µg/L	NS	NS	NS	NS	NS	11,100	6,570	13,100	11,300	9,200	12,200	98.7 J	941 J	6,300	4,800	1,840	328	829	5,310	9,060	8,340	10,300	10,800	11,700	21,600	14,700	7,910 J
Lead	µg/L	NS	**15**	**15**	**15**	**10**	0.94 J	*< 1.00*	*< 1.00*	0.60 J	*< 1.00*	*< 1.00*	*< 1.00*	0.36 J	*< 1.00*	0.40 J	0.35 J	*< 1.00*	*< 1.00*	0.37 J	0.57 J	0.45 J	*< 1.00*	*< 1.00*	*< 1.00*	**11.23 J**	**40.01**	**45.92**
Manganese	µg/L	NS	**300**	NS	NS	NS	**724.9**	**560.1 J**	**716.0**	**1,136**	**588.4**	**860.3**	284.6 J	222.1 J	**649.2**	**313.6**	95.18	29.30	164.7	212.6	**338.1**	**339.3**	**498.0**	**477.3**	**496.1**	**14,750**	**13,340**	**12,810 J**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	1.56 J	*< 5.00*	4.29 J
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS	130,000 J	172,000	118,000	146,000	195,000	127,000	137,000 J	230,000 J	241,000	147,000	124,000	76,600	313,000	12,300 J	14,000 J	8,410	7,760	10,200	15,900	642,000 J	745,000	801,000 J
Zinc	µg/L	NS	NS	NS	5,000	900	4.88 J			*< 10.47*	13.36	*< 10.21*	*< 10.00*	4.44 J			*< 12.90*	*< 10.00*	*< 10.00*	14.73	15.59		*< 19.93*	8.19 J	*< 16.54*	57.14	53.74	59.13
PCBs, µg/L																											
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																											
4,4'-DDD	µg/L	NS	NS	NS	0.2	50																						
4,4'-DDE	µg/L	NS	NS	NS	0.05	400																						
4,4'-DDT	µg/L	NS	NS	NS	0.3	1																						
Aldrin	µg/L	NS	NS	NS	0.5	30																						
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
alpha-Chlordane	µg/L	NS	NS	NS	2	2																						
trans-Chlordane	µg/L	NS	NS	NS	NS	NS																						
Chlordane	µg/L	NS	NS	NS	2	2																						
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5																						
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2																						
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2																						
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS																						
Endrin	µg/L	NS	NS	2	2	5																						
Heptachlor	µg/L	NS	NS	0.4	0.4	1																						
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2																						
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4																						
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS																						
Endrin ketone	µg/L	NS	NS	NS	NS	NS																						
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS																						
Methoxychlor	µg/L	NS	NS	40	40	10																						

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4
							Geologic Unit	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Deep Overburde	Deep Overburde
							Location ID	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-204S	MW-205S	MW-205S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202D
							Sample Date	29-Sep-17	07-Dec-17	14-Dec-20	14-Dec-20	21-May-21	21-May-21	11-Nov-21	11-Nov-21	20-Jun-22	20-Jun-22	21-Oct-22	21-Oct-22	21-Oct-22	16-Jun-17	08-Jan-18	06-Jun-17	06-Dec-17	09-Dec-20	14-May-21	03-Nov-21	22-Jun-22	20-Oct-22	18-Dec-20
							Sample Type	FD	N	N	FD	N	FD	N	FD	N	FD	N	FD	N	N	N	N	N	N	N	N	N	N
Cyanide, µg/L																													
Cyanide	µg/L	NS	NS	200	200	**30**		19													*< 5*	*< 5*							
Landfill Indicator Parameters, µg/L																													
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS		10,100	33,800	33,900	46,700	46,400	22,200	23,000	74,200	56,600	38,100	36,800	185,000	103,000									
Nitrate as N	µg/L	NS	NS	10,000	NS	NS		33 J	*< 100*	*< 100*	*< 100 J*	*< 100 J*	37 J	27 J	27 J	27 J	32 J	50 J	52 J	41 J	283								
Chloride	µg/L	NS	NS	NS	NS	NS		1,600,000	1,500,000	1,400,000	1,400,000	1,400,000	1,500,000	1,400,000	1,800,000	1,800,000	2,800,000	2,800,000	660,000	1,000,000									
Sulfate	µg/L	NS	NS	NS	NS	NS		28,000	13,000	33,000	51,000	30,000	36,000 J	36,000 J	34,000	33,000	42,000	36,000	39,000	33,000									
Total dissolved solids	µg/L	NS	NS	NS	NS	NS		2,800,000	2,700,000	2,700,000	2,600,000	2,600,000	2,400,000	2,500,000	3,700,000	3,900,000	4,900,000	4,900,000	1,400,000	2,000,000									
Calcium	µg/L	NS	NS	NS	NS	NS		203,000 J	107,000	103,000	71,100	69,600	98,000	98,000	128,000	128,000	180,000	175,000	162,000 J	144,000 J			25,000						
Iron	µg/L	NS	NS	NS	NS	NS		8,840 J	8,440	8,360	15,000	15,000	9,120	9,050	37,800	37,600	20,600	21,200	888	453 J			10,600						
Manganese	µg/L	NS	**300**	NS	NS	NS		**14,210 J**	**5,144**	**5,093**	**4,065**	**4,008**	**4,903**	**4,825**	**6,843**	**6,825**	**9,294**	**9,427**	**1,088**	**1,491 J**	271.4	261.1 J	**462.7**	**365.4**	**495.1**	**439.3**	**475.4**	46.52	
Sodium	µg/L	NS	NS	NS	NS	NS		822,000 J	729,000	730,000	667,000	664,000	831,000	851,000	1,090,000	1,090,000	1,300,000	1,320,000	320,000 J	654,000 J			35,300						
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS		88,000	160,000	160,000	140,000	170,000	140,000 J	100,000 J	220,000	170,000	190,000	180,000	51,000	49,000									
Metals, µg/L																													
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		1.84 J	0.56	*< 0.50*	0.78	0.86	2.29	2.32	1.20	1.27	1.62	1.69	0.61	0.48 J	7.96	**29.84 J**	**30.43**	9.22	**23.04**	6.18	**18.85**	*< 0.50*	
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		960.8	461.2	441.2			338.2	338.6	609.3	609.9	911.6	940.6	109.8	155.3			34.20		25.58	21.43	18.11		
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		1.70	0.58	0.62	0.33	0.34	1.16	1.15	0.34	0.37	1.16	1.19	0.25	0.48	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	**15.01**
Calcium	µg/L	NS	NS	NS	NS	NS		203,000 J	107,000	103,000	71,100	69,600	98,000	98,000	128,000	128,000	180,000	175,000	162,000 J	144,000 J			25,000						
Chromium	µg/L	NS	NS	100	100	300	*< 5.00*	*< 1.00*	1.04	1.01			2.69	2.61	0.34 J	0.26 J	*< 1.00*	*< 1.00*	1.11	*< 1.00*			*< 1.00*		0.68 J	0.69 J	*< 1.00*		
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS	38.82	13.18	3.17	3.10			4.72	4.78	4.38	4.07	*< 4.55*	*< 4.64*	11.46	*< 8.73*			*< 1.00*		0.87 J	0.62 J	0.39 J		
Iron	µg/L	NS	NS	NS	NS	NS		8,840 J	8,440	8,360	15,000	15,000	9,120	9,050	37,800	37,600	20,600	21,200	888	453 J			10,600						
Lead	µg/L	NS	**15**	**15**	**15**	**10**	**50.49**	**27.94**	5.66	5.20	3.90	3.89	2.89	2.74	3.43	3.57	*< 5.96*	*< 6.04*	7.03	5.55	0.37 J	7.46	*< 1.00*	*< 1.00*	0.74 J	0.40 J	*< 1.00*	4.06	
Manganese	µg/L	NS	**300**	NS	NS	NS		**14,210 J**	**5,144**	**5,093**	**4,065**	**4,008**	**4,903**	**4,825**	**6,843**	**6,825**	**9,294**	**9,427**	**1,088**	**1,491 J**	271.4	261.1 J	**462.7**	**365.4**	**495.1**	**439.3**	**475.4**	46.52	
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*		*< 0.20*	*< 0.20 J*	*< 0.20*		
Selenium	µg/L	NS	NS	50	50	100	*< 25.0*	3.47 J	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	2.57 J	2.53 J	*< 5.00*	*< 5.00*			*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*		
Silver	µg/L	NS	NS	NS	100	7	*< 2.00*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*		
Sodium	µg/L	NS	NS	NS	NS	NS		822,000 J	729,000	730,000	667,000	664,000	831,000	851,000	1,090,000	1,090,000	1,300,000	1,320,000	320,000 J	654,000 J			35,300						
Zinc	µg/L	NS	NS	NS	5,000	900	58.42	33.04	27.85	24.02			*< 29.53*	*< 26.79*	18.36	17.69	*< 32.55*	*< 33.70*	3.70 J	4.81 J			*< 10.00*		*< 27.18*	12.93	*< 17.41*		
PCBs, µg/L																													
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																							
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																							
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																							
Pesticides, µg/L																													
4,4'-DDD	µg/L	NS	NS	NS	0.2	50																							
4,4'-DDE	µg/L	NS	NS	NS	0.05	400																							
4,4'-DDT	µg/L	NS	NS	NS	0.3	1																							
Aldrin	µg/L	NS	NS	NS	0.5	30																							
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
alpha-Chlordane	µg/L	NS	NS	NS	2	2																							
trans-Chlordane	µg/L	NS	NS	NS	NS	NS																							
Chlordane	µg/L	NS	NS	NS	2	2																							
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5																							
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2																							
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2																							
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS																							
Endrin	µg/L	NS	NS	2	2	5																							
Heptachlor	µg/L	NS	NS	0.4	0.4	1																							
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2																							
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4																							
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS																							
Endrin ketone	µg/L	NS	NS	NS	NS	NS																							
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS																							
Methoxychlor	µg/L	NS	NS	40	40	10																							

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type	AOC4 Deep Overburde MW-202D 18-May-21 N	AOC4 Deep Overburde MW-202D 03-Nov-21 N	AOC4 Deep Overburde MW-202D 22-Jun-22 N	AOC4 Deep Overburde MW-202D 18-Oct-22 N	AOC4 Shallow Overburde MW-203S 06-Jun-17 N	AOC4 Shallow Overburde MW-203S 06-Dec-17 N	AOC4 Shallow Overburde MW-203S 09-Dec-20 N	AOC4 Shallow Overburde MW-203S 12-May-21 N	AOC4 Shallow Overburde MW-203S 03-Nov-21 N	AOC4 Shallow Overburde MW-203S 17-Jun-22 N	AOC4 Shallow Overburde MW-203S 21-Oct-22 N	AOC4 Shallow Overburde MW-301S 21-Oct-22 N	AOC4 Shallow Overburde MW-301S 21-Jan-16 FD	AOC4 Shallow Overburde MW-301S 12-Jun-17 N	AOC4 Shallow Overburde MW-301S 28-Sep-17 N	AOC4 Shallow Overburde MW-301S 06-Dec-17 N	AOC4 Shallow Overburde MW-301S 09-Dec-20 N	AOC4 Shallow Overburde MW-301S 14-May-21 N	AOC4 Shallow Overburde MW-301S 03-Nov-21 N	AOC4 Shallow Overburde MW-301S 16-Jun-22 N	AOC4 Shallow Overburde MW-301S 21-Oct-22 N	AOC4 Shallow Overburde MW-303S 06-Jun-17 N	AOC4 Shallow Overburde MW-303S 06-Dec-17 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**																						
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																						
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																						
Chloride	µg/L	NS	NS	NS	NS	NS																						
Sulfate	µg/L	NS	NS	NS	NS	NS																						
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																						
Calcium	µg/L	NS	NS	NS	NS	NS							20,000									38,000						
Iron	µg/L	NS	NS	NS	NS	NS							57,400									20,800						
Manganese	µg/L	NS	**300**	NS	NS	NS	149.9	22.06	68.17	57.62	**1,677**	**1,476 J**	**1,661**	**2,333**	**2,230**	**1,544**	**1,783**	**615.2**	**643.6**	**471.4 J**	**1,298 J**	**869.8 J**	251.9	282.6	**380.4**	**592.6**	**419.3**	227.3	87.68 J
Sodium	µg/L	NS	NS	NS	NS	NS							34,100									7,650						
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																						
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	1.69	*< 0.97*	1.98	0.96	**19.10**	**10.32 J**	**189.1**	**84.66**	**54.48**	**24.72**	**20.42**	**11.43**	**11.92**	**14.92**	**26.48**	**24.45 J**	**24.96**	8.90	**12.43**	**15.56**	**17.22**	4.51	1.70 J
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		35.02	18.49	25.76			37.62		53.59	36.36	58.50						35.05		43.63	111.8	55.32		
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	**6.62**	**23.80**	1.90	3.36	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.24	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS							20,000									38,000						
Chromium	µg/L	NS	NS	100	100	300		0.60 J	0.88 J	0.43 J			*< 1.00*		0.86 J	1.05	*< 1.00*						*< 1.00*		0.72 J	0.59 J	*< 1.00*		
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS		1.64	2.51	1.12			*< 1.00*		0.65 J	0.49 J	*< 1.00*						1.66		0.59 J	0.66 J	*< 1.00*		
Iron	µg/L	NS	NS	NS	NS	NS							57,400									20,800						
Lead	µg/L	NS	**15**	**15**	**15**	**10**	5.69	3.62	4.16	2.53	*< 1.00*	*< 1.00*	*< 1.00*	2.00	0.41 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.50 J	*< 1.00*	2.21	*< 1.00*	0.50 J	*< 1.00*	*< 1.00*	*< 1.00*	**23.23**	**16.63**
Manganese	µg/L	NS	**300**	NS	NS	NS	149.9	22.06	68.17	57.62	**1,677**	**1,476 J**	**1,661**	**2,333**	**2,230**	**1,544**	**1,783**	**615.2**	**643.6**	**471.4 J**	**1,298 J**	**869.8 J**	251.9	282.6	**380.4**	**592.6**	**419.3**	227.3	87.68 J
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.38 J*	*< 0.20*			*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*						*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*		
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*						*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*		
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*						*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*		
Sodium	µg/L	NS	NS	NS	NS	NS							34,100									7,650						
Zinc	µg/L	NS	NS	NS	5,000	900		*< 96.49*	24.11	123.9			*< 20.75*		*< 22.74*	12.18	*< 13.39*						*< 10.00*		*< 10.12*	*< 10.00*	*< 10.99*		
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50																						
4,4'-DDE	µg/L	NS	NS	NS	0.05	400																						
4,4'-DDT	µg/L	NS	NS	NS	0.3	1																						
Aldrin	µg/L	NS	NS	NS	0.5	30																						
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
alpha-Chlordane	µg/L	NS	NS	NS	2	2																						
trans-Chlordane	µg/L	NS	NS	NS	NS	NS																						
Chlordane	µg/L	NS	NS	NS	2	2																						
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																						
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5																						
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2																						
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2																						
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS																						
Endrin	µg/L	NS	NS	2	2	5																						
Heptachlor	µg/L	NS	NS	0.4	0.4	1																						
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2																						
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4																						
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS																						
Endrin ketone	µg/L	NS	NS	NS	NS	NS																						
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS																						
Methoxychlor	µg/L	NS	NS	40	40	10																						

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020																							
Location Group							AOC4	AOC4	AOC4	AOC4	AOC4	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5
Geologic Unit							Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Shallow Overburde	Shallow Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde
Location ID							MW-303S	MW-303S	MW-303S	MW-303S	MW-303S	MW-207B	MW-207B	MW-207B	MW-207B	MW-207B	MW-207B	MW-207B	MW-304S	MW-304S	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25
Sample Date							09-Dec-20	12-May-21	03-Nov-21	17-Jun-22	21-Oct-22	07-Jun-17	08-Dec-17	12-May-21	05-Nov-21	21-Jun-22	20-Oct-22		07-Jun-17	04-Dec-17	08-Jun-17	08-Dec-17	11-Dec-20	11-Dec-20	11-May-21	11-May-21	05-Nov-21	05-Nov-21	
Sample Type							N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	FD	N	FD	N	FD
Cyanide, µg/L																													
Cyanide	µg/L	NS	NS	200	200	**30**						**134**	**121**	28	**93**	**114 J**	**40 J**				**31**	23	**50**	**40**	23	19	**35**	19	
Landfill Indicator Parameters, µg/L																													
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS						51,200	50,600								138,000	133,000							
Nitrate as N	µg/L	NS	NS	10,000	NS	NS						1,380	465								*< 100*	*< 100*							
Chloride	µg/L	NS	NS	NS	NS	NS						6,600,000	6,600,000								890,000	890,000							
Sulfate	µg/L	NS	NS	NS	NS	NS						120,000	110,000								31,000	29,000							
Total dissolved solids	µg/L	NS	NS	NS	NS	NS						12,000,000	11,000,000								1,700,000	1,600,000							
Calcium	µg/L	NS	NS	NS	NS	NS	13,400					1,600,000 J	1,860,000								51,400 J	72,600 J							
Iron	µg/L	NS	NS	NS	NS	NS	2,650					*< 174*	158 J								*< 101*	44.0 J							
Manganese	µg/L	NS	**300**	NS	NS	NS	125.7	**307.2**	143.0	284.9	76.25	186.6 J	221.8 J					*< 2.57*	11.44	**305.6 J**	**360.6 J**	**404.0**	**430.6**	214.0	217.6	**443.3**	**448.0**		
Sodium	µg/L	NS	NS	NS	NS	NS	12,600					2,550,000 J	2,650,000 J								600,000 J	642,000 J							
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS						430,000	380,000								71,000	49,000							
Metals, µg/L																													
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	**18.34**	7.62	5.49	8.61	**19.35**	*< 1.45*	1.13 J					*< 0.61*	1.91	**11.72**	**19.31 J**	**25.08**	**24.17**	**30.02**	**29.95**	**10.61**	**10.41**		
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	37.04		38.75	66.20	47.51															41.56	41.41		
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.52	0.36					0.17 J	0.17 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.65	0.68		
Calcium	µg/L	NS	NS	NS	NS	NS	13,400					1,600,000 J	1,860,000							51,400 J	72,600 J								
Chromium	µg/L	NS	NS	100	100	300	*< 1.00*		0.95 J	0.63 J	*< 1.00*															*< 1.13*	*< 1.62*		
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS	3.49		2.31	2.45	*< 2.24*															4.70	5.48		
Iron	µg/L	NS	NS	NS	NS	NS	2,650					*< 174*	158 J							*< 101*	44.0 J								
Lead	µg/L	NS	**15**	**15**	**15**	**10**	**41.47**	**22.09**	**17.10**	**22.66**	**18.10**	*< 1.00*	2.33 J					*< 1.00*	*< 1.00*	0.47 J	0.59 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.82 J	1.23		
Manganese	µg/L	NS	**300**	NS	NS	NS	125.7	**307.2**	143.0	284.9	76.25	186.6 J	221.8 J					*< 2.57*	11.44	**305.6 J**	**360.6 J**	**404.0**	**430.6**	214.0	217.6	**443.3**	**448.0**		
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*															*< 0.20*	*< 0.20*		
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*															*< 5.00*	*< 5.00*		
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*															*< 0.40*	*< 0.40*		
Sodium	µg/L	NS	NS	NS	NS	NS	12,600					2,550,000 J	2,650,000 J								600,000 J	642,000 J							
Zinc	µg/L	NS	NS	NS	5,000	900	161.5		*< 22.72*	21.43	*< 48.86*															*< 10.44*	*< 10.00*		
PCBs, µg/L																													
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																							
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																							
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																							
Pesticides, µg/L																													
4,4'-DDD	µg/L	NS	NS	NS	0.2	50																							
4,4'-DDE	µg/L	NS	NS	NS	0.05	400																							
4,4'-DDT	µg/L	NS	NS	NS	0.3	1																							
Aldrin	µg/L	NS	NS	NS	0.5	30																							
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
alpha-Chlordane	µg/L	NS	NS	NS	2	2																							
trans-Chlordane	µg/L	NS	NS	NS	NS	NS																							
Chlordane	µg/L	NS	NS	NS	2	2																							
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																							
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5																							
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2																							
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2																							
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS																							
Endrin	µg/L	NS	NS	2	2	5																							
Heptachlor	µg/L	NS	NS	0.4	0.4	1																							
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2																							
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4																							
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS																							
Endrin ketone	µg/L	NS	NS	NS	NS	NS																							
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS																							
Methoxychlor	µg/L	NS	NS	40	40	10																							

Notes:
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above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
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NS = No Standard
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UJ = The detection limit is a quantitative estimate.

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Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group Geologic Unit Location ID Sample Date Sample Type	AOC5 Deep Overburde OW-25 21-Jun-22 N	AOC5 Deep Overburde OW-25 21-Jun-22 FD	AOC5 Deep Overburde OW-25 20-Oct-22 N	AOC5 Deep Overburde OW-25 20-Oct-22 FD	AOC5 Shallow Overburde OW-26 21-Jan-16 N	AOC5 Shallow Overburde OW-26 21-Jan-16 FD	AOC5 Shallow Overburde OW-26 08-Jun-17 N	AOC5 Shallow Overburde OW-26 08-Jun-17 FD	AOC5 Shallow Overburde OW-26 28-Sep-17 N	AOC5 Shallow Overburde OW-26 08-Dec-17 N	AOC5 Shallow Overburde OW-26 08-Dec-17 FD	AOC5 Shallow Overburde OW-26 10-Dec-20 N	AOC5 Shallow Overburde OW-26 11-May-21 N	AOC5 Shallow Overburde OW-26 03-Nov-21 N	AOC5 Shallow Overburde OW-26 20-Jun-22 N	AOC5 Shallow Overburde OW-26 20-Oct-22 N	AOC5 Bedrock OW-34 26-Jun-17 N	AOC5 Bedrock OW-34 06-Dec-17 N	AOC5 Bedrock OW-34 10-Dec-20 N	AOC5 Bedrock OW-34 17-May-21 N	AOC5 Bedrock OW-34 03-Nov-21 N	AOC5 Bedrock OW-34 23-Jun-22 N	AOC5 Bedrock OW-34 27-Oct-22 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**		28 J	27	26 J	17 J	*< 5*		1 J	*< 5*	2 J	2 J	4 J					3 J	*< 5*					
Landfill Indicator Parameters, µg/L																													
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS						109,000		115,000	118,000	130,000	119,000	119,000					21,600	21,900					
Nitrate as N	µg/L	NS	NS	10,000	NS	NS						*< 100*		35 J	42 J	*< 100*	*< 100*	*< 100*					190	226					
Chloride	µg/L	NS	NS	NS	NS	NS						240,000		150,000	150,000	230,000	190,000	190,000					130,000	150,000					
Sulfate	µg/L	NS	NS	NS	NS	NS						9,600 J		3,700 J	4,100 J	4,000 J	7,100 J	7,400 J					20,000	20,000					
Total dissolved solids	µg/L	NS	NS	NS	NS	NS						510,000		380,000	400,000	540,000	460,000	450,000					370,000	360,000					
Calcium	µg/L	NS	NS	NS	NS	NS						45,000		41,400 J	40,600	47,600 J	40,200 J	43,000 J	56,600				57,600	62,600 J	63,000				
Iron	µg/L	NS	NS	NS	NS	NS						*< 72.8 J*		*< 157*	*< 160*	68.3 J	105 J	115 J	265				24.2 J	72.8	210				
Manganese	µg/L	NS	**300**	NS	NS	NS		**405.4**	**394.0**	**304.8**	**319.5**	26.71		22.94 J	23.38 J	22.78 J	20.45 J	21.02 J	36.69	30.05	45.38	33.97	30.85	0.89 J	*< 2.59*	*< 3.08*	1.25	8.89	3.93	3.57
Sodium	µg/L	NS	NS	NS	NS	NS						130,000		107,000 J	106,000 J	144,000 J	138,000 J	148,000 J	142,000					14,800 J	14,100 J	16,300				
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS						41,000		14,000 J	16,000 J	26,000	6,000 J	36,000						9,400 J	10,000 J					
Metals, µg/L																													
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		**18.18**	**17.76**	**22.86**	**23.27**	**28.70**		**41.79**	**41.22**	**36.67**	**43.43 J**	**45.54 J**	**53.93**	**44.36**	**49.52**	**50.76**	**53.47**	4.22	4.12	4.75	4.22	4.37	4.00	4.49
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		34.83	32.44	25.02	26.07	5.82							10.07		5.08	3.48	3.50			*< 1.16*		*< 1.95*	1.13	1.01
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		0.06 J	0.07 J	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS						45,000		41,400 J	40,600	47,600 J	40,200 J	43,000 J	56,600				57,600	62,600 J	63,000				
Chromium	µg/L	NS	NS	100	100	300		0.18 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*							*< 1.00*		0.41 J	*< 1.00*	*< 1.00*			*< 1.00*		0.76 J	0.30 J	0.29 J
Cobalt	µg/L	NS	NS	NS	NS	NS																								
Copper	µg/L	NS	NS	1,300	NS	NS		0.63 J	0.70 J	0.46 J	0.42 J	*< 1.00*							*< 1.00*		0.43 J	0.66 J	*< 1.00*			*< 1.00*		2.80	1.64	1.00
Iron	µg/L	NS	NS	NS	NS	NS						*< 72.8 J*		*< 157*	*< 160*	68.3 J	105 J	115 J	265					24.2 J	72.8	210				
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*	0.37 J	0.37 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.55	2.04	*< 1.00*	1.56	3.40	3.30	2.10
Manganese	µg/L	NS	**300**	NS	NS	NS		**405.4**	**394.0**	**304.8**	**319.5**	26.71		22.94 J	23.38 J	22.78 J	20.45 J	21.02 J	36.69	30.05	45.38	33.97	30.85	0.89 J	*< 2.59*	*< 3.08*	1.25	8.89	3.93	3.57
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*							*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*		*< 0.20*	*< 1.29 J*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*							*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*							*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS						130,000		107,000 J	106,000 J	144,000 J	138,000 J	148,000 J	142,000					14,800 J	14,100 J	16,300				
Zinc	µg/L	NS	NS	NS	5,000	900		*< 10.00*	*< 10.00*	*< 10.00*	*< 10.00*	*< 10.00*							*< 10.00*		*< 10.00*	*< 10.00*	*< 10.95*			*< 15.07*		*< 15.16*	*< 10.00*	*< 10.00*
PCBs, µg/L																													
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																							
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																							
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																							
Pesticides, µg/L																													
4,4'-DDD	µg/L	NS	NS	NS	0.2	50						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
4,4'-DDE	µg/L	NS	NS	NS	0.05	400						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
4,4'-DDT	µg/L	NS	NS	NS	0.3	1						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Aldrin	µg/L	NS	NS	NS	0.5	30						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
alpha-Chlordane	µg/L	NS	NS	NS	2	2						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
trans-Chlordane	µg/L	NS	NS	NS	NS	NS						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
Chlordane	µg/L	NS	NS	NS	2	2						*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040 J*	*< 0.040*	*< 0.040*											
Endrin	µg/L	NS	NS	2	2	5						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Heptachlor	µg/L	NS	NS	0.4	0.4	1						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4						*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*	*< 0.020*											
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Endrin ketone	µg/L	NS	NS	NS	NS	NS						*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*	*< 0.040*											
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS						*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											
Methoxychlor	µg/L	NS	NS	40	40	10						*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*	*< 0.200*											

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5
							Geologic Unit	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Bedrock	Bedrock
							Location ID	OW-35	OW-35	OW-35	OW-35	OW-35	OW-35	OW-35	OW-35	OW-35	OW-35	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-37	OW-37
							Sample Date	06-Jun-17	06-Jun-17	06-Dec-17	06-Dec-17	08-Dec-20	18-May-21	05-Nov-21	23-Jun-22	21-Oct-22	21-Jan-16	21-Jan-16	06-Jun-17	29-Sep-17	29-Sep-17	06-Dec-17	16-Dec-20	17-May-21	05-Nov-21	17-Jun-22	21-Oct-22	23-Jun-17	07-Dec-17
							Sample Type	N	FD	N	FD	N	N	N	N	N	N	FD	N	N	FD	N	N	N	N	N	N	N	N
Cyanide, µg/L																													
Cyanide	µg/L	NS	NS	200	200	**30**	3 J	< 5	< 5	< 5	2 J						< 5	1 J	< 5	< 5	< 5	< 5							
Landfill Indicator Parameters, µg/L																													
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS	23,000	18,500	24,000	24,200							35,100	34,900	23,800	32,000	31,900	37,300							
Nitrate as N	µg/L	NS	NS	10,000	NS	NS	< 100	< 100	< 100	< 100							1,170	1,170	296	701	720	630							
Chloride	µg/L	NS	NS	NS	NS	NS	120,000	120,000	120,000	130,000							29,000	30,000	6,400	70,000	70,000	92,000							
Sulfate	µg/L	NS	NS	NS	NS	NS	25,000	25,000	23,000	23,000							14,000	15,000	7,400 J	9,700 J	10,000	14,000							
Total dissolved solids	µg/L	NS	NS	NS	NS	NS	370,000	370,000	340,000	350,000							130,000	130,000	78,000	240,000	180,000	250,000							
Calcium	µg/L	NS	NS	NS	NS	NS	48,600	50,000	62,100 J	62,700 J	52,000						20,100 J	20,200 J	10,500	29,000 J	29,100 J	34,200 J							
Iron	µg/L	NS	NS	NS	NS	NS	2,310	2,300	777 J	801 J	649						119 J	192 J	< 50.0	< 50.0	< 50.0	193 J							
Manganese	µg/L	NS	**300**	NS	NS	NS	**335.1**	260.1	286.5 J	291.6 J	142.5	**325.0**	290.1	**474.8**	**1,040**		6.30 J	13.77 J	< 7.37	2.31 J	2.02 J	18.59 J	5.79	4.80	10.83	**429.7**	**943.3**	**659.2**	**770.2 J**
Sodium	µg/L	NS	NS	NS	NS	NS	15,500	15,700	16,600 J	16,500 J	16,800						17,000 J	17,300 J	5,410	25,300 J	24,600 J	43,000 J							
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS	< 20,000	6,600 J	17,000 J	< 20,000							< 20,000	< 20,000	< 20,000	< 20,000	19,000 J	20,000							
Metals, µg/L																													
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	**28.32**	**28.95**	**11.56 J**	**10.92 J**	**13.23**	**19.74**	9.78	**28.33**	**30.32**		0.93	1.14	< 0.77	0.63		1.15 J	0.85	0.40 J	0.83	0.53	0.65	**12.40**	**10.03 J**
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000					15.47		17.46	22.25	26.65		17.46	17.78							15.60	60.80	48.64		
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20		< 0.20	< 0.20	< 0.20	< 0.20		0.08 J	< 0.20	< 0.20	< 0.20	0.12 J	0.23	< 0.20	0.14 J
Calcium	µg/L	NS	NS	NS	NS	NS	48,600	50,000	62,100 J	62,700 J	52,000						20,100 J	20,200 J	10,500	29,000 J	29,100 J	34,200 J							
Chromium	µg/L	NS	NS	100	100	300					< 1.00		< 1.00	0.22 J	< 1.00		< 1.89	< 1.00							< 1.00	< 1.00	< 1.00		
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS					< 1.00		1.01	1.42	< 1.27		0.50 J	0.55 J							1.18	0.95 J	< 1.00		
Iron	µg/L	NS	NS	NS	NS	NS	2,310	2,300	777 J	801 J	649						119 J	192 J	< 50.0	< 50.0	< 50.0	193 J							
Lead	µg/L	NS	**15**	**15**	**15**	**10**	4.19	0.96 J	0.45 J	0.70 J	< 1.00	**11.83**	2.34	2.71	< 1.80		0.45 J	1.58 J	0.48 J	0.43 J		1.62	< 1.00	1.10	0.73 J	1.07	< 1.00	< 1.00	0.36 J
Manganese	µg/L	NS	**300**	NS	NS	NS	**335.1**	260.1	286.5 J	291.6 J	142.5	**325.0**	290.1	**474.8**	**1,040**		6.30 J	13.77 J	< 7.37	2.31 J	2.02 J	18.59 J	5.79	4.80	10.83	**429.7**	**943.3**	**659.2**	**770.2 J**
Mercury	µg/L	NS	NS	2	2	20					< 0.20		< 0.20	< 0.74 J	< 0.20		< 0.20	< 0.20							< 0.20	< 0.20	< 0.20		
Selenium	µg/L	NS	NS	50	50	100					< 5.00		< 5.00	< 5.00	< 5.00		< 5.00	< 5.00							< 5.00	< 5.00	< 5.00		
Silver	µg/L	NS	NS	NS	100	7					< 0.40		< 0.40	< 0.40	< 0.40		< 0.40	< 0.40							< 0.40	< 0.40	< 0.40		
Sodium	µg/L	NS	NS	NS	NS	NS	15,500	15,700	16,600 J	16,500 J	16,800						17,000 J	17,300 J	5,410	25,300 J	24,600 J	43,000 J							
Zinc	µg/L	NS	NS	NS	5,000	900					< 10.00		< 10.73	3.59 J	< 15.76		< 10.00	< 10.00							< 11.52	< 10.00	< 11.10		
PCBs, µg/L																													
Aroclor 1016	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1221	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1232	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1248	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1254	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1260	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1262	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Aroclor 1268	µg/L	NS	NS	NS	0.5	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10											< 0.250	< 0.250	< 0.250 J	< 0.250	< 0.250	< 0.250							
Pesticides, µg/L																													
4,4'-DDD	µg/L	NS	NS	NS	0.2	50											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
4,4'-DDE	µg/L	NS	NS	NS	0.05	400											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
4,4'-DDT	µg/L	NS	NS	NS	0.3	1											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Aldrin	µg/L	NS	NS	NS	0.5	30											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
alpha-Chlordane	µg/L	NS	NS	NS	2	2											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
trans-Chlordane	µg/L	NS	NS	NS	NS	NS											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
Chlordane	µg/L	NS	NS	NS	2	2											< 0.200		< 0.200	< 0.100	< 0.200	< 0.200							
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS											< 0.040		< 0.040	< 0.020	< 0.040 J	< 0.040							
Endrin	µg/L	NS	NS	2	2	5											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Heptachlor	µg/L	NS	NS	0.4	0.4	1											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4											< 0.020		< 0.020	< 0.010	< 0.020	< 0.020							
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Endrin ketone	µg/L	NS	NS	NS	NS	NS											< 0.040		< 0.040	< 0.020	< 0.040	< 0.040							
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS											< 0.200		< 0.200	< 0.100	< 0.200	< 0.200							
Methoxychlor	µg/L	NS	NS	40	40	10											< 0.200		< 0.200	< 0.100	< 0.200	< 0.200							

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC5	AOC5	AOC5	AOC6	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6
							Geologic Unit	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden
							Location ID	OW-37	OW-37	OW-37	OW-38	OW-38	OW-38	OW-38	OW-38	OW-38	OW-38	MW-305S	MW-305S	MW-305S	MW-305S	MW-305S	MW-305S	MW-305D	MW-305D	MW-305D	MW-305D	MW-305D
							Sample Date	08-Nov-21	23-Jun-22	21-Oct-22	08-Jun-17	08-Jun-17	07-Dec-17	07-Dec-17	08-Nov-21	23-Jun-22	21-Oct-22	21-Jun-17	05-Dec-17	18-Dec-20	19-May-21	10-Feb-22	16-Jun-22	19-Oct-22	21-Jun-17	05-Dec-17	16-Dec-20	19-May-21	10-Feb-22
							Sample Type	N	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**																						
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS														100,000	177,000	125,000	86,600 J	89,000				
Nitrate as N	µg/L	NS	NS	10,000	NS	NS														*< 100*	*< 100*	*< 100*	*< 100 J*	*< 100*				
Chloride	µg/L	NS	NS	NS	NS	NS														280,000	170,000	200,000	140,000	270,000				
Sulfate	µg/L	NS	NS	NS	NS	NS														11,000	16,000	10,000	6,300 J	17,000				
Total dissolved solids	µg/L	NS	NS	NS	NS	NS														630,000	490,000	560,000	380,000	500,000				
Calcium	µg/L	NS	NS	NS	NS	NS														45,000	45,600	53,100	31,500	32,600				
Iron	µg/L	NS	NS	NS	NS	NS														1,560	823	317	460	*< 234*				
Manganese	µg/L	NS	**300**	NS	NS	NS		**1,346**	**1,247**	**1,296**	**562.0 J**	**535.5 J**	57.04 J	59.11 J	**808.1**	**990.1**	**1,181**	**3,492**	**10,900**	**5,865**	**3,816**	**3,172**	**2,559**	**3,498**	**1,387**	**1,198**	**2,066**	**1,120**	**1,698**
Sodium	µg/L	NS	NS	NS	NS	NS														172,000	118,000	138,000	96,400	166,000				
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS														28,000	11,000 J	20,000	*< 20,000*	21,000				
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	5.07	5.01	3.24	*< 2.87*	*< 2.77*	0.98 J	0.93 J	0.90	0.77	0.93	3.81	6.75	**11.32**	**11.01**	9.14	**10.65**	8.58	7.08	4.84	**11.88**	**14.51**	9.55
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	134.4	127.1	128.0					24.75	22.51	31.64	40.26	111.5				52.07	26.86	72.97	12.14	11.88			19.15
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.16 J	0.10 J	0.10 J	0.37	0.36	0.06 J	*< 0.20*	2.11	0.44	0.89	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.17 J	0.06 J	0.44	**4.70**	0.09 J	0.46
Calcium	µg/L	NS	NS	NS	NS	NS														45,000	45,600	53,100	31,500	32,600				
Chromium	µg/L	NS	NS	100	100	300	0.27 J	0.19 J	*< 1.00*					*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*				*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS	0.86 J	1.14	*< 1.00*					4.29	3.26	8.46	0.46 J	*< 1.00*				*< 1.00*	0.60 J	0.44 J	0.41 J	0.38 J			0.48 J
Iron	µg/L	NS	NS	NS	NS	NS														1,560	823	317	460	*< 234*					
Lead	µg/L	NS	**15**	**15**	**15**	**10**	*< 1.00*	0.53 J	*< 1.00*	1.27	1.06	0.39 J	*< 1.00*	0.55 J	1.40	*< 1.00*	*< 1.00*	*< 1.00*	1.85	*< 1.00*	*< 1.00*	*< 1.00*	0.37 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS	**1,346**	**1,247**	**1,296**	**562.0 J**	**535.5 J**	57.04 J	59.11 J	**808.1**	**990.1**	**1,181**	**3,492**	**10,900**	**5,865**	**3,816**	**3,172**	**2,559**	**3,498**	**1,387**	**1,198**	**2,066**	**1,120**	**1,698**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.75 J*	*< 0.20*					*< 0.20*	*< 0.77 J*	*< 0.20*	*< 0.20*	*< 0.20*				*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*	*< 5.00*	*< 5.00*					*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*				*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*	*< 0.40*	*< 0.40*					*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*				*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS														172,000	118,000	138,000	96,400	166,000				
Zinc	µg/L	NS	NS	NS	5,000	900	*< 12.59*	*< 10.00*	*< 15.19*					*< 10.00*	*< 10.00*	*< 13.92*	*< 10.00*	*< 10.00*				*< 10.00*	*< 10.00*	*< 11.54*	*< 10.00*	*< 10.00*			*< 10.00*
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
4,4'-DDE	µg/L	NS	NS	NS	0.05	400											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
4,4'-DDT	µg/L	NS	NS	NS	0.3	1											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Aldrin	µg/L	NS	NS	NS	0.5	30											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
alpha-Chlordane	µg/L	NS	NS	NS	2	2											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
trans-Chlordane	µg/L	NS	NS	NS	NS	NS											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
Chlordane	µg/L	NS	NS	NS	2	2											*< 0.200*	*< 0.200*							*< 0.200*	*< 0.200*		
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Endrin	µg/L	NS	NS	2	2	5											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Heptachlor	µg/L	NS	NS	0.4	0.4	1											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4											*< 0.020*	*< 0.020*							*< 0.020*	*< 0.020*		
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Endrin ketone	µg/L	NS	NS	NS	NS	NS											*< 0.040*	*< 0.040*							*< 0.040*	*< 0.040*		
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS											*< 0.200*	*< 0.200*							*< 0.200*	*< 0.200*		
Methoxychlor	µg/L	NS	NS	40	40	10											*< 0.200*	*< 0.200*							*< 0.200*	*< 0.200*		

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
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UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6
							Geologic Unit	Deep Overburde	Deep Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Shallow Overburde	Deep Overburde	Deep Overburde	Deep Overburde	Deep Overburde
							Location ID	MW-305D	MW-305D	MW-306S	MW-306S	MW-306S	MW-306S	MW-306S	MW-306S	MW-306S	MW-306S	MW-306S	MW-307S	MW-307S	MW-307S	MW-307S	MW-307S	MW-307S	MW-307S	MW-307D	MW-307D	MW-307D	MW-307D
							Sample Date	16-Jun-22	19-Oct-22	22-Jun-17	22-Jun-17	04-Dec-17	04-Dec-17	15-Dec-20	20-May-21	10-Feb-22	16-Jun-22	20-Oct-22	22-Jun-17	05-Dec-17	08-Dec-20	18-May-21	02-Nov-21	15-Jun-22	19-Oct-22	22-Jun-17	05-Dec-17	08-Dec-20	18-May-21
							Sample Type	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cyanide, µg/L																													
Cyanide	µg/L	NS	NS	200	200	**30**																							
Landfill Indicator Parameters, µg/L																													
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																							
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																							
Chloride	µg/L	NS	NS	NS	NS	NS																							
Sulfate	µg/L	NS	NS	NS	NS	NS																							
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																							
Calcium	µg/L	NS	NS	NS	NS	NS														107,000						33,300			
Iron	µg/L	NS	NS	NS	NS	NS														10,200						< 377			
Manganese	µg/L	NS	**300**	NS	NS	NS		**1,748**	**1,618**	143.6	132.9	192.9	202.5	159.0 J	130.8	149.1	150.1	144.2	**337.0**	**404.6**	281.9	224.9	**364.0**	< 1.00	177.4	114.2	94.69	84.93	107.4
Sodium	µg/L	NS	NS	NS	NS	NS															42,400							136,000	
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																							
Metals, µg/L																													
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		5.40	**10.93**	**13.66**	**12.50**	**12.21**	**13.38**	9.53 J	7.07	7.82	6.96	6.41	1.54	1.86	1.70	1.00	1.99	< 0.50	1.10	3.68	2.78	2.48	4.78
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		17.03	21.32	18.35	17.11	18.94	17.08			20.42	18.85	18.00	110.4	149.5	132.7		124.2	< 0.50	96.48	28.74	29.95	34.82	
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		0.12 J	0.16 J	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.06 J	0.06 J	0.47	0.10 J
Calcium	µg/L	NS	NS	NS	NS	NS															107,000						33,300		
Chromium	µg/L	NS	NS	100	100	300		0.31 J	0.22 J	< 1.00	< 1.00	< 1.00	< 1.00			0.46 J	0.27 J	< 1.00	< 1.8	< 2.89	1.80		2.87	< 1.00	1.25	< 1.00	< 1.48	1.10	
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS		1.24	0.49 J	1.99	1.80	0.63 J	0.64 J			2.88	1.84	1.74	0.87 J	0.72 J	< 1.00		1.01	< 1.00	< 1.00	9.50	57.26	39.94	
Iron	µg/L	NS	NS	NS	NS	NS															10,200						< 377		
Lead	µg/L	NS	**15**	**15**	**15**	**10**		< 1.00	1.31	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	0.65 J	4.51	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	1.46	< 1.00	< 1.00
Manganese	µg/L	NS	**300**	NS	NS	NS		**1,748**	**1,618**	143.6	132.9	192.9	202.5	159.0 J	130.8	149.1	150.1	144.2	**337.0**	**404.6**	281.9	224.9	**364.0**	< 1.00	177.4	114.2	94.69	84.93	107.4
Mercury	µg/L	NS	NS	2	2	20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20			< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	
Selenium	µg/L	NS	NS	50	50	100		< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00			< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00		< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	
Silver	µg/L	NS	NS	NS	100	7		< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40			< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40		< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	
Sodium	µg/L	NS	NS	NS	NS	NS															42,400						136,000		
Zinc	µg/L	NS	NS	NS	5,000	900		< 10.00	< 12.14	< 10.00	< 10.00	< 10.00	< 10.00			< 12.16	< 10.00	< 14.03	< 10.00	8.58 J	< 10.00		< 10.77	< 10.00	< 11.50	< 10.00	< 10.00	< 10.00	
PCBs, µg/L																													
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																							
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																							
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																							
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																							
Pesticides, µg/L																													
4,4'-DDD	µg/L	NS	NS	NS	0.2	50				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
4,4'-DDE	µg/L	NS	NS	NS	0.05	400				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
4,4'-DDT	µg/L	NS	NS	NS	0.3	1				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Aldrin	µg/L	NS	NS	NS	0.5	30				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
alpha-Chlordane	µg/L	NS	NS	NS	2	2				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
trans-Chlordane	µg/L	NS	NS	NS	NS	NS				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
Chlordane	µg/L	NS	NS	NS	2	2				< 0.200	< 0.200	< 0.200	< 0.200						< 0.200	< 0.200						< 0.200	< 0.200		
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Endrin	µg/L	NS	NS	2	2	5				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Heptachlor	µg/L	NS	NS	0.4	0.4	1				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4				< 0.020	< 0.020	< 0.020	< 0.020						< 0.020	< 0.020						< 0.020	< 0.020		
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Endrin ketone	µg/L	NS	NS	NS	NS	NS				< 0.040	< 0.040	< 0.040	< 0.040						< 0.040	< 0.040						< 0.040	< 0.040		
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS				< 0.200	< 0.200	< 0.200	< 0.200						< 0.200	< 0.200						< 0.200	< 0.200		
Methoxychlor	µg/L	NS	NS	40	40	10				< 0.200	< 0.200	< 0.200	< 0.200						< 0.200	< 0.200						< 0.200	< 0.200		

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6
							Geologic Unit	Deep Overburden	Deep Overburden	Deep Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden
							Location ID	MW-307D	MW-307D	MW-307D	MW-307B	MW-307B	MW-307B	MW-307B	MW-307B	MW-307B	MW-307B	MW-307B	MW-308B	MW-308B	MW-308B	MW-308B	MW-308B	MW-308B	MW-308B	OW-07	OW-07	OW-07
							Sample Date	02-Nov-21	15-Jun-22	19-Oct-22	20-Jun-17	20-Jun-17	05-Dec-17	05-Dec-17	08-Dec-20	18-May-21	02-Nov-21	15-Jun-22	19-Oct-22	21-Jun-17	09-Jan-18	08-Dec-20	19-May-21	02-Nov-21	15-Jun-22	19-Oct-22	20-Jun-17	09-Jan-18	08-Dec-20
							Sample Type	N	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**																						
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																						
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																						
Chloride	µg/L	NS	NS	NS	NS	NS																						
Sulfate	µg/L	NS	NS	NS	NS	NS																						
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																						
Calcium	µg/L	NS	NS	NS	NS	NS								31,700						50,400	53,400						58,200 J	71,000
Iron	µg/L	NS	NS	NS	NS	NS								*< 162*						2,680	4,180						*227*	1,130
Manganese	µg/L	NS	**300**	NS	NS	NS		94.37	*< 98.67*	101.8				109.2	128.4	87.81	*< 101.3*	92.95			**1,198**	**554.5**	**980.9**	*< 753.5*	**679.5**	**797.0**	**927.5**	**924.9**
Sodium	µg/L	NS	NS	NS	NS	NS								19,400						131,000 J	130,000						69,400 J	158,000
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																						
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		2.69	*< 2.85*	2.12	3.63	3.59	2.61	2.60	2.78	2.16	1.98	*< 2.07*	1.74	8.89	3.43	3.55	2.25	2.42	*< 1.46*	1.11	5.94	3.52	**16.50**
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		29.64	*< 32.28*	31.55	8.99	9.44	7.45	8.07	*< 9.51*		7.72	*< 9.04*	7.50	83.21	28.67	50.92		30.45	*< 12.07*	10.76	42.18	52.66	80.48
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		*< 0.20*	0.17 J	0.06 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	1.77	0.42	1.30	0.51	0.63	0.11 J	0.08 J	0.06 J	0.06 J	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS								31,700						50,400	53,400						58,200 J	71,000
Chromium	µg/L	NS	NS	100	100	300		0.32 J	*< 1.00*	0.36 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*		0.21 J	*< 1.00*	0.19 J	12.38	2.98	3.18		2.79	*< 1.00*	0.29 J	*< 1.00*	*< 1.00*	*< 1.00*
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS		4.13	*< 4.59*	3.94	0.70 J	0.57 J	0.45 J	0.47 J	*< 1.00*		0.73 J	*< 1.08*	*< 1.00*	39.52	7.84	19.01		9.60	*< 1.37*	0.63 J	0.74 J	*< 1.00*	*< 1.00*
Iron	µg/L	NS	NS	NS	NS	NS								*< 162*						2,680	4,180						227	1,130
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.59 J	*< 1.00*	*< 1.00*	*< 1.00*	**21.90**	4.90	**13.43**	4.66	6.99	*< 1.00*	0.37 J	*< 1.00*	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS		94.37	*< 98.67*	101.8				109.2	128.4	87.81	*< 101.3*	92.95			**1,198**	**554.5**	**980.9**	*< 753.5*	**679.5**	**797.0**	**927.5**	**924.9**
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	2.51 J	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	0.17 J	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	0.21 J	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS								19,400						131,000 J	130,000						69,400 J	158,000
Zinc	µg/L	NS	NS	NS	5,000	900		*< 9.23*	*< 10.00*	*< 10.99*	11.99	12.09	*< 10.00*	*< 10.00*	*< 10.00*		*< 9.81*	*< 10.00*	*< 13.03*	136.8	16.55	*< 35.13*		*< 25.31*	*< 10.00*	*< 11.69*	8.82 J	*< 10.00*	*< 13.82*
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50								*< 0.040*													*< 0.040*	*< 0.040*	
4,4'-DDE	µg/L	NS	NS	NS	0.05	400								*< 0.040*													*< 0.040*	*< 0.040*	
4,4'-DDT	µg/L	NS	NS	NS	0.3	1								*< 0.040*													*< 0.040*	*< 0.040*	
Aldrin	µg/L	NS	NS	NS	0.5	30								*< 0.020*													*< 0.020*	*< 0.020*	
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS								*< 0.020*													*< 0.020*	*< 0.020*	
alpha-Chlordane	µg/L	NS	NS	NS	2	2								*< 0.020*													*< 0.020*	*< 0.020*	
trans-Chlordane	µg/L	NS	NS	NS	NS	NS								*< 0.020*													*< 0.020*	*< 0.020*	
Chlordane	µg/L	NS	NS	NS	2	2								*< 0.200*													*< 0.200*	*< 0.200*	
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS								*< 0.020*													*< 0.020*	*< 0.020*	
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS								*< 0.020*													*< 0.020*	*< 0.020*	
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5								*< 0.040*													*< 0.040*	*< 0.040*	
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2								*< 0.020*													*< 0.020*	*< 0.020*	
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2								*< 0.040*													*< 0.040*	*< 0.040*	
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS								*< 0.040*													*< 0.040*	*< 0.040*	
Endrin	µg/L	NS	NS	2	2	5								*< 0.040*													*< 0.040*	*< 0.040*	
Heptachlor	µg/L	NS	NS	0.4	0.4	1								*< 0.020*													*< 0.020*	*< 0.020*	
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2								*< 0.020*													*< 0.020*	*< 0.020*	
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4								*< 0.020*													*< 0.020*	*< 0.020*	
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS								*< 0.040*													*< 0.040*	*< 0.040*	
Endrin ketone	µg/L	NS	NS	NS	NS	NS								*< 0.040*													*< 0.040*	*< 0.040*	
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS								*< 0.200*													*< 0.200*	*< 0.200*	
Methoxychlor	µg/L	NS	NS	40	40	10								*< 0.200*													*< 0.200*	*< 0.200*	

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
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UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	AOC6 Deep Overburde OW-07 19-May-21 N	AOC6 Deep Overburde OW-07 02-Nov-21 N	AOC6 Deep Overburde OW-07 15-Jun-22 N	AOC6 Deep Overburde OW-07 19-Oct-22 N	AOC6 Shallow Overburde OW-08 20-Jun-17 N	AOC6 Shallow Overburde OW-08 09-Jan-18 N	AOC6 Shallow Overburde OW-08 08-Dec-20 N	AOC6 Shallow Overburde OW-08 19-May-21 N	AOC6 Shallow Overburde OW-08 02-Nov-21 N	AOC6 Shallow Overburde OW-08 15-Jun-22 N	AOC6 Shallow Overburde OW-08 19-Oct-22 N	AOC6 Bedrock OW-28 21-Jun-17 N	AOC6 Bedrock OW-28 04-Dec-17 N	AOC6 Bedrock OW-28 18-Dec-20 N	AOC6 Bedrock OW-28 20-May-21 N	AOC6 Bedrock OW-28 11-Feb-22 N	AOC6 Bedrock OW-28 16-Jun-22 N	AOC6 Bedrock OW-28 20-Oct-22 N	AOC6 Deep Overburde OW-29 15-Dec-20 N	AOC6 Deep Overburde OW-29 20-May-21 N	AOC6 Deep Overburde OW-29 10-Feb-22 N	AOC6 Deep Overburde OW-29 16-Jun-22 N
Cyanide, µg/L																												
Cyanide	µg/L	NS	NS	200	200	**30**																						
Landfill Indicator Parameters, µg/L																												
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																						
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																						
Chloride	µg/L	NS	NS	NS	NS	NS																						
Sulfate	µg/L	NS	NS	NS	NS	NS																						
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																						
Calcium	µg/L	NS	NS	NS	NS	NS						38,500 J	63,400															
Iron	µg/L	NS	NS	NS	NS	NS						2,420	4,830															
Manganese	µg/L	NS	**300**	NS	NS	NS	**737.9**	243.2	*< 391.1*	**523.0**	**497.1**	**502.6**	**631.1**	**431.5**	**482.8**	*< 516.8*	**538.3**	63.34	71.01	41.09	5.70	45.32	59.90	50.27	**1,936 J**	**1,420**	**790.6**	**729.8**
Sodium	µg/L	NS	NS	NS	NS	NS						80,700	36,200															
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																						
Metals, µg/L																												
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	3.19	4.17	*< 1.87*	1.61	**61.05**	**16.42**	**31.26**	**20.26**	**18.67**	*< 35.49*	**20.08**	1.18	1.47	1.25	1.80	1.59	1.59	1.77	**14.11 J**	5.87	3.85	4.18
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		26.43	*< 42.86*	65.25	25.41	24.61	32.94		24.44	*< 21.98*	24.01	46.78	48.20			142.2	116.8	63.90			39.32	31.13
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.06 J	*< 0.20*	*< 0.20*	0.10 J	0.06 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.07 J	0.06 J	*< 0.20*	*< 0.20*	*< 0.20*	0.15 J	*< 0.20*	*< 0.20*	0.13 J	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS						38,500 J	63,400															
Chromium	µg/L	NS	NS	100	100	300		0.23 J	*< 1.00*	0.19 J	*< 1.00*	*< 1.00*	*< 1.00*		0.23 J	*< 1.00*	0.30 J	*< 1.00*	*< 1.00*			0.35 J	0.43 J	*< 1.00*			0.38 J	0.88 J
Cobalt	µg/L	NS	NS	NS	NS	NS																						
Copper	µg/L	NS	NS	1,300	NS	NS		0.62 J	*< 1.00*	*< 1.00*	0.51 J	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	*< 1.00*	0.50 J	0.43 J			0.52 J	0.61 J	*< 1.00*			1.76	2.03
Iron	µg/L	NS	NS	NS	NS	NS						2,420	4,830															
Lead	µg/L	NS	**15**	**15**	**15**	**10**	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.00	*< 1.00*	*< 1.00*	0.80 J	*< 1.00*	3.18	1.83	0.34 J	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS	**737.9**	243.2	*< 391.1*	**523.0**	**497.1**	**502.6**	**631.1**	**431.5**	**482.8**	*< 516.8*	**538.3**	63.34	71.01	41.09	5.70	45.32	59.90	50.27	**1,936 J**	**1,420**	**790.6**	**729.8**
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.94*			*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	0.22 J	0.46			0.37 J	0.41	*< 0.40*			*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS						80,700	36,200															
Zinc	µg/L	NS	NS	NS	5,000	900		*< 17.78*	*< 10.00*	*< 12.04*	6.23 J	5.85 J	*< 10.00*		*< 9.73*	*< 10.00*	*< 12.92*	*< 10.00*	*< 10.00*			*< 10.00*	*< 10.00*	*< 10.79*			*< 10.00*	*< 10.00*
PCBs, µg/L																												
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																						
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																						
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																						
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																						
Pesticides, µg/L																												
4,4'-DDD	µg/L	NS	NS	NS	0.2	50					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
4,4'-DDE	µg/L	NS	NS	NS	0.05	400					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
4,4'-DDT	µg/L	NS	NS	NS	0.3	1					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Aldrin	µg/L	NS	NS	NS	0.5	30					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
alpha-Chlordane	µg/L	NS	NS	NS	2	2					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
trans-Chlordane	µg/L	NS	NS	NS	NS	NS					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
Chlordane	µg/L	NS	NS	NS	2	2					*< 0.200*	*< 0.200*						*< 0.200*	*< 0.200*									
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Endrin	µg/L	NS	NS	2	2	5					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Heptachlor	µg/L	NS	NS	0.4	0.4	1					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4					*< 0.020*	*< 0.020*						*< 0.020*	*< 0.020*									
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Endrin ketone	µg/L	NS	NS	NS	NS	NS					*< 0.040*	*< 0.040*						*< 0.040*	*< 0.040*									
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS					*< 0.200*	*< 0.200*						*< 0.200*	*< 0.200*									
Methoxychlor	µg/L	NS	NS	40	40	10					*< 0.200*	*< 0.200*						*< 0.200*	*< 0.200*									

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group Geologic Unit Location ID Sample Date Sample Type	AOC6 Deep Overburden OW-29 20-Oct-22 N	Downgradient Bedrock MW-01 29-Jun-17 N	Downgradient Bedrock MW-01 10-Jan-18 N	Downgradient Bedrock MW-01 11-Dec-20 N	Downgradient Bedrock MW-01 20-May-21 N	Downgradient Bedrock MW-01 10-Nov-21 N	Downgradient Bedrock MW-01 21-Jun-22 N	Downgradien Bedrock MW-01 25-Oct-22 N	Downgradient Deep Overburde MW-01B 30-Jun-17 N	Downgradient Deep Overburde MW-01B 10-Jan-18 N	Downgradient Deep Overburde MW-01B 15-Dec-20 N	Downgradient Deep Overburde MW-01B 20-May-21 N	Downgradient Deep Overburde MW-01B 10-Nov-21 N	Downgradient Deep Overburde MW-01B 21-Jun-22 N	Downgradient Deep Overburde MW-01B 25-Oct-22 N	Downgradient Shallow Overburde SEN-1S 13-May-21 N	Downgradient Shallow Overburde SEN-1S 25-Aug-21 N	Downgradient Shallow Overburde SEN-1S 10-Nov-21 N	Downgradient Shallow Overburde SEN-1S 17-Mar-22 N	Downgradient Shallow Overburde SEN-1S 23-Jun-22 N	Downgradient Shallow Overburde SEN-1S 24-Aug-22 N	Downgradient Shallow Overburde SEN-1S 18-Oct-22 N
Cyanide, µg/L																										
Cyanide	µg/L	NS	NS	200	200	**30**																				
Landfill Indicator Parameters, µg/L																										
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																				
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																				
Chloride	µg/L	NS	NS	NS	NS	NS																				
Sulfate	µg/L	NS	NS	NS	NS	NS																				
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																				
Calcium	µg/L	NS	NS	NS	NS	NS																				
Iron	µg/L	NS	NS	NS	NS	NS																				
Manganese	µg/L	NS	**300**	NS	NS	NS		**1,253**			**638.6**	26.77	60.23	55.99	45.25				228.3 J	200.2	172.4	109.2	99.91	39.58	44.45	52.29	158.9	112.8	135.0	56.69
Sodium	µg/L	NS	NS	NS	NS	NS																				
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																				
Metals, µg/L																										
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		5.13	0.17 J	0.30 J	*< 0.50*	2.70	2.31	0.96	1.17	0.40 J	0.73	*< 0.50*	0.21 J	0.47 J	0.44 J	0.67	0.78	0.84	0.81	0.16 J	0.87	0.26 J	0.36 J
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		22.28	56.60	49.75			7.41	3.67	3.08	22.11	23.15			25.62	23.17	19.59		101.5	117.0	124.1	102.5	86.95	105.3
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		*< 0.20*	0.11 J	0.10 J	0.30	*< 0.20*	0.20	0.16 J	0.10 J	1.93	**11.17**	0.53	0.58	0.51	0.89	0.28	0.14 J	0.14 J	0.17 J	0.23	0.21	0.24	0.19 J
Calcium	µg/L	NS	NS	NS	NS	NS																				
Chromium	µg/L	NS	NS	100	100	300		*< 1.00*	0.18 J	*< 1.11*			*< 1.00*	*< 1.00*	*< 1.00*	0.38 J	3.17			*< 1.00*	0.37 J	*< 1.07*		*< 1.18*	*< 1.00*	0.31 J	0.66 J	*< 1.00*	*< 1.00*
Cobalt	µg/L	NS	NS	NS	NS	NS																				
Copper	µg/L	NS	NS	1,300	NS	NS		1.23	*< 1.00*	*< 2.04*			*< 2.70*	1.58	1.03	*< 3.19*	7.84			*< 1.98*	1.51	1.48		1.78	*< 1.28*	0.39 J	1.51	0.45 J	*< 1.00*
Iron	µg/L	NS	NS	NS	NS	NS																				
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	0.41 J	0.99 J	*< 1.00*	5.29	5.75	1.10	1.25	0.66 J	3.60	*< 1.00*	1.13	0.83 J	1.31	1.51	*< 1.00*	0.34 J	0.34 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS		**1,253**			**638.6**	26.77	60.23	55.99	45.25			228.3 J	200.2	172.4	109.2	99.91	39.58	44.45	52.29	158.9	112.8	135.0	56.69
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*			*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.90 J*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*			*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*			*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS																				
Zinc	µg/L	NS	NS	NS	5,000	900		*< 10.00*	*< 10.00*	6.03 J			*< 24.54*	10.57	*< 27.66*	13.76	55.14			*< 20.20*	9.65 J	*< 21.94*		*< 10.00*	*< 12.61*	*< 10.60*	*< 10.00*	*< 11.72*	*< 11.62*
PCBs, µg/L																										
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																				
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																				
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																				
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																				
Pesticides, µg/L																										
4,4'-DDD	µg/L	NS	NS	NS	0.2	50																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
4,4'-DDE	µg/L	NS	NS	NS	0.05	400																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
4,4'-DDT	µg/L	NS	NS	NS	0.3	1																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Aldrin	µg/L	NS	NS	NS	0.5	30																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
alpha-Chlordane	µg/L	NS	NS	NS	2	2																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
trans-Chlordane	µg/L	NS	NS	NS	NS	NS																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Chlordane	µg/L	NS	NS	NS	2	2																	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endrin	µg/L	NS	NS	2	2	5																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Heptachlor	µg/L	NS	NS	0.4	0.4	1																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4																	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endrin ketone	µg/L	NS	NS	NS	NS	NS																	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS																	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			
Methoxychlor	µg/L	NS	NS	40	40	10																	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			

Notes:
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The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
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Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

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5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
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MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group Geologic Unit Location ID Sample Date Sample Type	Downgradient Deep Overburden SEN-1D 13-May-21 N	Downgradient Deep Overburden SEN-1D 20-Aug-21 N	Downgradient Deep Overburden SEN-1D 10-Nov-21 N	Downgradient Deep Overburden SEN-1D 16-Mar-22 N	Downgradient Deep Overburden SEN-1D 23-Jun-22 N	Downgradient Deep Overburden SEN-1D 25-Aug-22 N	Downgradient Deep Overburden SEN-1D 25-Oct-22 N	Downgradient Bedrock SEN-1B 13-May-21 N	Downgradient Bedrock SEN-1B 25-Aug-21 N	Downgradient Bedrock SEN-1B 10-Nov-21 N	Downgradient Bedrock SEN-1B 17-Mar-22 N	Downgradient Bedrock SEN-1B 23-Jun-22 N	Downgradient Bedrock SEN-1B 24-Aug-22 N	Downgradient Bedrock SEN-1B 25-Oct-22 N	Downgradient Shallow Overburden SEN-2S 13-May-21 N	Downgradient Shallow Overburden SEN-2S 25-Aug-21 N	Downgradient Shallow Overburden SEN-2S 11-Nov-21 N	Downgradient Shallow Overburden SEN-2S 17-Mar-22 N	Downgradient Shallow Overburden SEN-2S 30-Jun-22 N	Downgradient Shallow Overburden SEN-2S 24-Aug-22 N	Downgradient Shallow Overburden SEN-2S 18-Oct-22 N	Downgradient Deep Overburden SEN-2D 13-May-21 N
Cyanide, µg/L																											
Cyanide	µg/L	NS	NS	200	200	**30**																					
Landfill Indicator Parameters, µg/L																											
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																					
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																					
Chloride	µg/L	NS	NS	NS	NS	NS																					
Sulfate	µg/L	NS	NS	NS	NS	NS																					
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																					
Calcium	µg/L	NS	NS	NS	NS	NS																					
Iron	µg/L	NS	NS	NS	NS	NS																					
Manganese	µg/L	NS	**300**	NS	NS	NS		6.57	45.91	54.54	74.88	31.12	58.04	51.35	28.10	151.5	195.6	189.7	134.6	140.8	158.8	**1,323**	**1,074**	**1,026**	**521.2**	**358.6**	**511.5**	**879.3**	**1,538**
Sodium	µg/L	NS	NS	NS	NS	NS																					
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																					
Metals, µg/L																											
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		3.39	2.55	6.17	4.47	3.86	2.87	2.08	6.89	2.42	1.55	1.30	0.83	0.94	1.06	1.46	0.22 J	0.80	0.39 J	0.24 J	0.22 J	0.22 J	0.33 J
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000			53.02	50.79	86.28	79.63	72.68	71.45		50.28	61.49	45.57	39.79	35.10	36.86		62.61	83.12	48.79	42.56	40.13	49.90		
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		*< 0.20*	*< 0.20*	*< 0.20*	0.14 J	0.08 J	0.12 J	0.12 J	*< 0.20*	0.29	0.34	0.25	0.25	0.23	0.23	0.19 J	0.24	0.35	0.20	0.16 J	0.18 J	0.23	0.39
Calcium	µg/L	NS	NS	NS	NS	NS																					
Chromium	µg/L	NS	NS	100	100	300			*< 6.23*	3.19	2.25	1.24	1.35	*< 1.49*		*< 1.49*	*< 1.00*	0.64 J	0.70 J	0.40 J	*< 1.00*		*< 1.00*	0.44 J	0.38 J	*< 1.00*	*< 1.00*	*< 1.00*	
Cobalt	µg/L	NS	NS	NS	NS	NS																					
Copper	µg/L	NS	NS	1,300	NS	NS			*< 2.12*	*< 1.21*	0.94 J	0.77 J	0.74 J	0.96 J		2.21	*< 1.01*	1.43	1.07	0.99 J	1.33		1.11	2.39	1.74	1.18	0.80 J	*< 1.00*	
Iron	µg/L	NS	NS	NS	NS	NS																					
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.35 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	0.57 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS		6.57	45.91	54.54	74.88	31.12	58.04	51.35	28.10	151.5	195.6	189.7	134.6	140.8	158.8	**1,323**	**1,074**	**1,026**	**521.2**	**358.6**	**511.5**	**879.3**	**1,538**
Mercury	µg/L	NS	NS	2	2	20			*< 0.20*	*< 0.20*	*< 0.20*	*< 1.69 J*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.91 J*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	
Selenium	µg/L	NS	NS	50	50	100			*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	
Silver	µg/L	NS	NS	NS	100	7			*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	
Sodium	µg/L	NS	NS	NS	NS	NS																					
Zinc	µg/L	NS	NS	NS	5,000	900			*< 10.00*	*< 10.00*	*< 10.00*	*< 10.00*	*< 10.59*	*< 14.02*		*< 10.00*	*< 12.27*	*< 12.78*	*< 10.00*	*< 13.64*	*< 16.47*		*< 10.00*	*< 10.00*	*< 10.79*	*< 10.00*	*< 11.22*	*< 11.39*	
PCBs, µg/L																											
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																					
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																					
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																					
Pesticides, µg/L																											
4,4'-DDD	µg/L	NS	NS	NS	0.2	50		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
4,4'-DDE	µg/L	NS	NS	NS	0.05	400		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
4,4'-DDT	µg/L	NS	NS	NS	0.3	1		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Aldrin	µg/L	NS	NS	NS	0.5	30		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
alpha-Chlordane	µg/L	NS	NS	NS	2	2		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
trans-Chlordane	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
Chlordane	µg/L	NS	NS	NS	2	2		*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Endrin	µg/L	NS	NS	2	2	5		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Heptachlor	µg/L	NS	NS	0.4	0.4	1		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4		*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Endrin ketone	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS		*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*
Methoxychlor	µg/L	NS	NS	40	40	10		*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group Geologic Unit Location ID Sample Date Sample Type	Downgradient Deep Overburden SEN-2D 20-Aug-21 N	Downgradient Deep Overburden SEN-2D 11-Nov-21 N	Downgradient Deep Overburden SEN-2D 16-Mar-22 N	Downgradient Deep Overburden SEN-2D 30-Jun-22 N	Downgradient Deep Overburden SEN-2D 24-Aug-22 N	Downgradient Deep Overburden SEN-2D 18-Oct-22 N	Downgradien Bedrock SEN-2B 13-May-21 N	Downgradien Bedrock SEN-2B 25-Aug-21 N	Downgradien Bedrock SEN-2B 11-Nov-21 N	Downgradien Bedrock SEN-2B 17-Mar-22 N	Downgradien Bedrock SEN-2B 30-Jun-22 N	Downgradien Bedrock SEN-2B 25-Aug-22 N	Downgradien Bedrock SEN-2B 18-Oct-22 N	Downgradien hallow Overburde SEN-3S 19-May-21 N	Downgradient Shallow Overburde SEN-3S 20-Aug-21 N	Downgradient Shallow Overburde SEN-3S 08-Nov-21 N	Downgradient Shallow Overburde SEN-3S 16-Mar-22 N	Downgradient Shallow Overburde SEN-3S 20-Jun-22 N	Downgradient Shallow Overburde SEN-3S 24-Aug-22 N	Downgradient Shallow Overburde SEN-3S 18-Oct-22 N	Downgradient Deep Overburde SEN-3D 19-May-21 N	Downgradient Deep Overburde SEN-3D 20-Aug-21 N
Cyanide, µg/L																											
Cyanide	µg/L	NS	NS	200	200	**30**																					
Landfill Indicator Parameters, µg/L																											
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS																					
Nitrate as N	µg/L	NS	NS	10,000	NS	NS																					
Chloride	µg/L	NS	NS	NS	NS	NS																					
Sulfate	µg/L	NS	NS	NS	NS	NS																					
Total dissolved solids	µg/L	NS	NS	NS	NS	NS																					
Calcium	µg/L	NS	NS	NS	NS	NS																					
Iron	µg/L	NS	NS	NS	NS	NS																					
Manganese	µg/L	NS	**300**	NS	NS	NS		**2,485**	**2,859**	**2,858**	**1,989**	**2,415**	**1,976**	**997.5**	**1,710**	**1,757**	**1,895**	**1,535**	**1,721**	**1,533**	**1,610**	**2,827**	**2,769**	**3,044**	**3,198**	**2,751**	**1,828**	**2,500**	**3,030**
Sodium	µg/L	NS	NS	NS	NS	NS																					
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS																					
Metals, µg/L																											
Arsenic	µg/L	**10**	**10**	**10**	**10**	900		0.40 J	0.65	0.63	0.34 J	0.49 J	0.38 J	4.93	1.20	1.35	1.00	0.93	1.16	1.03	**31.72**	**40.61**	**41.26**	**105.5**	**42.02**	**21.32**	**45.72**	0.61	0.97
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000		33.29	35.75	25.82	23.65	22.54	22.86		10.25	9.99	8.61	8.16	8.31	7.15		46.52	45.71	65.41	57.23	41.13	38.42		68.47
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**		0.32	0.40	0.26	0.35	0.33	0.34	0.06 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	0.16 J	0.27	0.08 J	0.15 J	*< 0.20*	0.15 J	0.10 J
Calcium	µg/L	NS	NS	NS	NS	NS																							
Chromium	µg/L	NS	NS	100	100	300		*< 1.00*	0.27 J	0.42 J	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	0.35 J	0.59 J	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*	*< 1.00*	2.13	*< 1.00*	*< 1.00*	*< 1.00*		*< 1.00*
Cobalt	µg/L	NS	NS	NS	NS	NS																							
Copper	µg/L	NS	NS	1,300	NS	NS		*< 1.35*	0.48 J	0.70 J	1.13	0.40 J	*< 1.00*		0.99 J	1.25	0.75 J	1.45	1.09	*< 1.00*		*< 1.00*	*< 1.28*	3.78	0.52 J	*< 1.00*	*< 1.00*		*< 1.15*
Iron	µg/L	NS	NS	NS	NS	NS																							
Lead	µg/L	NS	**15**	**15**	**15**	**10**		*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	3.51	*< 1.00*	*< 1.00*	0.46 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.52	*< 1.00*	*< 1.00*	0.48 J	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS		**2,485**	**2,859**	**2,858**	**1,989**	**2,415**	**1,976**	**997.5**	**1,710**	**1,757**	**1,895**	**1,535**	**1,721**	**1,533**	**1,610**	**2,827**	**2,769**	**3,044**	**3,198**	**2,751**	**1,828**	**2,500**	**3,030**
Mercury	µg/L	NS	NS	2	2	20		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*
Selenium	µg/L	NS	NS	50	50	100		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*
Silver	µg/L	NS	NS	NS	100	7		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS																							
Zinc	µg/L	NS	NS	NS	5,000	900		28.70	*< 10.00*	*< 13.31*	3.92 J	*< 11.41*	*< 11.51*		*< 10.00*	*< 10.94*	*< 13.53*	*< 10.00*	*< 13.68*	*< 11.39*		*< 10.00*	*< 10.00*	*< 12.37*	*< 10.00*	*< 10.00*	*< 11.25*		*< 10.00*
PCBs, µg/L																											
Aroclor 1016	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1221	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1232	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10																					
Aroclor 1248	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1254	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1260	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1262	µg/L	NS	NS	NS	0.5	10																					
Aroclor 1268	µg/L	NS	NS	NS	0.5	10																					
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10																					
Pesticides, µg/L																											
4,4'-DDD	µg/L	NS	NS	NS	0.2	50		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
4,4'-DDE	µg/L	NS	NS	NS	0.05	400		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
4,4'-DDT	µg/L	NS	NS	NS	0.3	1		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Aldrin	µg/L	NS	NS	NS	0.5	30		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
alpha-Chlordane	µg/L	NS	NS	NS	2	2		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
trans-Chlordane	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
Chlordane	µg/L	NS	NS	NS	2	2		*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Endrin	µg/L	NS	NS	2	2	5		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Heptachlor	µg/L	NS	NS	0.4	0.4	1		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4		*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*				*< 0.014*	*< 0.014*
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Endrin ketone	µg/L	NS	NS	NS	NS	NS		*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*				*< 0.029*	*< 0.029*
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS		*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*
Methoxychlor	µg/L	NS	NS	40	40	10		*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*				*< 0.143*	*< 0.143*

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 9
Summary of Groundwater Analytical Data - Landfill Indicator Parameters, Metals
PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	Downgradient Deep Overburden SEN-3D 20-Aug-21 FD	Downgradient Deep Overburden SEN-3D 08-Nov-21 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 FD	Downgradient Deep Overburden SEN-3D 20-Jun-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 FD	Downgradient Deep Overburden SEN-3D 18-Oct-22 N	Downgradient Bedrock SEN-3B 19-May-21 N	Downgradient Bedrock SEN-3B 20-Aug-21 N	Downgradient Bedrock SEN-3B 08-Nov-21 N	Downgradient Bedrock SEN-3B 16-Mar-22 N	Downgradient Bedrock SEN-3B 20-Jun-22 N	Downgradient Bedrock SEN-3B 24-Aug-22 N	Downgradient Bedrock SEN-3B 18-Oct-22 N
Cyanide, µg/L																					
Cyanide	µg/L	NS	NS	200	200	**30**															
Landfill Indicator Parameters, µg/L																					
Alkalinity, Total as CaCO3	µg/L	NS	NS	NS	NS	NS															
Nitrate as N	µg/L	NS	NS	10,000	NS	NS															
Chloride	µg/L	NS	NS	NS	NS	NS															
Sulfate	µg/L	NS	NS	NS	NS	NS															
Total dissolved solids	µg/L	NS	NS	NS	NS	NS															
Calcium	µg/L	NS	NS	NS	NS	NS															
Iron	µg/L	NS	NS	NS	NS	NS															
Manganese	µg/L	NS	**300**	NS	NS	NS	**3,057**	**3,076**	**3,322**	**3,457**	**3,545**	**3,426**	**3,479**	**3,188**	**419.2**	**465.6**	**454.2**	**492.3**	**506.5**	**500.9**	**483.9**
Sodium	µg/L	NS	NS	NS	NS	NS															
Chemical oxygen demand	µg/L	NS	NS	NS	NS	NS															
Metals, µg/L																					
Arsenic	µg/L	**10**	**10**	**10**	**10**	900	1.11	1.05	0.65	0.65	0.94	0.72	0.79	0.81	5.41	**10.55**	**11.64**	**12.66**	**13.93**	**13.15**	**12.98**
Barium	µg/L	NS	NS	**2,000**	**2,000**	50,000	68.20	67.89	65.99	65.24	75.33	68.99	70.37	72.69		30.77	25.60	23.84	29.31	28.70	25.81
Cadmium	µg/L	NS	**5**	**5**	**5**	**4**	0.11 J	0.13 J	0.18 J	0.19 J	0.18 J	0.15 J	0.14 J	0.15 J	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Calcium	µg/L	NS	NS	NS	NS	NS															
Chromium	µg/L	NS	NS	100	100	300	*< 1.00*	*< 1.00*	0.20 J	0.22 J	0.26 J	*< 1.00*	0.20 J	*< 1.00*		*< 1.77*	*< 1.00*	0.82 J	0.89 J	0.96 J	0.35 J
Cobalt	µg/L	NS	NS	NS	NS	NS															
Copper	µg/L	NS	NS	1,300	NS	NS	*< 1.58*	*< 1.55*	1.10	1.20	1.36	0.98 J	1.06	0.56 J		*< 1.33*	*< 1.00*	0.96 J	1.31	1.31	*< 1.00*
Iron	µg/L	NS	NS	NS	NS	NS															
Lead	µg/L	NS	**15**	**15**	**15**	**10**	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	1.23	0.46 J	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*	*< 1.00*
Manganese	µg/L	NS	**300**	NS	NS	NS	**3,057**	**3,076**	**3,322**	**3,457**	**3,545**	**3,426**	**3,479**	**3,188**	**419.2**	**465.6**	**454.2**	**492.3**	**506.5**	**500.9**	**483.9**
Mercury	µg/L	NS	NS	2	2	20	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*		*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*	*< 0.20*
Selenium	µg/L	NS	NS	50	50	100	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*		*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*
Silver	µg/L	NS	NS	NS	100	7	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*		*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*	*< 0.40*
Sodium	µg/L	NS	NS	NS	NS	NS															
Zinc	µg/L	NS	NS	NS	5,000	900	*< 10.00*	*< 10.00*	*< 10.36*	*< 11.04*	*< 10.00*	*< 17.08*	*< 12.29*	*< 10.57*		*< 10.00*	*< 10.17*	*< 11.30*	*< 10.00*	*< 13.56*	*< 18.01*
PCBs, µg/L																					
Aroclor 1016	µg/L	NS	NS	NS	0.5	10															
Aroclor 1221	µg/L	NS	NS	NS	0.5	10															
Aroclor 1232	µg/L	NS	NS	NS	0.5	10															
Aroclor 1242	µg/L	NS	NS	NS	**0.5**	10															
Aroclor 1248	µg/L	NS	NS	NS	0.5	10															
Aroclor 1254	µg/L	NS	NS	NS	0.5	10															
Aroclor 1260	µg/L	NS	NS	NS	0.5	10															
Aroclor 1262	µg/L	NS	NS	NS	0.5	10															
Aroclor 1268	µg/L	NS	NS	NS	0.5	10															
Total PCBs	µg/L	NS	NS	**0.5**	**0.5**	10															
Pesticides, µg/L																					
4,4'-DDD	µg/L	NS	NS	NS	0.2	50	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
4,4'-DDE	µg/L	NS	NS	NS	0.05	400	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
4,4'-DDT	µg/L	NS	NS	NS	0.3	1	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Aldrin	µg/L	NS	NS	NS	0.5	30	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
alpha-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
alpha-Chlordane	µg/L	NS	NS	NS	2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
trans-Chlordane	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Chlordane	µg/L	NS	NS	NS	2	2	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*					*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			
beta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
delta-BHC/HCH	µg/L	NS	NS	NS	NS	NS	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Dieldrin	µg/L	**0.01**	**0.01**	NS	0.1	0.5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endosulfan I (Alpha)	µg/L	NS	NS	NS	10	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Endosulfan II (Beta)	µg/L	NS	NS	NS	10	2	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endosulfan sulfate	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endrin	µg/L	NS	NS	2	2	5	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Heptachlor	µg/L	NS	NS	0.4	0.4	1	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Heptachlor epoxide	µg/L	NS	NS	0.2	0.2	2	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
gamma-BHC/HCH (Lindane)	µg/L	NS	NS	0.2	0.2	4	*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*					*< 0.014*	*< 0.014*	*< 0.014*	*< 0.014*			
Endrin aldehyde	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Endrin ketone	µg/L	NS	NS	NS	NS	NS	*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*					*< 0.029*	*< 0.029*	*< 0.029*	*< 0.029*			
Chlorinated camphene/ Toxaphene	µg/L	NS	NS	3	NS	NS	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*					*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			
Methoxychlor	µg/L	NS	NS	40	40	10	*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*					*< 0.143*	*< 0.143*	*< 0.143*	*< 0.143*			

Notes:
< = Compound not detected at concentration
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
FD = Field Duplicate Sample
N = Normal Environmental Sample
Units are in µg/L = micrograms per liter
Analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Bedrock MW-213B 26-Jun-17 N	AOC1 Bedrock MW-213B 10-Jan-18 N	AOC1 Bedrock MW-213B 16-Dec-20 N	AOC1 Bedrock MW-213B 11-May-21 N	AOC1 Bedrock MW-213B 04-Nov-21 N	AOC1 Bedrock MW-213B 29-Jun-22 N	AOC1 Bedrock MW-213B 26-Oct-22 N	AOC1 Deep Overburden MW-213D 26-Jun-17 N	AOC1 Deep Overburden MW-213D 10-Jan-18 N	AOC1 Deep Overburden MW-213D 10-Dec-20 N	AOC1 Deep Overburden MW-213D 04-Nov-21 N	AOC1 Deep Overburden MW-213D 29-Jun-22 N	AOC1 Deep Overburden MW-213D 26-Oct-22 N	AOC1 Shallow Overburden MW-213S 26-Jun-17 N	AOC1 Shallow Overburden MW-213S 26-Jun-17 FD	AOC1 Shallow Overburden MW-213S 10-Jan-18 N	AOC1 Shallow Overburden MW-213S 10-Jan-18 FD	AOC1 Shallow Overburden MW-213S 10-Dec-20 N	AOC1 Shallow Overburden MW-213S 10-Dec-20 FD	AOC1 Shallow Overburden MW-213S 11-May-21 N	AOC1 Shallow Overburden MW-213S 11-May-21 FD	AOC1 Shallow Overburden MW-213S 04-Nov-21 N	AOC1 Shallow Overburden MW-213S 04-Nov-21 FD	AOC1 Shallow Overburden MW-213S 22-Jun-22 N	AOC1 Shallow Overburden MW-213S 22-Jun-22 FD	AOC1 Shallow Overburden MW-213S 27-Oct-22 N	AOC1 Shallow Overburden MW-213S 27-Oct-22 FD	AOC1 Bedrock MW-214B 10-Dec-20 N	AOC1 Bedrock MW-214B 12-May-21 N	AOC1 Bedrock MW-214B 04-Nov-21 N
VOCs, Method 8260, µg/L																																				
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	0.59 J	0.55 J	< 0.75	0.80	0.33 J	0.77	0.62 J	0.60 J	0.66 J	< 0.75	0.32 J	0.32 J	0.38 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	NS	7	7	30,000	0.82	0.36 J	0.50	0.75	0.62	1.0	0.83	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.21 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	4.2	1.1	1.3	3.3	1.6	2.5	3.0	1.0	1.3	0.50	0.39 J	0.33 J	0.42 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.14 J	0.14 J	< 0.50	< 0.50	< 0.50	< 0.50	0.20 J	0.15 J
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	NS	0.84	0.41 J	0.51	0.73	0.58	0.78	0.85	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	16	14	6.4	5.6	6.5	7.5	9.5	12	2.2 J	2.7 J	< 5.0	< 5.0 J	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	6,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	0.84	0.41 J	0.51	0.73	0.58	0.78	0.85	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Ethylbenzene	µg/L	NS	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Freon 11	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Freon 12	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.24 J	0.26 J	0.25 J	0.22 J	< 0.50	< 0.50	0.29 J	0.31 J	< 0.50	< 0.50	< 0.50	< 0.50	0.21 J	0.20 J	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1
						Geologic Unit	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Bedrock	Bedrock	Bedrock	Bedrock
						Location ID	MW-214D	MW-214D	MW-214D	MW-214D	MW-214S	MW-214S	MW-214S	MW-214S	MW-214S	MW-214S	MW-214S	MW-215B	MW-215B	MW-215B	MW-215D	MW-215D	MW-215D	MW-215D	MW-215D	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	MW-215S	OW-49	OW-49	OW-49	OW-49
						Sample Date	28-Jun-17	11-Jan-18	10-Dec-20	11-May-21	28-Jun-17	11-Jan-18	15-Dec-29	11-May-21	22-Jun-22	28-Oct-22	04-Nov-21	22-Jun-22	26-Oct-22	29-Jun-17	11-Jan-18	11-Nov-21	22-Jun-22	26-Oct-22	28-Jun-17	11-Jan-18	28-Jun-17	11-Jan-18	11-Jan-18	09-Nov-21	22-Jun-22	26-Oct-22	30-Jun-17	11-Jan-18	14-Dec-20	18-May-21
						Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N
						MA-GW-3-2020																															
VOCs, Method 8260, µg/L																																			
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	0.26 J	< 0.75	8.0	9.3	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.37 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.78	0.63 J	0.96	0.98
1,1-Dichloroethene	µg/L	NS	NS	NS	7	7	30,000	< 0.50	< 0.50	0.93	0.99	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.64	0.49 J	0.82	0.99
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0			< 2.0									< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5		< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	70	70	50,000										< 2.5				< 2.5															
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	NS	600	600	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	0.28 J	0.20 J	0.77	0.55	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.3	4.6	5.4	5.5
1,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	1.6	2.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.4	1.3	1.9	2.3
1,2-Dichloropropane	µg/L	NS	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
2-Butanone	µg/L	NS	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0			< 2.0	< 2.0								< 2.0	< 2.0				< 2.0	< 2.0	< 2.0	< 2.0					< 2.0	< 2.0		
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Acrolein	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0			< 5.0									< 5.0	< 5.0				< 5.0	< 5.0	< 5.0	< 5.0					< 5.0 J	< 5.0		
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	NS	100	100	1,000	< 0.50	< 0.50	2.2	2.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	NS	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	< 0.50	< 0.50	< 0.50	1.6	2.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.4	1.3	1.9	2.3
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10			< 10									< 10	< 10				< 10	< 10	< 10	< 10					< 10	< 10		
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10			< 10									< 10	< 10				< 10	< 10	< 10	< 10					< 10	< 10		
Ethyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	NS	700	700	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0			< 2.0									< 2.0	< 2.0				< 2.0	< 2.0	< 2.0	< 2.0					< 2.0	< 2.0		
Freon 11	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10			< 10									< 10	< 10				< 10	< 10	< 10	< 10					< 10	< 10		
Freon 12	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0			< 2.0									< 2.0	< 2.0				< 2.0	< 2.0	< 2.0	< 2.0					< 2.0	< 2.0		
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000		0.33 J	0.22 J	1.6	1.5	0.34 J	0.20 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.5	3.4	8.0	6.4
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2
						Geologic Unit	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
						Location ID	OW-49	OW-49	OW-49	OW-50	OW-50	OW-50	OW-50	OW-50	OW-50	OW-50	OW-51	OW-51	OW-51	OW-51	OW-51	OW-51	MW-210S	MW-210S	MW-210S	MW-210S	MW-210B	MW-210B	MW-210B	MW-210B	MW-210B	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S
						Sample Date	04-Nov-21	23-Jun-22	25-Oct-22	14-Dec-20	13-May-21	04-Nov-21	21-Jun-22	29-Oct-22	13-May-21	14-Dec-20	13-May-21	04-Nov-21	04-Nov-21	04-Nov-21	21-Jun-22	29-Oct-22	14-Jun-17	14-Jun-17	14-Jun-17	05-Dec-17	14-Jun-17	05-Dec-17	16-Dec-20	10-May-21	09-Nov-21	04-Dec-17	04-Dec-17	04-Dec-17	15-Dec-20	10-May-21
						Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N	FD	N	N	N	N	N	N	N	FD	N	N	N
VOCs, Method 8260, µg/L																																				
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	0.73 J	0.86	1.3	0.76	0.55 J	0.54 J	0.80	0.85	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.97	1.2	0.64 J	0.41 J	0.22 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	0.62	0.53	0.51	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS																	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.52 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000			< 2.5					< 2.5							< 2.5									< 2.5						
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	4.0	4.3	3.9 J	0.94	0.70	0.73	1.1	1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	3.1	1.6	1.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.35 J	0.27 J	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS																	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1.6 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS																	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.16 J	0.19 J	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.47 J	1.4	0.78	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	0.13 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	3.1	1.6	1.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS																	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS																	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Ethylbenzene	µg/L	NS	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS																	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS																	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS																	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	6.2	7.5	9.0	25	25	25	24	23	< 1.0	< 1.0	0.18 J	< 1.0	2.7	12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µ

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A	AOC3A
						Geologic Unit	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden
						Location ID	MW-211S	MW-211S	MW-211S	MW-211D	MW-211D	MW-211D	MW-211D	MW-211D	MW-211D	MW-211D	MW-211D	MW-212S	MW-212S	MW-212D	MW-212D	MW-206S	MW-206S	MW-206S	MW-206S	MW-206S	MW-206S	MW-206D	MW-206D	MW-206D	MW-206D
						Sample Date	09-Nov-21	28-Jun-22	27-Oct-22	07-Jun-17	07-Jun-17	04-Dec-17	15-Dec-20	10-May-21	09-Nov-21	28-Jun-22	27-Oct-22	12-Jun-17	04-Dec-17	13-Jun-17	04-Dec-17	13-Jun-17	08-Jan-18	18-May-21	09-Nov-21	05-Nov-21	20-Jun-22	25-Oct-22	11-Dec-20	18-May-21	05-Nov-21	20-Jun-22
						Sample Type	N	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VOCs, Method 8260, µg/L																															
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5		< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5			< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000			< 2.5								< 2.5											< 2.5			
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	20,000	< 2.5	< 2.5	< 2.5	< 2.5	0.18 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	0.41 J	0.40 J	0.28 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0						< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS			< 5.0	< 5.0	< 5.0 J							< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J							
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	0.32 J	0.30 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	1.5	1.6	0.77	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	70	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS				< 10	< 10	< 10						< 10	< 10	< 10	< 10	< 10	< 10	< 10							
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS				< 10	< 10	< 10						< 10	< 10	< 10	< 10	< 10	< 10	< 10							
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0						< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS				< 10	< 10	< 10						< 10	< 10	< 10	< 10	< 10	< 10	< 10							
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0						< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS				< 10	< 10	< 10						< 10	< 10	< 10	< 10	< 10	< 10	< 10							
Methylene chloride	µg/L	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	140	20,000	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0						< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	µg/L	NS	NS	100	100	6,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Amyl Methyl Ether	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0	< 2.0						< 2.0 J	< 2.0	< 2.0 J	< 2.0	< 2.0 J	< 2.0	< 2.0							
tert-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Tetrachloroethene	µg/L	5	5	5	5	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC3A Deep Overburden MW-206D 25-Oct-22 N	AOC3A Shallow Overburden OW-46 29-Jun-17 N	AOC3A Shallow Overburden OW-46 06-Dec-17 N	AOC3A Shallow Overburden OW-40 28-May-21 N	AOC3A Shallow Overburden OW-40 10-Nov-21 N	AOC3A Shallow Overburden OW-40 21-Jun-22 N	AOC3A Shallow Overburden OW-40 21-Oct-22 N	AOC3B Shallow Overburden MW-204S 22-Jan-16 N	AOC3B Shallow Overburden MW-204S 23-Jun-17 N	AOC3B Shallow Overburden MW-204S 29-Sep-17 N	AOC3B Shallow Overburden MW-204S 07-Dec-17 N	AOC3B Shallow Overburden MW-204S 14-Dec-20 N	AOC3B Shallow Overburden MW-204S 14-Dec-20 FD	AOC3B Shallow Overburden MW-204S 21-May-21 N	AOC3B Shallow Overburden MW-204S 21-May-21 FD	AOC3B Shallow Overburden MW-204S 11-Nov-21 N	AOC3B Shallow Overburden MW-204S 11-Nov-21 FD	AOC3B Shallow Overburden MW-204S 20-Jun-22 N	AOC3B Shallow Overburden MW-204S 20-Jun-22 FD	AOC3B Shallow Overburden MW-204S 21-Oct-22 N	AOC3B Shallow Overburden MW-204S 21-Oct-22 FD	AOC3B Shallow Overburden MW-205S 16-Jun-17 N	AOC3B Shallow Overburden MW-205S 08-Jan-18 N	AOC4 Shallow Overburden MW-202S 06-Jun-17 N	AOC4 Shallow Overburden MW-202S 06-Dec-17 N
VOCs, Method 8260, µg/L																													
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	12	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	4.9	0.28 J
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000		< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000	< 2.5					< 2.5												< 2.5	< 2.5				
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50 J	2.1	1.5	1.5	2.0	2.4	2.3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.1	0.26 J
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.23 J	0.31 J
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0										< 2.0	< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	3.4 J	3.3 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Acrolein	µg/L	NS	NS	NS	NS	NS		< 5.0	< 5.0					< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J									< 5.0	< 5.0
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	80	4	50,000	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.97	3.1
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	70	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.1	0.26 J
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS		< 10	< 10					< 10	< 10	< 10	< 10	< 10										< 10	< 10
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS		< 10	< 10					< 10	< 10	< 10	< 10	< 10										< 10	< 10
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Ethylbenzene	µg/L	NS	NS	700	700	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0										< 2.0	< 2.0
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS		< 10	< 10					< 10	< 10	< 10	< 10	< 10										< 10	< 10
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0										< 2.0	< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS		< 10	< 10					< 10	< 10	< 10	< 10	< 10										< 10	< 10
Methylene chloride	µg/L	NS	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0										< 2.0	< 2.0
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	µg/L	NS	NS	100	100	6,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Amyl Methyl Ether	µg/L	NS	NS	NS	NS	NS		< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0										< 2.0	< 2.0
tert-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Tetrachloroethene	µg/L	5	5	5	5	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	7	< 0.50
Tetrahydrofuran	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Toluene	µg/L	NS	NS	1,000	1,000	40,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
trans-1,2-Dichloroethene	µg/L	NS	NS	100	100	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
trans-1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4
						Geologic Unit	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
						Location ID	MW-202S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202D	MW-202D	MW-202D	MW-202D	MW-202D	MW-202D	MW-202D	MW-202B	MW-202B	MW-202B	MW-202B	MW-202B	MW-203S	MW-203S	MW-301S	MW-301S	MW-301S	MW-301S	MW-302S	MW-302S	MW-302S	MW-302S	MW-302S
						Sample Date	09-Dec-20	14-May-21	03-Nov-21	22-Jun-22	29-Oct-22	06-Jun-17	06-Dec-17	18-Dec-20	18-May-21	03-Nov-21	22-Jun-22	18-Oct-22	18-Dec-20	14-May-21	03-Nov-21	20-Jun-22	18-Oct-22	06-Jun-17	21-Jan-16	12-Jun-17	28-Sep-17	06-Dec-17	06-Jun-18	09-Dec-20	12-May-21	03-Nov-21	17-Jun-22	21-Oct-22
						Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
						MA-GW-3-2020																											
VOCs, Method 8260, µg/L																																	
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	20,000	< 0.50	15	0.21 J	1.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	5.4 J	0.68 J	5.1	0.37 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	0.79	< 0.50	0.32 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS						< 2.0	< 2.0											< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000					< 2.5							< 2.5					< 2.5										< 2.5
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	1.4	0.50	1.1	0.30 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8 J	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8 J	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	0.31 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS						< 2.0	< 2.0											< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	1.7 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS						< 5.0	< 5.0											< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0					
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	0.30 J	0.48 J	2.8	0.79	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0 J	0.87 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	50,000	< 0.50	1.4	0.50	1.1	0.30 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS						< 10	< 10											< 10	< 10	< 10	< 10	< 10	< 10					
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS						< 10	< 10											< 10	< 10	< 10	< 10	< 10	< 10					
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	NS	700	700	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS						< 2.0	< 2.0											< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS						< 10	< 10											< 10	< 10	< 10	< 10	< 10	< 10					
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS						< 2.0	< 2.0											< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS						< 10	< 10											< 10	< 10	< 10	< 10	< 10	< 10					
Methylene chloride	µg/L	NS	NS	NS	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS						< 2.0	< 2.0											< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC4 Shallow Overburden MW-303S 06-Jun-17 N	AOC4 Shallow Overburden MW-303S 06-Dec-17 N	AOC4 Shallow Overburden MW-303S 09-Dec-20 N	AOC4 Shallow Overburden MW-303S 12-May-21 N	AOC4 Shallow Overburden MW-303S 03-Nov-21 N	AOC4 Shallow Overburden MW-303S 17-Jun-22 N	AOC4 Shallow Overburden MW-303S 21-Oct-22 N	AOC5 Bedrock MW-207B 07-Jun-17 N	AOC5 Bedrock MW-207B 08-Dec-17 N	AOC5 Bedrock MW-207B 12-May-21 N	AOC5 Bedrock MW-207B 05-Nov-21 N	AOC5 Bedrock MW-207B 21-Jun-22 N	AOC5 Bedrock MW-207B 20-Oct-22 N	AOC5 Deep Overburden OW-25 08-Jun-17 N	AOC5 Deep Overburden OW-25 08-Dec-17 N	AOC5 Deep Overburden OW-25 11-Dec-20 N	AOC5 Deep Overburden OW-25 11-May-21 N	AOC5 Deep Overburden OW-25 11-May-21 FD	AOC5 Deep Overburden OW-25 05-Nov-21 N	AOC5 Deep Overburden OW-25 05-Nov-21 FD	AOC5 Deep Overburden OW-25 21-Jun-22 N	AOC5 Deep Overburden OW-25 21-Jun-22 FD	AOC5 Deep Overburden OW-25 20-Oct-22 N	AOC5 Deep Overburden OW-25 20-Oct-22 FD	AOC5 Deep Overburden OW-25 04-Jun-19 N	AOC5 Shallow Overburden OW-26 21-Jan-16 N	AOC5 Shallow Overburden OW-26 08-Jun-17 N	AOC5 Shallow Overburden OW-26 08-Jun-17 FD	AOC5 Shallow Overburden OW-26 28-Sep-17 N
VOCs, Method 8260, µg/L																																		
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.3	1.2	0.27 J	0.81	1.2 J	0.42 J	0.18 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.18 J	0.17 J	0.17 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	2.1	1.6	1.5	1.6	2.3	2.0	0.77	0.51 J	< 0.75	0.28 J	0.28 J	0.91	1.0	0.98	0.91	0.97	0.79	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	4.7	3.6	0.53	4.0	6.4	1.2	0.23 J	< 0.50	< 0.50	< 0.50	< 0.50	0.22 J	0.29 J	0.30 J	0.32 J	0.35 J	0.25 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	1.6 J	1.4 J	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.96 J	0.94 J	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000							< 2.5							< 2.5									< 2.5	< 2.5					
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	50	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromoethane	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.22 J	< 2.5	< 2.5	0.20 J	0.20 J	0.18 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	0.14 J	< 0.50	< 0.50	< 0.50	< 0.50	2.8	2.9	3.1	2.2	2.9 J	3.3	< 0.50	0.15 J	< 0.50	< 0.50	< 0.50	0.17 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.47 J	0.49 J	0.29 J	0.52	0.62	0.58	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.33 J	0.47 J	0.45 J	0.44 J	0.46 J	0.43 J	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	NS	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0							< 2.0	< 2.0						< 2.0	< 2.0									< 2.0	< 2.0	< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	2.6 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0							< 5.0	< 5.0 J						< 5.0	< 5.0 J									< 5.0	< 5.0	< 5.0
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	0.31 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	0.30 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	0.31 J	0.30 J	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	1.7	0.30 J	0.39 J	0.27 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.47 J	0.49 J	0.29 J	0.52	0.62	0.58	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.33 J	0.47 J	0.45 J	0.44 J	0.46 J	0.43 J	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	< 10	< 10					< 10	< 10								< 10	< 10									< 10	< 10	< 10
Dibromochloromethane	µg/L	NS	NS	NS	80	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	< 10	< 10					< 10	< 10								< 10	< 10									< 10	< 10	< 10
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0					< 2.0	< 2.0								< 2.0	< 2.0									< 2.0	< 2.0	< 2.0
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.64 J	0.58 J	< 2.5	0.57 J	0.59 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS	< 10	< 10					< 10	< 10								< 10	< 10									< 10	< 10	< 10
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.59	0.59	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.17 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.30 J	0.28 J	0.37 J	0.38 J	0.19 J	0.23 J	< 1.0	0.18 J	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS	< 10	< 10					< 10	< 10								< 10	< 10									< 10	< 10	< 10
Methylene chloride	µg/L	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
n-Butylbenzene	µg/L	NS	NS

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC6	AOC6	AOC6
						Geologic Unit	Shallow Overburden	Shallow Overburden	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
						Location ID	OW-26	OW-26	OW-34	OW-35	OW-35	OW-35	OW-35	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-36	OW-37	OW-37	OW-37	OW-37	OW-37	OW-37	OW-37	OW-38	OW-38	OW-38	MW-305S	MW-305S	MW-305S
						Sample Date	08-Dec-17	08-Dec-17	26-Jun-17	06-Jun-17	06-Jun-17	06-Dec-17	06-Dec-17	21-Jan-16	21-Jan-16	06-Jun-17	29-Sep-17	29-Sep-17	06-Dec-17	06-Dec-17	23-Jun-17	07-Dec-17	08-Nov-21	23-Jun-22	21-Oct-22	08-Jun-17	08-Jun-17	07-Dec-17	07-Dec-17	08-Nov-21	21-Jun-17	05-Dec-17	18-Dec-20
						Sample Type	N	FD	N	N	FD	N	FD	N	FD	N	N	FD	N	FD	N	N	N	N	N	N	FD	N	FD	N	N	N	N
						MA-GW-3-2020																											
VOCs, Method 8260, µg/L																																	
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.9	0.72	2.1	1.6	0.93	< 0.50	< 0.50	< 0.50	< 0.50	1.8	1.1	1.3	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	8.1	9.7	17	15	14	2.1	1.7	0.81	0.77	13	8.8	5.9	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.8	5.7	13	12	10	< 0.50	< 0.50	< 0.50	< 0.50	2.0	1.6	3.9	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	70	70	50,000																		< 2.5						< 2.5		
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.17 J	< 0.50	0.15 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	NS	5	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.5	4.4	6.8	7.5 J	6.0	1.2	1.1	0.76	0.73	13 J	11 J	6.5 J	< 0.50	< 0.50	< 0.50
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobenzene	µg/L	NS	NS	NS	0.4	200	8,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobutane	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.26 J	0.35 J	0.60 J	0.63 J	0.62 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.37 J	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	NS	4,000	50,000	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS	NS	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.21 J	0.16 J	0.18 J	< 0.50	< 0.50	< 0.50	0.26 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.29 J	< 0.50	< 0.50	1.1	1.2	6.5	6.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	0.31 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.7	6.7	14	13	14	< 0.50	< 0.50	< 0.50	< 0.50	2.0	1.4	4.8	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.3	< 1.2	6.0	6.2	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.5	4.4	6.8	7.3	6.0	1.2	1.1	0.76	0.73	13	11	6.3	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.81	0.89	4.1	4.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Freon 11	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Freon 12	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	NS	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	NS	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	2.3	2.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 J	< 10	< 10 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride	µg/L	NS	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6	AOC6
						Geologic Unit	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden
						Location ID	MW-306S	MW-305S	MW-305S	MW-306S	MW-305D	MW-306D	MW-305D	MW-306D	MW-305D	MW-306D	MW-305D	MW-306D	MW-306S	MW-306S	MW-306S	MW-306S	MW-307S	MW-307S	MW-307S	MW-307S	MW-307D	MW-307D	MW-307D	MW-307D
						Sample Date	19-May-21	10-Feb-22	16-Jun-22	19-Oct-22	21-Jun-17	05-Dec-17	16-Dec-20	19-May-21	10-Feb-22	16-Jun-22	19-Oct-22	22-Jun-17	22-Jun-17	04-Dec-17	04-Dec-17	FD	22-Jun-17	05-Dec-17	08-Dec-20	18-May-21	02-Nov-21	15-Jun-22	19-Oct-22	22-Jun-17	05-Dec-17	08-Dec-20	18-May-21
						Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N
						MA-GW-3-2020																								
VOCs, Method 8260, µg/L																														
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	0.64 J	0.62 J	1.3	< 0.75	0.30 J	0.84	0.87	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.69 J	1.9	1.8	1.2	1.5
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS					0.62 J	< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	1.1 J	< 2.0	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	3.2	3.2	< 2.5 J	2.4 J	3.2	0.25 J	< 2.5	< 2.5 J	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000				< 2.5							< 2.5											< 2.5		
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	20,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	1.1 J	1.6 J	< 2.5	0.29 J	0.36 J	3.6	2.5	24	0.88 J	0.53 J	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	< 0.50	1.8	1.5	4.4	0.67	1.0	2.9	2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.23 J	< 0.50	< 0.50	< 0.50	0.38 J	0.48 J	9.0	7.8	6.5	6.6
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	0.25 J	0.21 J	0.50	< 0.50	< 0.50	0.52 J	0.28 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.0	0.44 J	0.38 J	< 0.50	0.42 J
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.40 J	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.37 J	0.55 J	< 2.5	0.36 J	0.41 J	1.2 J	3.5	0.20 J	0.22 J	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS				< 2.0	< 2.0							< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		< 2.0	< 2.0			
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.42 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	56 J	< 11	6.7	66 J	34	24	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Acrolein	µg/L	NS	NS	NS	NS	NS					< 5.0	< 5.0	< 5.0					< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J						< 5.0	< 5.0		
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	13	13	17	7.2	8.9	20	39	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	45 J	65	140	39	39	100	200	< 0.50	< 0.50	< 0.50	0.30 J
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.8	5.8	2.9	0.60 J	0.34 J	1.1	2.8	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	70	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	0.25 J	0.21 J	0.50	< 0.50	< 0.50	< 0.50	0.36 J	0.28 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	1.0	0.44 J	0.38 J	< 0.50	0.42 J
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS					< 10	< 10					< 10	< 10	< 10	< 10	< 10	0.46 J	1.7 J						< 10	< 10		
Dibromochloromethane	µg/L	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS					< 10	< 10					< 10	< 10	< 10	< 10	< 10	< 10	< 10						< 10	< 10		
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.25 J	0.39 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	700	700	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.43 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS					< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0		
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS					< 10	< 10					< 10	< 10	< 10	< 10	< 10	< 10	< 10						< 10	< 10		
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS					< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0		
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.8	3.0	3.4	2.4	2.8	0.42 J	1.1	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	10	800	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS					< 10	< 10					< 10	< 10	< 10	< 10	< 10	0.76 J	2.0 J						< 10	< 10		
Methylene chloride	µg/L	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	140	20,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.7	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	0.23 J	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.40 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.0	1.0	0.60	0.33 J	0.27 J	0.50	0.21 J	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS					< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0		
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.21 J	0.51	< 0.50	0.19 J	< 0.50	< 0.50	0.41 J	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	µg/L	NS	NS	NS	100	6,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Amyl Methyl Ether	µg/L	NS	NS	NS	NS	NS					< 2.0	< 2.0					< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0		
tert-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC6 MW-307D 02-Nov-21 N	AOC6 MW-307D 15-Jun-22 N	AOC6 MW-307D 19-Oct-22 N	AOC6 MW-307B 20-Jun-17 N	AOC6 MW-307B 05-Dec-17 FD	AOC6 MW-307B 05-Dec-17 N	AOC6 MW-307B 08-Dec-20 FD	AOC6 MW-307B 08-Dec-20 N	AOC6 MW-307B 18-May-21 N	AOC6 MW-307B 02-Nov-21 N	AOC6 MW-307B 15-Jun-22 N	AOC6 MW-307B 19-Oct-22 N	AOC6 MW-307B 21-Jun-17 N	AOC6 MW-308B 09-Jan-18 N	AOC6 MW-308B 08-Dec-20 N	AOC6 MW-308B 19-May-21 N	AOC6 MW-308B 02-Nov-21 N	AOC6 MW-308B 15-Jun-22 N	AOC6 MW-308B 19-Oct-22 N	AOC6 OW-07 20-Jun-17 N	AOC6 OW-07 09-Jan-18 N	AOC6 OW-07 08-Dec-20 N	AOC6 OW-07 19-May-21 N	AOC6 OW-07 02-Nov-21 N	AOC6 OW-07 15-Jun-22 N	AOC6 OW-07 19-Oct-22 N	AOC6 Shallow Overburden OW-08 20-Jun-17 N	AOC6 Shallow Overburden OW-08 09-Jan-18 N	AOC6 Shallow Overburden OW-08 08-Dec-20 N	AOC6 Shallow Overburden OW-08 19-May-21 N	AOC6 Shallow Overburden OW-08 02-Nov-21 N	AOC6 Shallow Overburden OW-08 15-Jun-22 N	AOC6 Shallow Overburden OW-08 19-Oct-22 N
VOCs, Method 8260, µg/L																																										
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	NS	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	1.7	1.3	1.7	1.3	1.1	1.2	1.2	1.5	1.5	1.4	1.7	1.1	1.3	1.3	1.2	1.3	1.0	1.1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.24 J	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.24 J	< 0.50	0.19 J	0.18 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	NS			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	NS	70	70	50,000	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	70	70	50,000			< 2.5											< 2.5																					
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	0.21 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	5.4	5.1	5.7	42	42	45	41	40	45	38	43	44	4.9	5.3	5.8	5.5	4.6	4.4	4.0	0.19 J	< 0.50	< 0.50	0.32 J	0.41 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.21 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	0.38 J	0.24 J	< 2.5	0.89 J	0.60 J	0.53 J	0.50 J
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
2-Butanone	µg/L	NS	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	NS			< 2.0	< 2.0	< 2.0	< 2.0						< 2.0	< 2.0						< 2.0	< 2.0						< 2.0	< 2.0									
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS	NS			< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0					< 5.0	< 5.0						< 5.0	< 5.0						< 5.0 J	< 5.0									
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.88	6.3	1.3	11	1.3	2.8
Bromobenzene	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.35 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	0.27 J	0.23 J	0.13 J	0.20 J	< 1.0	< 1.0	0.54 J	0.24 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.79 J	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	0.47 J	0.33 J	0.40 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.1	7.6	20	19	9.5	5.0 J	4.5	< 0.50	< 0.50	< 0.50	1.0	< 0.50	0.35 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	NS			< 10	< 10	< 10	< 10						< 10	< 10						< 10	< 10						< 10	< 10									
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	NS			< 10	< 10	< 10	< 10						< 10	< 10						< 10	< 10						< 10	< 10									
Ethyl ether	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	NS			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0					< 2.0	< 2.0						< 2.0	< 2.0						< 2.0	< 2.0									
Freon 11	µg/L	NS	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC6 Bedrock OW-28 21-Jun-17 N	AOC6 Bedrock OW-28 04-Dec-17 N	AOC6 Bedrock OW-28 18-Dec-20 N	AOC6 Bedrock OW-28 25-May-21 N	AOC6 Bedrock OW-28 11-Feb-22 N	AOC6 Bedrock OW-28 16-Jun-22 N	AOC6 Bedrock OW-28 20-Oct-22 N	AOC6 Deep Overburden OW-29 15-Dec-20 N	AOC6 Deep Overburden OW-29 26-May-21 N	AOC6 Deep Overburden OW-29 10-Feb-22 N	AOC6 Deep Overburden OW-29 16-Jun-22 N	AOC6 Deep Overburden OW-29 20-Oct-22 N	Downgradient Shallow Overburden SEN-1S 13-May-21 N	Downgradient Shallow Overburden SEN-1S 25-Aug-21 N	Downgradient Shallow Overburden SEN-1S 10-Nov-21 N	Downgradient Shallow Overburden SEN-1S 17-Mar-22 N	Downgradient Shallow Overburden SEN-1S 23-Jun-22 N	Downgradient Shallow Overburden SEN-1S 24-Aug-22 N	Downgradient Shallow Overburden SEN-1S 18-Oct-22 N	Downgradient Deep Overburden SEN-1D 13-May-21 N	Downgradient Deep Overburden SEN-1D 28-Aug-21 N	Downgradient Deep Overburden SEN-1D 10-Nov-21 N	Downgradient Deep Overburden SEN-1D 16-Mar-22 N	Downgradient Deep Overburden SEN-1D 23-Jun-22 N	Downgradient Deep Overburden SEN-1D 25-Aug-22 N	Downgradient Deep Overburden SEN-1D 25-Oct-22 N	Downgradient Bedrock SEN-1B 13-May-21 N	Downgradient Bedrock SEN-1B 25-Aug-21 N	Downgradient Bedrock SEN-1B 10-Nov-21 N	Downgradient Bedrock SEN-1B 17-Mar-22 N
VOCs, Method 8260, µg/L																																		
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	NS	200	200,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	0.51 J	0.35 J	< 0.75	0.33 J	0.70 J	0.59 J	0.56 J	< 0.75	0.24 J	0.35 J	0.42 J	0.33 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	1.4	0.93	0.83	0.52	0.97	0.72	0.67	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0																											
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000							< 2.5						< 2.5																
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	5.1	8.9	9.7	10	9.8	7.9	9.0	1.8	1.9	3.6	3.9	2.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.16 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	0.24 J	0.22 J	0.13 J	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0																											
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1.7 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	4.8 J	2.8 J	< 5.0	< 5.0	< 5.0	1.6 J	1.8 J	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0																											
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS	< 10	< 10																											
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS	< 10	< 10	< 10	< 10																									
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J
Ethylbenzene	µg/L	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0																											
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS	< 10	< 10																											
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS	< 2.0	< 2.0																											
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.22 J	0.20 J	0.19 J	< 1.0	< 1.0	< 1.0	0.18 J	< 1.0	0.20 J	< 1.0	< 1.0	0.17 J	0.19 J	< 1.0	< 1.0	< 1.0	0.17 J	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS	< 10	< 10																											
Methylene chloride	µg/L	NS	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	Downgradient Bedrock SEN-1B 23-Jun-22 N	Downgradient Bedrock SEN-1B 24-Aug-22 N	Downgradient Bedrock SEN-1B 25-Oct-22 N	Downgradient Shallow Overburden SEN-2S 13-May-21 N	Downgradient Shallow Overburden SEN-2S 25-Aug-21 N	Downgradient Shallow Overburden SEN-2S 11-Nov-21 N	Downgradient Shallow Overburden SEN-2S 17-Mar-22 N	Downgradient Shallow Overburden SEN-2S 30-Jun-22 N	Downgradient Shallow Overburden SEN-2S 24-Aug-22 N	Downgradient Shallow Overburden SEN-2S 18-Oct-22 N	Downgradient Deep Overburden SEN-2D 13-May-21 N	Downgradient Deep Overburden SEN-2D 20-Aug-21 N	Downgradient Deep Overburden SEN-2D 11-Nov-21 N	Downgradient Deep Overburden SEN-2D 16-Mar-22 N	Downgradient Deep Overburden SEN-2D 30-Jun-22 N	Downgradient Deep Overburden SEN-2D 24-Aug-22 N	Downgradient Deep Overburden SEN-2D 18-Oct-22 N	Downgradient Bedrock SEN-2B 13-May-21 N	Downgradient Bedrock SEN-2B 25-Aug-21 N	Downgradient Bedrock SEN-2B 11-Nov-21 N	Downgradient Bedrock SEN-2B 17-Mar-22 N	Downgradient Bedrock SEN-2B 30-Jun-22 N	Downgradient Bedrock SEN-2B 25-Aug-22 N	Downgradient Bedrock SEN-2B 18-Oct-22 N	Downgradient Shallow Overburden SEN-3S 19-May-21 N	Downgradient Shallow Overburden SEN-3S 20-Aug-21 N	Downgradient Shallow Overburden SEN-3S 08-Nov-21 N	Downgradient Shallow Overburden SEN-3S 16-Mar-22 N
VOCs, Method 8260, µg/L																																
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	1.0	0.54 J	0.83	0.67 J
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS																											
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000			< 2.5															< 2.5									
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.71	0.39 J	0.54	0.41 J
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	0.4	200		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS																											
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	2.2 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS																											
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	2.1 J	2.5 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J
Chlorobenzene	µg/L	NS	NS	100	100	1,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.19 J	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.71	0.39 J	0.54	0.41 J
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS																											
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS																											
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	700	700	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS																											
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
Freon 113	µg/L	NS	NS	NS	NS	NS																											
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS																											
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0 J	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	< 1.0	< 1.0	< 1.0	< 1.0	0.24 J	0.39 J	0.18 J	< 1.0	< 1.0	< 1.0	< 1.0	0.36 J	0.45 J	0.37 J	0.42 J	< 1.0	0.24 J	0.32 J	0.40 J	0.49 J	0.37 J	0.42 J	0.21 J	0.48 J	0.48 J	0.68 J	1.2	0.77 J	0.34 J
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS																											
Methylene chloride	µg/L	NS	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5 J	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS																											
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	µg/L	NS	NS	NS	100	6,000	< 1.0	< 1.0

Table 10
Summary of Groundwater Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	Downgradient Shallow Overburden SEN-3S 20-Jun-22 N	Downgradient Shallow Overburden SEN-3S 24-Aug-22 N	Downgradient Shallow Overburden SEN-3S 18-Oct-22 N	Downgradient Deep Overburden SEN-3D 19-May-21 N	Downgradient Deep Overburden SEN-3D 20-Aug-21 N	Downgradient Deep Overburden SEN-3D 20-Aug-21 FD	Downgradient Deep Overburden SEN-3D 08-Nov-21 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 FD	Downgradient Deep Overburden SEN-3D 20-Jun-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 FD	Downgradient Deep Overburden SEN-3D 18-Oct-22 N	Downgradient Bedrock SEN-3B 19-May-21 N	Downgradient Bedrock SEN-3B 20-Aug-21 N	Downgradient Bedrock SEN-3B 08-Nov-21 N	Downgradient Bedrock SEN-3B 16-Mar-22 N	Downgradient Bedrock SEN-3B 20-Jun-22 N	Downgradient Bedrock SEN-3B 24-Aug-22 N	Downgradient Bedrock SEN-3B 18-Oct-22 N
VOCs, Method 8260, µg/L																									
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	5	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200	200	20,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	NS	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	µg/L	NS	NS	5	5	50,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	µg/L	NS	NS	NS	70	20,000	0.76	0.97	0.43 J	6.6	6.2	6.4	6.8	4.4	4.2	5.2	4.5	4.4	3.7	0.59 J	0.67 J	0.75	0.71 J	0.74 J	0.67 J
1,1-Dichloroethene	µg/L	NS	NS	7	7	30,000	0.18 J	0.19 J	< 0.50	1.2	1.2	1.2	1.2	0.96	1.0	1.2 J	0.95	0.98	0.66	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	NS																				
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 2.5	< 2.5		< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000			< 2.5											< 2.5						< 2.5
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	20,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	5	5	5	5	20,000	< 0.50	< 0.50	< 0.50	0.24 J	0.22 J	0.21 J	< 0.50	0.20 J	< 0.50	0.22 J	0.19 J	< 0.50	0.18 J	1.0	1.0	1.2	1.3	1.2	1.2	1.0
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	NS	0.47 J	0.65	0.34 J	4.6 J	4.6 J	4.7 J	4.9 J	2.8 J	2.8 J	3.3 J	3.1 J	3.2 J	2.7 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	5	5	50,000	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	< 2.5	< 2.5	< 2.5	< 2.5	0.19 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	4,000	50,000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	NS																				
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	350	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Acetone	µg/L	NS	NS	NS	6,300	50,000	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Acrolein	µg/L	NS	NS	NS	NS	NS																				
Acrylonitrile	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/L	5	5	5	5	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	NS	80	3	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	NS	80	4	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	5	5	5	5	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	µg/L	NS	NS	100	100	1,000	0.18 J	0.25 J	< 0.50	1.2	1.4	1.5	1.3	1.0	1.0	1.3	1.2	1.2	1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	NS	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0
Chloroform	µg/L	NS	NS	NS	80	70	20,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	70	70	50,000	0.47 J	0.65	0.34 J	4.1	4.0	4.1	4.4	2.6	2.6	2.9	2.7	2.8	2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	0.49	0.49	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	NS																				
Dibromochloromethane	µg/L	NS	NS	NS	80	2	50,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	NS																				
Ethyl ether	µg/L	NS	NS	NS	NS	NS	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0 J	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0
Ethylbenzene	µg/L	NS	NS	NS	700	700	5,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	0.05	0.02	50,000	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	NS																				
Freon 11	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	NS																				
Freon 12	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isopropyl ether	µg/L	NS	NS	NS	NS	NS																				
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	NS	10	800	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J
Methyl chloride	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	70	50,000	0.35 J	0.40 J	0.39 J	0.34 J	0.44 J	0.45 J	0.40 J	0.47 J	0.45 J	0.38 J	0.44 J	0.47 J	0.49 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	NS																				
Methylene chloride	µg/L	NS	NS	NS	5	5	50,000	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	µg/L	NS	NS	NS	140	20,000	< 2.5	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5 J
n-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
n-Propylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
o-Chlorotoluene (2-chlorotoluene)	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
p-Diethylbenzene	µg/L	NS	NS	NS	NS	NS																				
sec-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	µg/L	NS	NS	NS	100	6,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Amyl Methyl Ether	µg/L	NS	NS	NS	NS	NS																				
tert-Butylbenzene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Tetrachloroethene	µg/L	5	5	5	5	30,000	0.56	0.33 J	< 0.50	2.4	2.4	2.5	1.9	2.5	2.5	2.2	1.8	1.6	1.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tetrahydrofuran	µg/L	NS	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/L	NS	NS	1,000	1,000	40,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
trans-1,2-Dichloroethene	µg/L	NS	NS	100	100	50,000	< 0.75	< 0.75	< 0.75	0.52 J	0.62 J	0.63 J	0.53 J	0.19 J	0.19 J	0.35 J	0.44 J	0.41 J	0.29 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
trans-1,3-Dichloropropene	µg/L	NS	NS	NS	0.4	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,4-Dichlorobutene	µg/L	NS	NS	NS	NS	NS	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5
Trichloroethene	µg/L	5	NS	5	5	5,000	0.47 J	0.69	0.37 J	3.1	3.8	3.9	4.1	2.8	2.7	3.2	3.2	3.4	2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Vinyl acetate	µg/L	NS	NS	NS	NS	NS	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Vinyl chloride	µg/L	2	2	2	2	50,000	< 1.0	< 1.0 J	< 1.0	0.30 J	0.25 J	0.24 J	0.30 J	0.17 J	0.16 J	0.19 J	0.17 J	0.15 J	0.12 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/L	NS	NS	NS	10,000	5,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, m/p	µg/L	NS	NS	NS	10,000	5,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, Total	µg/L	NS	NS	NS	10,000	10,000	5,000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VOCs, Method E504, µg/L																										
1,2-Dibromo-3-chloropropane (by GC)	µg/L	NS	NS	0.2	NS	NS	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010 J	< 0.010 J	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010 J	< 0.010	< 0.010	< 0.010
Ethylene dibromide (by GC)	µg/L	NS	NS	0.05	0.02	50,000	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Tentatively Identified Compound																										
VOCs, Method 8260, µg/L																										
TICs (Calculated), Total	µg/L	NS	NS	NS	NS	NS																				

Notes:
< = Compound not detected at concentrations
above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
R = Rejected. Quality control indicates that the data are unusable (compound may or not be present).
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Tabl
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decisic
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1
							Geologic Unit	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
							Location ID	MW-213B	MW-213B	MW-213B	MW-213B	MW-213B	MW-213D	MW-213D	MW-213D	MW-213D	MW-213D	MW-213D	MW-213D	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S	MW-213S
							Sample Date	16-Dec-20	11-May-21	04-Nov-21	29-Jun-22	26-Oct-22	27-Jun-17	10-Jan-18	10-Dec-20	04-Nov-21	29-Jun-22	26-Oct-22	26-Jun-17	26-Jun-17	10-Jan-18	10-Jan-18	10-Dec-20	10-Dec-20	11-May-21	11-May-21	04-Nov-21	04-Nov-21	22-Jun-22	22-Jun-22	27-Oct-22	27-Oct-22
							Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	FD	N	FD	N	FD	N	FD	N	FD	N	FD
SVOCs, Method SW8270, µg/L																														
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000							< 0.532	< 0.500		< 0.495	< 0.500		< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490		
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000												< 0.485												< 0.481	< 0.500
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481 J	< 0.500 J
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS							< 0.495	< 0.500		< 0.495	< 0.500	< 0.485							< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000							< 2.13	< 2.00		< 1.98	< 2.00	< 1.94	< 10.2	< 10.3	< 2.10	< 2.13			< 9.43	< 9.80	< 1.98	< 1.98	< 1.98	< 1.96	< 1.92	< 2.00
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000							< 5.32	< 5.00		< 4.95	< 5.00	< 4.85	< 25.5	< 25.8	< 5.26	< 5.32			< 23.6	< 24.5	< 4.95	< 4.95	< 4.95	< 4.90	< 4.81	< 5.00
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																									
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS							< 2.66	< 2.50		< 2.48	< 2.50	< 2.43	< 12.8	< 12.9	< 2.63	< 2.66			< 11.8	< 12.2	< 2.48	< 2.48	< 2.48	< 2.45	< 2.40	< 2.50
Acenaphthene	µg/L	NS	NS	NS	20	10,000																									
Acenaphthylene	µg/L	NS	NS	NS	30	40																									
Acetophenone	µg/L	NS	NS	NS	NS	NS							< 1.06	< 1.00		< 0.990	< 1.00	< 0.971	< 5.10	< 5.15	< 1.05	< 1.06			< 4.72	< 4.90	< 0.990	< 0.990	< 0.990	< 0.980	< 0.962	0.270 J
Aniline	µg/L	NS	NS	NS	NS	NS							< 1.06	< 1.00					< 5.10	< 5.15	< 1.05	< 1.06									
Anthracene	µg/L	NS	NS	NS	60	30																									
Atrazine	µg/L	3	3	3	NS	NS							< 0.532	< 0.500		< 0.495 J	0.164 J	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495 J	< 0.495 J	< 0.495	< 0.490	< 0.481	< 0.500
Azobenzene	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500					< 2.55	< 2.58	< 0.526	< 0.532									
Benzaldehyde	µg/L	NS	NS	NS	NS	NS										< 1.98	< 2.00	< 1.94							< 9.43	< 9.80	0.164 J	0.232 J	< 1.98	< 1.96	0.280 J	0.396 J
Benzidine	µg/L	NS	NS	NS	NS	NS							< 21.3 J	< 20.0		< 19.8	< 20.0	< 19.4	< 102 J	< 103 J	< 21.0	< 21.3			< 94.3	< 98.0	< 19.8	< 19.8	< 19.8	< 19.6	< 19.2	< 20.0
Benzo(a)anthracene	µg/L	NS	NS	NS	NS	1	1,000																								
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500																								
Benzo(b)fluoranthene	µg/L	NS	NS	NS	NS	1	400																								
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	NS	50	20																								
Benzo(k)fluoranthene	µg/L	NS	NS	NS	NS	1	100																								
Benzoic acid	µg/L	NS	NS	NS	NS	NS	NS																								
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS	NS						< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	0.177 J	0.192 J	< 0.481	0.160 J
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS	50,000						< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	0.181 J	< 0.500
Biphenyl	µg/L	NS	NS	NS	0.9	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	6	6	50,000							0.100 J	< 0.500		< 0.495	< 0.500	< 0.485	0.699 J	0.531 J	0.659	0.713			0.943 J	0.618 J	< 0.495	< 0.495	0.688	0.422 J	0.480 J	0.462 J
Caprolactam	µg/L	NS	NS	NS	NS	NS										< 1.98	< 2.00	0.544 J							< 9.43	< 9.80	< 1.98	< 1.98	< 1.98	< 1.96	< 1.92	< 2.00
Carbazole	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Chrysene	µg/L	NS	NS	NS	NS	2	70																								
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.3	0.3	40																								
Dibenzofuran	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	0.816 J	0.990 J	< 0.526	< 0.532			0.849 J	< 2.45	0.217 J	0.289 J	0.254 J	0.245 J	< 0.481	< 0.500
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495 J	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495 J	< 0.495 J	< 0.495	< 0.490	< 0.481	< 0.500
Dichloroethyl ether	µg/L	0.5	0.5	NS	NS	50,000							0.103 J	0.100 J		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	0.921	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000							< 2.13	< 2.00		< 1.98	< 2.00	< 1.94	< 10.2	< 10.3	< 2.10	< 2.13			< 9.43	< 9.80	< 1.98	< 1.98	< 1.98	< 1.96	< 1.92	< 2.00
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS							< 1.06	< 1.00		< 0.990	< 1.00	< 0.971	< 5.10	< 5.15	< 1.05	< 1.06			< 4.72	< 4.90	< 0.990	< 0.990	< 0.990	< 0.980	< 0.962	< 1.00
Fluoranthene	µg/L	NS	NS	NS	90	200																									
Fluorene	µg/L	NS	NS	NS	30	40																									
Hexachlorobenzene	µg/L	NS	NS	NS	1	1	6,000						< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3.000							< 0.532	< 0.500 J		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526 J	< 0.532 J			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Hexachlorocyclopentadiene	µg/L	NS	NS	NS	50	NS	NS						< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Hexachloroethane	µg/L	NS	NS	NS	8	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																									
Isophorone	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Naphthalene	µg/L	NS	NS	NS	140	20,000																									
Nitrobenzene	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	0.765 J	0.593 J	0.488 J	0.528 J			< 2.36	< 2.45	0.318 J	0.313 J	0.246 J	0.268 J	0.269 J	0.282 J
o-Cresol	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
p-Chloroaniline	µg/L	NS	NS	NS	20	300							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
p-Cresol	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																									
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200						< 2.13	< 2.00		< 1.98	< 2.00	< 1.94	< 10.2	< 10.3	< 2.10	< 2.13			< 9.43	< 9.80	< 1.98	< 1.98	< 1.98	< 1.96	< 1.92	< 2.00
Phenanthrene	µg/L	NS	NS	NS	40	10,000																									
Phenol	µg/L	NS	NS	NS	1,000	2,000							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS							< 0.532	< 0.500		< 0.495	< 0.500	< 0.485	< 2.55	< 2.58	< 0.526	< 0.532			< 2.36	< 2.45	< 0.495	< 0.495	< 0.495	< 0.490	< 0.481	< 0.500
Pyrene	µg/L	NS	NS	NS	60	20																									
Pyridine	µg/L	NS	NS	NS	NS	NS							< 0.532 J	< 0.500					< 2.55 J	< 2.58 J	< 0.526	< 0.532									
SVOCs, Method SW8270-SIM, µg/L																															
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000		1.1	1.23	1.2	1.16	1.06	1.36	1.42	0.888	0.948	0.8	0.932	1.06	0.957	1.18	1.16	0.782	0.838	0.611	0.655	0.815	0.794	0.8	0.813	0.818	0.727
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000							< 0.0101	< 0.0105		< 0.00980	< 0.0104	< 0.00962	1.2	1.29	1.03	1.08			1.61	1.73	0.538	0.66	0.402	0.529	0.662	0.751
Acenaphthene	µg/L	NS	NS	NS	20	10,000							0.00229 J	< 0.0105		< 0.00980	< 0.0104	0.00202 J	0.743	0.94	0.546 J	0.801 J			0.741	0.746	0.249 J	0.352 J	0.268	0.289	0.608	0.614
Acenaphthylene	µg/L	NS	NS	NS	30	40							0.00423 J	0.00266 J		0.00184 J	0.0184 J	0.0184	0.0235	0.0130	0.0276				0.0303	0.0356	< 0.00990	0.00662 J	0.00981	0.00767 J	0.0517	0.0630
Anthracene	µg/L	NS	NS	NS	60	30							0.00633 J	0.00560 J		0.00378 J	0.00627 J	0.00676 J	0.257	0.276	0.244	0.253			0.449	0.429	0.15	0.172	0.256 J	0.188 J	0.292	0.334
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000							0.00703 J	< 0.0105		0.00182 J	0.0543 J	0.00659 J	0.00908 J	0.0104 J	0.00901 J				0.00705 J	0.00870 J	0.00782 J	< 0.00990	0.0435	0.0253	0.0152	0.0171
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500						< 0.0101	< 0.0105		0.00565 J	< 0.0104	0.00332 J	0.00358 J	0.00337 J	< 0.0105	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	0.00798 J	0.00362 J	< 0.0100	< 0.0100
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400							< 0.0101	< 0.0105		0.00755 J	0.00214 J	0.00506 J	0.00406 J	0.00511 J	< 0.0105	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	0.0114	0.00443 J	< 0.0100	< 0.0100
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20							< 0.0101	< 0.0105		< 0.00980	< 0.0104	0.00248 J	0.00459 J	0.00295 J	< 0.0105	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	0.00524 J	< 0.00971	< 0.0100	< 0.0100
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100							< 0.0101	< 0.0105		0.00442 J	< 0.0104	0.00354 J	0.00384 J	0.00296 J	< 0.0105	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	0.00637 J	0.00292 J	< 0.0100	< 0.0100
Chrysene	µg/L	NS	NS	NS	2	70							0.00122 J	0.00151 J		0.00684 J	< 0.0104	0.00464 J	0.0126	0.00889 J	0.0113	0.00947 J			0.00934 J	0.0101	0.00884 J	< 0.00990	0.0398	0.0209	0.0194	0.0178
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40							< 0.0101	< 0.0105		< 0.00980	< 0.0104	< 0.00962	0.000777 J	0.000813 J	0.00112 J	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	< 0.00971	< 0.00971	< 0.0100	< 0.0100
Fluoranthene	µg/L	NS	NS	NS	90	200							0.00254 J	< 0.0105		0.00964 J	0.00334 J	0.00985	0.0896	0.0706	0.0742	0.0806			0.0916	0.0963	0.0996	0.0955	0.975 J	0.577 J	0.17	0.178
Fluorene	µg/L	NS	NS	NS	30	40							< 0.0101	< 0.0105		< 0.00980	< 0.0104	< 0.00962	0.612	0.736	0.494	0.639			0.62	0.628	0.188 J	0.28 J	0.367	0.318	0.583	0.561
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100							< 0.0101	< 0.0105		0.00465 J	< 0.0104	0.00261 J	0.0333	0.0319	< 0.0105	< 0.0106			< 0.00971	< 0.00971	< 0.00990	< 0.00990	< 0.00971	< 0.00971	< 0.0100	< 0.0100
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000							< 0.00980	< 0.0104		< 0.00980	< 0.0104	< 0.00962	1.12	1.15	0.163 J	0.118 J			0.896	0.852	0.17	0.186	0.697	0.643	< 0.356	< 0.364
Phenanthrene	µg/L	NS	NS	NS	40	10,000							< 0.0101	< 0.0105		< 0.00980	< 0.0104	< 0.00962	0.51	0.645	0.425	0.496			0.522	0.591	0.252	0.299	0.472	0.445	0.376	0.407
Pyrene	µg/L	NS	NS	NS	60	20							0.00468 J	< 0.0105		0.0112	0.00524 J	0.0109	0.0513	0.0361	0.0331	0.0312			0.0420	0.0449	0.0861	0.0707	0.671 J	0.417 J	0.108	0.111

Notes:
< = Compound not detected at
concentrations
above the laboratory reporting detection
limit.
The laboratory reporting detection limit is
shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
R = Rejected. Quality control indicates that the data are unusable (compound may or not be present).
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Record of Decision Table L-2.
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

| Analyte | Unit | 5006-GPS-RES-CCC | 5006-GPS-RES-NCCC | EPA-RSL-MCL-WG-THQ1.0 | MA-GW-1-2020 | MA-GW-3-2020 | Location Group | AOC1 | AOC1 | AOC1

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC1	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2	AOC2
						Geologic Unit	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
						Location ID	OW-49	OW-50	OW-50	OW-50	OW-50	OW-50	OW-50	OW-51	OW-51	OW-51	OW-51	OW-51	OW-51	MW-210S	MW-210S	MW-210S	MW-210S	MW-210S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S	MW-211S
						Sample Date	25-Oct-22	14-Dec-20	13-May-21	04-Nov-21	21-Jun-22	20-Oct-22	09-Nov-20	13-May-21	04-Nov-21	04-Nov-21	21-Jun-22	20-Oct-22	09-Nov-20	14-Jun-17	14-Jun-17	07-Jun-17	05-Dec-17	05-Dec-17	07-Jun-17	04-Dec-17	04-Dec-17	15-Dec-20	10-May-21	09-Nov-21	09-Nov-21	28-Jun-22	27-Oct-22	15-Dec-20	10-May-21
						Sample Type	N	N	N	N	N	N	N	N	N	FD	N	N	N	N	FD	N	N	FD	N	N	N	N	N	N	N	N	N	N	N
						MA-GW-3-2020																														
SVOCs, Method SW8270, µg/L																																			
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS			< 0.495 J	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505 J	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70			R	< 0.510	< 0.485	< 0.481		R	< 0.490	< 0.495	< 0.490	< 0.481		< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70							< 0.476						< 0.490																
1,2-Dichlorobenzene	µg/L	NS	NS	600	600			R	< 0.510	< 0.485	< 0.481	< 0.476	R	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100			R	< 0.510	< 0.485	< 0.481	< 0.476	R	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
1,4-Dichlorobenzene	µg/L	5	5	75	5			R	< 0.510	< 0.485	< 0.481	< 0.476	R	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	0.106 J	0.097 J										
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30			< 0.495 J	< 0.510	< 0.485	< 0.481	< 0.476 J	< 0.505 J	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490 J	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS			< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490																
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,200		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		< 1.98	< 2.04	< 1.94	< 1.92	< 1.90	< 2.02	< 1.96	< 1.98	< 1.96	< 1.92	< 1.96	< 2.04	< 2.00	< 10.2	< 10.3	< 2.00	< 2.00										
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		< 4.95	< 5.10	< 4.85	< 4.81	< 4.76	< 5.05	< 4.90	< 4.95	< 4.90	< 4.81	< 4.90	< 5.10	< 5.00	< 25.5	< 25.8	R	< 5.00										
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		< 0.495 J	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505 J	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		< 0.495 J					< 0.505 J																					
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	0.678	< 0.500										
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 2.48	< 2.55	< 2.43	< 2.40	< 2.38	< 2.52	< 2.45	< 2.48	< 2.45	< 2.40	< 2.45	< 2.55	< 2.50	< 12.8	< 12.9	< 2.50 J	< 2.50										
Acenaphthene	µg/L	NS	NS	NS	20	10,000		< 0.495					< 0.505																					
Acenaphthylene	µg/L	NS	NS	NS	30	40		< 0.495					< 0.505																					
Acetophenone	µg/L	NS	NS	NS	NS	NS		< 0.990	< 1.02	< 0.971	< 0.962	< 0.952	< 1.01	< 0.980	< 0.990	< 0.980	< 0.962	< 0.980	< 1.02	< 1.00	< 5.10	< 5.15	< 1.00	< 1.00										
Aniline	µg/L	NS	NS	NS	NS	NS		< 0.990					< 1.01						< 1.02	< 1.00	< 5.10	< 5.15	< 1.00	< 1.00										
Anthracene	µg/L	NS	NS	NS	60	30		< 0.495					< 0.505																					
Atrazine	µg/L	3	3	3	NS	NS		< 0.495	0.388 J	0.465 J	0.397 J	0.456 J	< 0.505	< 0.490	< 0.495 J	< 0.490 J	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Azobenzene	µg/L	NS	NS	NS	NS	NS		< 0.495					< 0.505						< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Benzaldehyde	µg/L	NS	NS	NS	NS	NS		< 1.98	< 2.04	< 1.94	< 1.92	< 1.90	< 2.02	< 1.96	< 1.98	< 1.96	< 1.92	< 1.96																
Benzidine	µg/L	NS	NS	NS	NS	NS		< 19.8 J	< 20.4	< 19.4	< 19.2	< 19.0	< 20.2 J	< 19.6	< 19.8	< 19.6	< 19.2	< 19.6 J	< 20.4 J	< 20.0 J	< 102	< 103	< 20.0 J	< 20.0										
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000		< 0.495					< 0.505																					
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500		< 0.495					< 0.505																					
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400		< 0.495					< 0.505																					
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20		< 0.495					< 0.505																					
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100		< 0.495					< 0.505																					
Benzoic acid	µg/L	NS	NS	NS	NS	NS		< 39.6					< 40.4																					
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Benzyl butyl phthalate	µg/L	NS	NS	NS	20	10,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Biphenyl	µg/L	NS	NS	NS	0.9	50,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	6	6	50,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	0.528	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	0.279 J										
Caprolactam	µg/L	NS	NS	NS	NS	NS		24.0	< 2.04	< 1.94	< 1.92	< 1.90	11.9	< 1.96	24.3	20.0	< 1.92	< 1.96 J																
Carbazole	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Chrysene	µg/L	NS	NS	NS	2	70		< 0.495					< 0.505																					
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40		< 0.495					< 0.505																					
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485 J	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495 J	< 0.490 J	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Dichlorodiethyl ether	µg/L	0.5	0.5	NS	30	50,000		< 0.495	< 0.510	0.093 J	< 0.481	0.090 J	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490 J	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	0.192 J	0.264 J										
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		< 1.98	< 2.04	< 1.94	< 1.92	< 1.90	< 2.02	< 1.96	< 1.98	< 1.96	< 1.92	< 1.96	< 2.04	< 2.00	< 10.2	< 10.3	< 2.00 J	< 2.00										
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.990	< 1.02	< 0.971	< 0.962	< 0.952	< 1.01	< 0.980	< 0.990	< 0.980	< 0.962	< 0.980	< 1.02	< 1.00	< 5.10	< 5.15	< 1.00	< 1.00										
Fluoranthene	µg/L	NS	NS	NS	90	200		< 0.495					< 0.505																					
Fluorene	µg/L	NS	NS	NS	30	40		< 0.495					< 0.505																					
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS		< 0.495 J	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505 J	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Hexachloroethane	µg/L	NS	NS	NS	8	50,000		< 0.495 J	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505 J	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100		< 0.495					< 0.505																					
Isophorone	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Naphthalene	µg/L	NS	NS	NS	140	20,000		< 0.495 J					< 0.505 J																					
Nitrobenzene	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490 J	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500 J	< 0.500										
o-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	0.295 J	0.246 J	< 2.55	< 2.58	< 0.500	< 0.500										
p-Chloroaniline	µg/L	NS	NS	NS	20	300		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
p-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS		< 0.495					< 0.505																					
Pentachlorophenol	µg/L	NS	NS	NS	1	1		< 1.98	< 2.04	< 1.94	< 1.92	< 1.90	< 2.02	< 1.96	< 1.98	< 1.96	< 1.92	< 1.96	< 2.04	< 2.00	< 10.2	< 10.3	< 2.00 J	< 2.00										
Phenanthrene	µg/L	NS	NS	NS	NS	10,000		< 0.495					< 0.505																					
Phenol	µg/L	NS	NS	NS	1,000	2,000		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500 J	< 0.500										
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.495	< 0.510	< 0.485	< 0.481	< 0.476	< 0.505	< 0.490	< 0.495	< 0.490	< 0.481	< 0.490	< 0.510	< 0.500	< 2.55	< 2.58	< 0.500	< 0.500										
Pyrene	µg/L	NS	NS	NS	60	20		< 0.495					< 0.505																					
Pyridine	µg/L	NS	NS	NS	NS	NS		< 0.495					< 0.505						< 0.510 J	< 0.500 J	< 2.55	< 2.58	< 0.500 J	< 0.500										
SVOCs, Method SW8270-SIM, µg/L																																		
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000	1.38	0.811	0.641	0.773	0.857	0.741	< 0.144	< 0.15	< 0.139		0.0447 J	0.0689 J	< 0.150	< 0.153	< 0.147	< 0.142 J	0.121 J	0.313	< 0.139	< 0.139	< 0.144	< 0.156	< 0.142	0.245	0.195	0.204	0.217	
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		< 0.00943	< 0.00980	< 0.00990	0.00263 J	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Acenaphthene	µg/L	NS	NS	NS	20	10,000		< 0.00943	< 0.00980	< 0.00990	< 0.00962	0.00310 J	< 0.00943	0.00421 J	0.00908 J	0.00972 J	0.0231	0.0364	< 0.0100	< 0.0106	< 0.0101	< 0.0102	0.0567	0.00985 J										
Acenaphthylene	µg/L	NS	NS	NS	30	40		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Anthracene	µg/L	NS	NS	NS	60	30		0.0113	0.00279 J	0.00409 J	0.00286 J	0.00690 J	< 0.00943	< 0.0101	< 0.00990	0.00211 J	0.00228 J	0.00458 J	0.00677 J	0.00635 J	0.00583 J	0.00588 J	0.0109	0.0142										
Benzo(a)anthracene	µg/L	1	1	1	NS	1,000		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Benzo(a)pyrene	µg/L	0.2	0.2	0.2	0.2	500		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00137 J										
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00202 J										
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00175 J										
Chrysene	µg/L	NS	NS	NS	2	70		< 0.00943	0.00162 J	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00175 J										
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Fluoranthene	µg/L	NS	NS	NS	90	200		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	0.00159 J	< 0.00962	< 0.00971	0.00165 J	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00385 J										
Fluorene	µg/L	NS	NS	NS	30	40		< 0.00943	< 0.00980	< 0.00990	< 0.00962	0.00197 J	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	0.00191 J	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	0.000901 J	0.000824 J	< 0.0101	< 0.0102	< 0.0102	0.00110 J										
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000		< 0.00943	< 0.00980	< 0.00990	< 0.00962	< 0.0100	< 0.00943	0.00205 J	< 0.00990	< 0.00990	< 0.00962	< 0.00971	< 0.0100	< 0.0106	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Phenanthrene	µg/L	NS	NS	NS	40	10,000		< 0.00943	< 0.00980	< 0.00990	< 0.00962	0.00233 J	< 0.00943	< 0.0101	< 0.00990	< 0.00990	< 0.00962	< 0.00971	0.00528 J	0.00454 J	< 0.0101	< 0.0102	< 0.0102	< 0.0100										
Pyrene	µg/L	NS	NS	NS	60	20		< 0.00943	0.00397 J	< 0.00990	< 0.00962	< 0.0100	< 0.00943	< 0.0101	< 0.00990	0.00164 J	0.00156 J	< 0.00971	0.00169 J	< 0.0106	< 0.0101	< 0.0102	< 0.0102	0.00451 J										

Notes:
< = Compound not detected at
concentrations
above the laboratory reporting detection
limit.
The laboratory reporting detection limit is
shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	AOC2 Deep Overburden MW-211D 27-Oct-22 N	AOC2 Shallow Overburden MW-212S 12-Jun-17 N	AOC2 Shallow Overburden MW-212S 04-Dec-17 N	AOC3A Shallow Overburden MW-206S 13-Jun-17 N	AOC3A Shallow Overburden MW-206S 08-Jan-18 N	AOC3A Shallow Overburden MW-206S 18-Dec-20 N	AOC3A Shallow Overburden MW-206S 18-May-21 N	AOC3A Shallow Overburden MW-206S 05-Nov-21 N	AOC3A Shallow Overburden MW-206S 20-Jun-22 N	AOC3A Shallow Overburden MW-206S 25-Oct-22 N	AOC3A Shallow Overburden OW-40 29-Jun-17 N	AOC3A Shallow Overburden OW-40 05-Dec-17 N	AOC3A Shallow Overburden OW-40 20-May-21 N	AOC3A Shallow Overburden OW-40 10-Nov-21 N	AOC3A Shallow Overburden OW-40 21-Jun-22 N	AOC3A Shallow Overburden OW-40 21-Oct-22 N	AOC3B Shallow Overburden MW-204S 22-Jan-16 N	AOC3B Shallow Overburden MW-204S 23-Jun-17 N	AOC3B Shallow Overburden MW-204S 29-Sep-17 N	AOC3B Shallow Overburden MW-204S 07-Dec-17 N	AOC3B Shallow Overburden MW-204S 14-Dec-20 N	AOC3B Shallow Overburden MW-204S 21-May-21 N	AOC3B Shallow Overburden MW-204S 21-May-21 FD	AOC3B Shallow Overburden MW-204S 11-Nov-21 N	AOC3B Shallow Overburden MW-204S 20-Jun-22 N
SVOCs, Method SW8270, µg/L																														
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS			< 0.510 J	< 0.515	< 0.500	< 0.521	R	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490 J	< 0.500	< 0.500	< 0.454	< 0.500
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	50,000			< 0.510 J	< 0.515	< 0.500	< 0.521	R	< 0.485	< 0.495	< 0.481 J		< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490		< 0.510	< 0.532	< 0.521	< 2.50	R	< 0.500	< 0.500	< 0.454	< 0.500
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000						R				< 0.481					< 0.485						R				
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000		< 0.510 J	< 0.515	< 0.500	< 0.521 J	R	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	R	< 0.500	< 0.500	< 0.454	< 0.500
1,3-Dichlorobenzene	µg/L	NS	NS	100	50,000			< 0.510 J	< 0.515	< 0.500	< 0.521 J	R	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	R	< 0.500	< 0.500	< 0.454	< 0.500
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000		< 0.510 J	< 0.515	< 0.500	< 0.521 J	R	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	R	< 0.500	< 0.500	< 0.454	< 0.500
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476 J	< 0.485	< 0.495	< 0.481	< 0.481 J	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485 J	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS						< 0.476	< 0.485	< 0.495	< 0.481	< 0.481			< 0.500	< 0.500	< 0.490	< 0.485					< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		< 2.04 J	< 2.06	< 2.00 J	< 2.08	< 1.90	< 1.94	< 1.98	< 1.92	< 1.92	< 2.02	< 11.4	< 2.00	< 2.00	< 1.96	< 1.94	< 2.04	< 2.13	< 2.08	< 10.0	< 1.96	< 2.00	< 2.00	< 1.82	< 2.00
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		< 5.10 J	< 5.15	< 5.00 J	< 5.21	< 4.76	< 4.85	< 4.95	< 4.81	< 4.81	< 5.05	< 28.4	< 5.00	< 5.00	< 4.90	< 4.85	< 5.10	< 5.32	< 5.21	< 25.0	< 4.90	< 5.00 J	< 5.00 J	< 4.54	< 5.00
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476 J	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490 J	< 0.500	< 0.500	< 0.454	< 0.500
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476 J	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000						< 0.476 J															< 0.490 J				
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 2.55 J	< 2.58	< 2.50 J	< 2.60	< 2.38	< 2.43	< 2.48	< 2.40	< 2.40	< 2.52	< 14.2	< 2.50	< 2.50	< 2.45	< 2.43	< 2.55	< 2.66	< 2.60	< 12.5	< 2.45	< 2.50	< 2.50	< 2.27	< 2.50
Acenaphthene	µg/L	NS	NS	NS	20	10,000						< 0.476 J															< 0.490				
Acenaphthylene	µg/L	NS	NS	NS	30	40						< 0.476															< 0.490 J				
Acetophenone	µg/L	NS	NS	NS	NS	NS		< 1.02 J	< 1.03	< 1.00	< 1.04	< 0.952	< 0.971	< 0.990	< 0.962	< 0.962	< 1.01	< 5.68	< 1.00	< 1.00	< 0.980	< 0.971	< 1.02	< 1.06	< 1.04	< 5.00	< 0.980	< 1.00	< 1.00	< 0.909	< 1.00
Aniline	µg/L	NS	NS	NS	NS	NS		< 1.02 J	< 1.03	< 1.00	< 1.04	< 0.952					< 1.01	< 5.68					< 1.02	< 1.06	< 1.04	< 5.00	< 0.980				
Anthracene	µg/L	NS	NS	NS	60	30						< 0.476															< 0.490				
Atrazine	µg/L	3	3	3	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495 J	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Azobenzene	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476					< 0.505	< 2.84			< 0.490		< 0.510	< 0.532	< 0.521	< 2.50	< 0.490				
Benzaldehyde	µg/L	NS	NS	NS	NS	NS						< 1.90	< 1.94	< 1.98	< 1.92	< 1.92		< 2.00	< 2.00	< 2.00	< 1.96	< 1.94					< 1.96	< 2.00	< 2.00	< 1.82	< 2.00
Benzidine	µg/L	NS	NS	NS	NS	NS		< 20.4 J	< 20.6	< 20.0 J	< 20.8 J	< 19.0	< 19.4	< 19.8	< 19.2	< 19.2 J	< 20.2 J	< 114	< 20.0	< 20.0	< 19.6	< 19.4	< 102	< 21.3 J	< 20.8	< 100 J	< 19.6 J	< 20.0	< 20.0	< 18.2	< 20.0
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000						< 0.476															< 0.490				
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500						< 0.476															< 0.490				
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400						< 0.476															< 0.490				
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20						< 0.476															< 0.490				
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100						< 0.476															< 0.490				
Benzoic acid	µg/L	NS	NS	NS	NS	NS						< 38.1															< 39.2				
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490 J	< 0.500	< 0.500	< 0.454	< 0.500
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Biphenyl	µg/L	NS	NS	NS	0.9	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	6	6	50,000		0.152 J	0.186 J	0.084 J	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	0.130 J	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Caprolactam	µg/L	NS	NS	NS	NS	NS						7.36	< 1.94	7.19	< 1.92	< 1.92		< 2.00	< 2.00	< 2.00	< 1.96	< 1.94					< 1.96	< 2.00	< 2.00	18.8	0.193 J
Carbazole	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Chrysene	µg/L	NS	NS	NS	2	70						< 0.476															< 0.490				
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40						< 0.476															< 0.490				
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Dichloromethyl ether	µg/L	0.5	0.5	NS	30	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481 J	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485 J	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	0.805	< 0.500	< 0.500	< 0.454	< 0.500
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		< 2.04 J	< 2.06	< 2.00 J	< 2.08	< 1.90	< 1.94	< 1.98	< 1.92	< 1.92	< 2.02	< 11.4	< 2.00	< 2.00	< 1.96	< 1.94	< 2.04	< 2.13	< 2.08	< 10.0	< 1.96	< 2.00	< 2.00	< 1.82	< 2.00
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		< 1.02 J	< 1.03	< 1.00	< 1.04 J	< 0.952	< 0.971	< 0.990	< 0.962	< 0.962	< 1.01	< 5.68	< 1.00	< 1.00	< 0.980	< 0.971	< 1.02	< 1.06	< 1.04	< 5.00	< 0.980	< 1.00	< 1.00	< 0.909	< 1.00
Fluoranthene	µg/L	NS	NS	NS	90	200						< 0.476															< 0.490				
Fluorene	µg/L	NS	NS	NS	30	40						< 0.476															< 0.490				
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Hexachlorobutadiene	µg/L	NS	NS	0.6	0.6	3,000		< 0.510 J	< 0.515	< 0.500	< 0.521 J	R	< 0.485	< 0.495	< 0.481 J	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500 J	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	R	< 0.500	< 0.500	< 0.454	< 0.500
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	R	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	< 0.490 J	< 0.500	< 0.500	< 0.454	< 0.500
Hexachloroethane	µg/L	NS	NS	NS	NS	50,000		< 0.510 J	< 0.515	< 0.500	< 0.521	R	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532 J	< 0.521	< 2.50	< 0.490 J	< 0.500	< 0.500	< 0.454	< 0.500
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100						< 0.476															< 0.490				
Isophorone	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Naphthalene	µg/L	NS	NS	NS	140	20,000						< 0.476 J															< 0.490 J				
Nitrobenzene	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
n-Nitrosodimethylamine	µg/L	NS	NS	0.01	0.01	50,000		< 0.510 J	< 0.515	< 0.500 J	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50 J	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
o-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
p-Chloroaniline	µg/L	NS	NS	NS	20	300		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
p-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS						< 0.476															< 0.490				
Pentachlorophenol	µg/L	NS	NS	1	1	200		< 2.04 J	< 2.06	< 2.00 J	< 2.08	< 1.90	< 1.94	< 1.98	< 1.92	< 1.92	< 2.02	< 11.4	< 2.00	< 2.00	< 1.96	< 1.94	< 2.04	< 2.13	< 2.08	< 10.0	< 1.96	< 2.00	< 2.00	< 1.82	< 2.00
Phenanthrene	µg/L	NS	NS	NS	NS	10,000						< 0.476															< 0.490				
Phenol	µg/L	NS	NS	NS	1,000	2,000		< 0.510 J	< 0.515	< 0.500 J	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510 J	< 0.532 J	< 0.521	< 2.50	1.04	< 0.500	< 0.500	< 0.454	< 0.500
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500	< 0.521	< 0.476	< 0.485	< 0.495	< 0.481	< 0.481	< 0.505	< 2.84	< 0.500	< 0.500	< 0.490	< 0.485	< 0.510	< 0.532	< 0.521	< 2.50	< 0.490	< 0.500	< 0.500	< 0.454	< 0.500
Pyrene	µg/L	NS	NS	NS	60	20						< 0.476															< 0.490				
Pyridine	µg/L	NS	NS	NS	NS	NS		< 0.510 J	< 0.515	< 0.500 J	< 0.521	< 0.476					< 0.505 J	< 2.84					< 0.510	< 0.532 J	< 0.521	< 2.50 J	< 0.490				
SVOCs, Method SW8270-SIM, µg/L																														
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000	0.152	< 0.142	< 0.144	< 0.147	< 0.160	< 0.134	< 0.134	< 0.144	< 0.167	< 0.139	< 0.147	< 0.139	< 0.139	< 0.139	< 0.147	< 0.139	< 0.15	< 0.150	< 0.144	< 0.150					
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		< 0.0102	< 0.0101	0.00137 J	< 0.0106	< 0.0100	< 0.0106	< 0.00980	< 0.00980	< 0.00962	< 0.0105	< 0.0104	< 0.00990	< 0.0101	< 0.00980	< 0.0101	< 0.0104	< 0.0102	< 0.0100	< 0.0100	< 0.0102	< 0.0103	< 0.00990	< 0.00980
Acenaphthene	µg/L	NS	NS	NS	20	10,000		0.00174 J	0.00169 J	< 0.0104	< 0.0106	0.0117	< 0.0106	< 0.00980	< 0.00980	0.00483 J	< 0.0105	< 0.0104	< 0.00990	< 0.0101	< 0.00980	< 0.0100	0.00201 J	< 0.0104	< 0.0102	0.00195 J	< 0.0100	0.00195 J	0.00204 J	< 0.00990	0.00232 J
Acenaphthylene	µg/L	NS	NS	NS	30	40		< 0.0102	< 0.0101	< 0.0104	< 0.0106	< 0.0100	< 0.0106	< 0.00980	< 0.00980	< 0.00962	< 0.0105	< 0.0104	< 0.00990	< 0.0101	< 0.00980	< 0.0100	< 0.0104	< 0.0102	< 0.0100	< 0.0100	< 0.0102	< 0.0103	< 0.00990	< 0.00980
Anthracene	µg/L	NS	NS	NS	60	30		0.00320 J	0.00289 J	0.00381 J	0.00349 J	< 0.0100	0.00288 J	0.00418 J	0.00556 J	0.00265 J	0.00228 J	0.00270 J	0.00372 J	< 0.0101	0.00394 J	0.0126	< 0.0104	< 0.0104	< 0.0102	< 0.0100	< 0.0100	< 0.0102	< 0.0103	< 0.00990	< 0.00980
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000		< 0.0102	< 0.0101	< 0.0104	< 0.0106	< 0.0100	< 0.0106	< 0.00980	< 0.00980	< 0.00962	< 0.0105	< 0.0104	< 0.00990	< 0.0101	< 0.00980	< 0.0100	< 0.0104	< 0.0104

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	AOC3B	AOC3B	AOC3B	AOC3B	AOC3B	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC4	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5	AOC5
							Geologic Unit	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden
							Location ID	MW-204S	MW-204S	MW-204S	MW-205S	MW-205S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202S	MW-202D	MW-202D	MW-202D	MW-202D	MW-202D	MW-202B	MW-202B	MW-202B	MW-202B	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25	OW-25
							Sample Date	20-Jun-22	21-Oct-22	21-Oct-22	16-Jun-17	08-Jan-18	09-Dec-20	14-May-21	03-Nov-21	22-Jun-22	20-Oct-22	18-Dec-20	18-May-21	03-Nov-21	22-Jun-22	18-Oct-22	18-Dec-20	14-May-21	03-Nov-21	20-Jun-22	18-Oct-22	11-Dec-20	11-Dec-20	11-May-21	11-May-21	11-May-21	05-Nov-21	05-Nov-21	21-Jun-22	21-Jun-22	20-Oct-22
							Sample Type	FD	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	FD	N	N	FD	N	FD	N
SVOCs, Method SW8270, µg/L																																				
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532*																							
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000		*< 0.490*			*< 0.532 J*	*< 0.532 J*																							
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000			*< 0.485*	*< 0.485*																									
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532 J*																							
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532 J*																							
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532 J*																							
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000		*< 0.490*	*< 0.485 UJ*	*< 0.485 UJ*	*< 0.532*	*< 0.532*																							
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*																									
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		*< 1.96*	*< 1.94*	*< 1.94*	*< 2.13 J*	*< 2.13*																							
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		*< 4.90*	*< 4.85*	*< 4.85*	*< 5.32*	*< 5.32*																							
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																													
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532*																							
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		*< 2.45*	*< 2.43*	*< 2.43*	*< 2.66 J*	*< 2.66*																							
Acenaphthene	µg/L	NS	NS	NS	20	10,000																													
Acenaphthylene	µg/L	NS	NS	NS	30	40																													
Acetophenone	µg/L	NS	NS	NS	NS	NS		*< 0.980*	*< 0.971*	*< 0.971*	*< 1.06*	*< 1.06*																							
Aniline	µg/L	NS	NS	NS	NS	NS					*< 1.06*	*< 1.06*																							
Anthracene	µg/L	NS	NS	NS	60	30																													
Atrazine	µg/L	3	3	3	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Azobenzene	µg/L	NS	NS	NS	NS	NS					*< 0.532*	*< 0.532*																							
Benzaldehyde	µg/L	NS	NS	NS	NS	NS		*< 1.96*	*< 1.94*	*< 1.94*																									
Benzidine	µg/L	NS	NS	NS	NS	NS		*< 19.6*	*< 19.4*	*< 19.4*	R	*< 21.3 J*																							
Benzo(a)anthracene	µg/L	NS	NS	NS	NS	1,000																													
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500																													
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400																													
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20																													
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100																													
Benzoic acid	µg/L	NS	NS	NS	NS	NS																													
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*0.084 J*	*< 0.485*	*0.093 J*	*< 0.532*																							
Biphenyl	µg/L	NS	NS	NS	0.5	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6	50,000	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Caprolactam	µg/L	NS	NS	NS	NS	NS		*0.165 J*	*< 1.94*	*< 1.94*																									
Carbazole	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Chrysene	µg/L	NS	NS	NS	2	70																													
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40																													
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Dichloromethyl ether	µg/L	0.5	0.5	NS	NS	50,000		*< 0.490*	*< 0.485 J*	*< 0.485 J*	*< 0.532*	*< 0.532*																							
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		*< 1.96*	*< 1.94*	*< 1.94*	*< 2.13*	*< 2.13*																							
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.980*	*< 0.971*	*< 0.971*	*< 1.06*	*< 1.06 J*																							
Fluoranthene	µg/L	NS	NS	NS	90	200																													
Fluorene	µg/L	NS	NS	NS	30	40																													
Hexachlorobenzene	µg/L	NS	NS	NS	1	6,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532 J*																							
Hexachlorocyclopentadiene	µg/L	NS	NS	NS	50	NS	NS	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532*																							
Hexachloroethane	µg/L	NS	NS	NS	8	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532 J*	*< 0.532*																							
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	NS	0.5	100																												
Isophorone	µg/L	NS	NS	NS	NS	NS	NS	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Naphthalene	µg/L	NS	NS	NS	140	20,000																													
Nitrobenzene	µg/L	NS	NS	NS	NS	NS	NS	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
o-Cresol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
p-Chloroaniline	µg/L	NS	NS	NS	20	300		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
p-Cresol	µg/L	NS	NS	NS	NS	NS		*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																													
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200	*< 1.96*	*< 1.94*	*< 1.94*	*< 2.13*	*< 2.13*																							
Phenanthrene	µg/L	NS	NS	NS	NS	40	10,000																												
Phenol	µg/L	NS	NS	NS	NS	1,000	2,000	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS	NS	*< 0.490*	*< 0.485*	*< 0.485*	*< 0.532*	*< 0.532*																							
Pyrene	µg/L	NS	NS	NS	NS	60	20																												
Pyridine	µg/L	NS	NS	NS	NS	NS	NS				*< 0.532 J*	*< 0.532*																							
SVOCs, Method SW8270-SIM, µg/L																																			
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000					*< 0.144*	*< 0.156*	*< 0.134*	*< 0.139*	*< 0.144*	*0.0831 J*	*< 0.142*	*< 0.134*	*< 0.134*	*< 0.139*	*< 0.144*	*< 0.144*	*< 0.134*	*< 0.134*	*< 0.134*	*< 0.15*	*< 0.144*	*0.266*	*0.264*	*0.138 J*	*0.171*	*0.279*	*0.282*	*0.232*	*0.238*	*0.193*
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Acenaphthene	µg/L	NS	NS	NS	20	10,000		*0.00213 J*	*0.00200 J*	*0.00161 J*	*< 0.0106*	*< 0.0101*																							
Acenaphthylene	µg/L	NS	NS	NS	30	40		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Anthracene	µg/L	NS	NS	NS	60	30		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500	*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Chrysene	µg/L	NS	NS	NS	2	70		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Dibenzo(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Fluoranthene	µg/L	NS	NS	NS	90	200		*< 0.00980*	*0.00214 J*	*0.00160 J*	*< 0.0106*	*< 0.0101*																							
Fluorene	µg/L	NS	NS	NS	30	40		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000		*< 0.00980*	*< 0.00971*	*< 0.00990*	*< 0.0106*	*< 0.0101*																							
Phenanthrene	µg/L	NS	NS	NS	40	10,000		*< 0.00980*	*0.00253 J*	*0.00259 J*	*< 0.0106*	*< 0.0101*																							
Pyrene	µg/L	NS	NS	NS	60	20		*< 0.00980*	*< 0.00971*	*< 0.00990*	*0.00399 J*	*< 0.0101*																							

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
R = Rejected. Quality control indicates that the data are unusable (compound may or not be present).
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of I
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Reco
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-5-2020	AOC5 Deep Overburden OW-25 26-Oct-22 FD	AOC5 Shallow Overburden OW-26 21-Jan-16 N	AOC5 Shallow Overburden OW-26 05-Jun-17 N	AOC5 Shallow Overburden OW-26 08-Jun-17 FD	AOC5 Shallow Overburden OW-26 28-Sep-17 N	AOC5 Shallow Overburden OW-26 08-Dec-17 N	AOC5 Shallow Overburden OW-26 08-Dec-17 FD	AOC5 Bedrock OW-34 26-Jun-17 N	AOC5 Bedrock OW-34 06-Dec-17 N	AOC5 Deep Overburden OW-36 06-Jun-17 N	AOC5 Deep Overburden OW-36 06-Jun-17 FD	AOC5 Deep Overburden OW-35 06-Dec-17 N	AOC5 Deep Overburden OW-35 06-Dec-17 FD	AOC5 Shallow Overburden OW-36 21-Jan-16 N	AOC5 Shallow Overburden OW-36 21-Jan-16 FD	AOC5 Shallow Overburden OW-36 06-Jun-17 N	AOC5 Shallow Overburden OW-36 29-Sep-17 N	AOC5 Shallow Overburden OW-36 29-Sep-17 FD	AOC5 Shallow Overburden OW-36 06-Dec-17 N	AOC6 Shallow Overburden MW-305S 21-Jun-17 N	AOC6 Shallow Overburden MW-305S 05-Dec-17 N	AOC6 Shallow Overburden MW-305S 18-Dec-20 N	AOC6 Shallow Overburden MW-305S 19-May-21 N	AOC6 Shallow Overburden MW-305S 10-Feb-22 N	AOC6 Shallow Overburden MW-305S 16-Jun-22 N	AOC6 Shallow Overburden MW-305S 19-Oct-22 N	AOC6 Deep Overburden MW-305D 21-Jun-17 N
SVOCs, Method SW8270, µg/L																																
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS																											< 0.500
1,2,4-Trichlorobenzene	µg/L	NS	70	70	50,000			< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	50,000			< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
1,2-Dichlorobenzene	µg/L	NS	NS	600	2,000			< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
1,3-Dichlorobenzene	µg/L	NS	NS	100	50,000			< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521 J	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521 J	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500 J	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS																										
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		< 2.00	< 2.02	< 2.00	< 2.04	< 2.10 J	< 2.13 J	< 2.08	< 11.0	< 2.10	< 2.06	< 10.9	< 10.4	< 2.08	< 2.27	< 2.00	< 2.08	< 2.00	< 10.6 J	< 2.13	< 10.3						< 2.00
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		< 5.00	< 5.05 J	< 5.00 J	< 5.10	< 5.26 J	< 5.32 J	< 5.21	< 27.5	< 5.26	< 5.15	< 27.2	< 26.0	< 5.21	< 5.68	< 5.00	< 5.21	< 5.00	< 26.6	< 5.32	< 25.8						< 5.00
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500 J	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																										
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 2.50	< 2.52 J	< 2.50 J	< 2.55	< 2.63 J	< 2.66 J	< 2.60	< 13.7	< 2.63	< 2.58	< 13.6	< 13.0	< 2.60	< 2.84	< 2.50	< 2.60	< 2.50	< 13.3	< 2.66	< 12.9						< 2.50
Acenaphthene	µg/L	NS	NS	NS	20	10,000																										
Acenaphthylene	µg/L	NS	NS	NS	NS	40																										
Acetophenone	µg/L	NS	NS	NS	NS	NS		< 1.00	< 1.01	< 1.00	< 1.02	< 1.05 J	< 1.06 J	< 1.04	< 5.49	< 1.05	< 1.03	< 5.43	< 5.21	< 1.04	< 1.14	< 1.00	< 1.04	< 1.00	< 5.32	< 1.06	< 5.15						< 1.00
Aniline	µg/L	NS	NS	NS	NS	NS		< 1.00	< 1.01	< 1.00	< 1.02	< 1.05 J	< 1.06 J	< 1.04	< 5.49	< 1.05	< 1.03	< 5.43	< 5.21	< 1.04	< 1.14	< 1.00	< 1.04	< 1.00	< 5.32 J	< 1.06	< 5.15						< 1.00
Anthracene	µg/L	NS	NS	NS	60	30																										
Atrazine	µg/L	3	3	3	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Azobenzene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Benzaldehyde	µg/L	NS	NS	NS	NS	NS																										
Benzidine	µg/L	NS	NS	NS	NS	NS																										
Benzo(a)anthracene	µg/L	NS	NS	NS	NS	1	1,000		< 100	< 20.2	< 20.0	< 20.4	< 21.0 J	< 21.3 J	< 20.8 J	< 110	< 21.0 J	< 20.6 J	< 109 J	< 104 J	< 104 J	< 114	< 20.0 J	< 20.8 J	< 20.0	< 106 J	< 21.3 J	< 103						< 20.0 J
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500																									
Benzo(b)fluoranthene	µg/L	NS	NS	NS	NS	1	400																									
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	NS	50	20																									
Benzo(k)fluoranthene	µg/L	NS	NS	NS	NS	1	100																									
Benzoic acid	µg/L	NS	NS	NS	NS	NS																										
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Biphenyl	µg/L	NS	NS	NS	0.9	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6	50,000		< 0.500	< 0.505	< 0.500	< 0.510	0.118 J	0.137 J	0.098 J	< 2.75	0.233 J	0.092 J	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Caprolactam	µg/L	NS	NS	NS	NS	NS																										
Carbazole	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Chrysene	µg/L	NS	NS	NS	NS	2	70																									
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	0.5	40																									
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		< 0.500	0.214 J	0.241 J	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Dichlorodiethyl ether	µg/L	0.5	0.5	NS	30	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						0.144 J
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		< 2.00	< 2.02 J	< 2.00 J	< 2.04	< 2.10 J	< 2.13 J	< 2.08	< 11.0	< 2.10	< 2.06	< 10.9	< 10.4	< 2.08	< 2.27	< 2.00	< 2.08	< 2.00	< 10.6	< 2.13	< 10.3						< 2.00
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		< 1.00	< 1.01	< 1.00	< 1.02	< 1.05 J	< 1.06 J	< 1.04	< 5.49	< 1.05	< 1.03	< 5.43	< 5.21	< 1.04	< 1.14	< 1.00	< 1.04	< 1.00	< 5.32	< 1.06	< 5.15						< 1.00
Fluoranthene	µg/L	NS	NS	NS	90	200																										
Fluorene	µg/L	NS	NS	NS	30	40																										
Hexachlorobenzene	µg/L	NS	NS	NS	1	6,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521 J	< 0.568	R	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
Hexachlorocyclopentadiene	µg/L	NS	NS	NS	50	NS	NS	< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521 J	< 0.568	R	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
Hexachloroethane	µg/L	NS	NS	NS	NS	50,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526 J	< 0.515 J	< 2.72	< 2.60	< 0.521 J	< 0.568	R	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																										
Isophorone	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Naphthalene	µg/L	NS	NS	NS	NS	140	20,000																									
Nitrobenzene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	10,000		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72 J	< 2.60 J	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66 J	< 0.532	< 2.58						< 0.500
o-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
p-Chloroaniline	µg/L	NS	NS	NS	20	300		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
p-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																										
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200	< 2.00	< 2.02 J	< 2.00 J	< 2.04	< 2.10 J	< 2.13 J	< 2.08	< 11.0	< 2.10	< 2.06	< 10.9	< 10.4	< 2.08	< 2.27	< 2.00	< 2.08	< 2.00	< 10.6	< 2.13	< 10.3						< 2.00
Phenanthrene	µg/L	NS	NS	NS	NS	40	10,000																									
Phenol	µg/L	NS	NS	NS	NS	1,000	2,000		< 0.500 J	< 0.505 J	< 0.500 J	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521 J	< 0.568 J	< 0.500 J	< 0.521 J	< 0.500	< 2.66	< 0.532 J	< 2.58						< 0.500 J
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS	NS	< 0.500	< 0.505	< 0.500	< 0.510	< 0.526 J	< 0.532 J	< 0.521	< 2.75	< 0.526	< 0.515	< 2.72	< 2.60	< 0.521	< 0.568	< 0.500	< 0.521	< 0.500	< 2.66	< 0.532	< 2.58						< 0.500
Pyrene	µg/L	NS	NS	NS	NS	60	20																									
Pyridine	µg/L	NS	NS	NS	NS	NS	NS	< 0.500	< 0.505 J	< 0.500 J	< 0.510	< 0.526 J	< 0.532 J	< 0.521 J	< 2.75	< 0.526 J	< 0.515 J	< 2.72 J	< 2.60 J	< 0.521	< 0.568	< 0.500 J	< 0.521 J	< 0.500	< 2.66 J	< 0.532 J	< 2.58						< 0.500 J
SVOCs, Method SW8270-SIM, µg/L																																
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000	0.198	0.105 J	< 0.142	< 0.146	< 0.142	< 0.142	< 0.142	< 0.153	< 0.142	< 0.171	< 0.179	< 0.142	< 0.150	< 0.142	< 0.167	< 0.144	< 0.142	< 0.142	< 0.147	< 0.147	< 0.139	< 0.134	< 0.139	< 0.139	< 0.134	< 0.139	0.601 J
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		0.00106 J	< 0.0103	< 0.0102	< 0.0104	< 0.0104	< 0.0104	< 0.0107	< 0.0108	< 0.0104	< 0.0100	< 0.0102	< 0.0103	< 0.0100	< 0.0104	< 0.0100	< 0.0101	< 0.0102	< 0.0106	< 0.0103	< 0.0101						< 0.0100
Acenaphthene	µg/L	NS	NS	NS	20	10,000		0.00496 J	0.31	0.294	0.00356 J	0.0252	0.0247	< 0.0107	< 0.0108	< 0.0104	< 0.0100	< 0.0102	< 0.0103	< 0.0100	< 0.0104	< 0.0100	< 0.0101	< 0.0102	< 0.0106	< 0.0103	< 0.0101						< 0.0100
Acenaphthylene	µg/L	NS	NS	NS	30	40		< 0.0100	0.0302	0.0256	< 0.0104	< 0.0104	< 0.0104	< 0.0107	0.00412 J	< 0.0104	< 0.0100	< 0.0102	< 0.0103	< 0.0100	< 0.0104	< 0.0100	< 0.0101	< 0.0102	< 0.0106	< 0.0103	< 0.0101						< 0.0100
Anthracene	µg/L	NS	NS	NS	60	30		0.00240 J	0.0153	0.0146	0.00467 J	0.00462 J	0.00444 J	< 0.0107	0.00389 J	0.00216 J	0.00212 J	< 0.0102	< 0.0103	< 0.0100	0.00228 J	0.00667 J	0.00790 J	0.00533 J	0.00353 J	< 0.0103	< 0.0101						0.00318 J
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000		< 0.0100	< 0.0103	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.00466 J	< 0.0108	< 0.0104	0.00281 J	< 0.0102	< 0.0103	< 0.0100	0.00198 J	< 0.0100	0.00333 J	< 0.0102	0.00230 J	< 0.0103	< 0.0101						< 0.0100
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500	< 0.0100	0.00126 J	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.00608 J	0.0103 J	< 0.0104	0.00261 J	0.00136 J	0.00138 J	< 0.0100	0.00321 J	0.000938 J	0.00199 J	0.00106 J	0.00241 J	< 0.0103	< 0.0101						< 0.0100
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400		< 0.0100	< 0.0103	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.0141	0.0169	0.00192 J	0.00576 J	0.00323 J	0.00312 J	< 0.0100	0.00462 J	0.00184 J	0.00358 J	0.00194 J	0.00431 J	< 0.0103	< 0.0101						< 0.0100
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20		< 0.0100	< 0.0103	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.00947 J	0.00783 J	< 0.0104	0.00345 J	< 0.0102	0.00136 J	< 0.0100	< 0.0104	< 0.0100	0.00188 J	< 0.0102	0.00189 J	< 0.0103	< 0.0101						< 0.0100
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100		< 0.0100	0.00125 J	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.0107	0.0144	< 0.0104	0.00502 J	0.00210 J	0.00271 J	< 0.0100	0.00486 J	0.00206 J	0.00340 J	0.00186 J	0.00428 J	< 0.0103	< 0.0101						< 0.0100
Chrysene	µg/L	NS	NS	NS	2	70		0.000969 J	< 0.0103	< 0.0102	< 0.0104	< 0.0104	< 0.0104	0.0104 J	0.0176	< 0.0104

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	Geologic Unit	Location ID	Sample Date	Sample Type
SVOCs, Method SW8270, µg/L											
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
1,2,4-Trichlorobenzene	µg/L	NS	70	70	50,000	50,000	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000	AOC6	Deep Overburden	MW-305D	19-May-21	N
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000	AOC6	Shallow Overburden	MW-306S	20-May-21	N
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	15-May-21	N
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Acenaphthene	µg/L	NS	NS	NS	20	10,000	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Acenaphthylene	µg/L	NS	NS	NS	30	40	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Acetophenone	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Aniline	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Anthracene	µg/L	NS	NS	NS	60	30	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Atrazine	µg/L	3	3	3	NS	NS	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Azobenzene	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Benzaldehyde	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Benzidine	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Benzoic acid	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	19-May-21	N
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
Biphenyl	µg/L	NS	NS	NS	0.9	50,000	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	50,000	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
Caprolactam	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
Carbazole	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
Chrysene	µg/L	NS	NS	NS	2	70	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Dibenzofuran	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Dichloroethyl ether	µg/L	0.5	0.5	NS	30	50,000	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Fluoranthene	µg/L	NS	NS	NS	90	200	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Fluorene	µg/L	NS	NS	NS	30	40	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Hexachloroethane	µg/L	NS	NS	NS	8	50,000	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Isophorone	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Naphthalene	µg/L	NS	NS	NS	140	20,000	AOC6	Deep Overburden	MW-305D	19-May-21	N
Nitrobenzene	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
o-Cresol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
p-Chloroaniline	µg/L	NS	NS	NS	20	300	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
p-Cresol	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Pentachlorophenol	µg/L	NS	NS	NS	1	1	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Phenanthrene	µg/L	NS	NS	NS	40	10,000	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Phenol	µg/L	NS	NS	NS	1,000	2,000	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Pyrene	µg/L	NS	NS	NS	60	20	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Pyridine	µg/L	NS	NS	NS	NS	NS	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
SVOCs, Method SW8270-SIM, µg/L											
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Acenaphthene	µg/L	NS	NS	NS	20	10,000	AOC6	Deep Overburden	MW-305D	19-May-21	N
Acenaphthylene	µg/L	NS	NS	NS	30	40	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
Anthracene	µg/L	NS	NS	NS	60	30	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500	AOC6	Shallow Overburden	MW-306S	22-Jun-17
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Chrysene	µg/L	NS	NS	NS	2	70	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Dibenzo(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Fluoranthene	µg/L	NS	NS	NS	90	200	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
Fluorene	µg/L	NS	NS	NS	30	40	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Phenanthrene	µg/L	NS	NS	NS	40	10,000	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Pyrene	µg/L	NS	NS	NS	60	20	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N

Analyte	Unit	Location Group	Geologic Unit	Location ID	Sample Date	Sample Type
SVOCs, Method SW8270, µg/L						
1,2,4,5-Tetrachlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
1,2,4-Trichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
1,2,4-Trimethylbenzene	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
1,2-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
1,3-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
1,4-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
2,2-Oxybis(1-chloropropane)	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
2,3,4,6-Tetrachlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
2,4,5-Trichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
2,4,6-Trichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
2,4-Dichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
2,4-Dimethylphenol	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
2,4-Dinitrophenol	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
2,4-Dinitrotoluene	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
2,6-Dinitrotoluene	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
2-Chloronaphthalene	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
2-Chlorophenol	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
2-Methylnaphthalene	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
2-Nitroaniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
2-Nitrophenol	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
3,3'-Dichlorobenzidine	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
3-Nitroaniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
4-Bromophenyl phenyl ether	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
4-Chloro-3-methylphenol	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
4-Chlorophenyl phenyl ether	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
4-Nitrophenol	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Acenaphthene	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Acenaphthylene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Acetophenone	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Aniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Anthracene	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Atrazine	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Azobenzene	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Benzaldehyde	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Benzidine	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Benzo(a)anthracene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Benzo(a)pyrene	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Benzo(b)fluoranthene	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Benzo(g,h,i)perylene	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Benzo(k)fluoranthene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Benzoic acid	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Benzyl alcohol	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
Benzyl butyl phthalate	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
Biphenyl	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
Bis(2-chloroethoxy)methane	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
Bis(2-ethylhexyl)phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
Caprolactam	µg/L	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
Carbazole	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
Chrysene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Dibenz(a,h)anthracene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Dibenzofuran	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Dibutyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Dichloroethyl ether	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
Diethyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Dimethyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Dinitro-o-cresol	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Di-n-octyl phthalate	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Fluoranthene	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Fluorene	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Hexachlorobenzene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Hexachlorobutadiene	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Hexachlorocyclopentadiene	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Hexachloroethane	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Indeno(1,2,3-cd)pyrene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Isophorone	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Naphthalene	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
Nitrobenzene	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
n-Nitrosodimethylamine	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
n-Nitroso-n-propylamine	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
n-Nitrosodiphenylamine	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
o-Cresol	µg/L	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
p-Chloroaniline	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
p-Cresol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Pentachloronitrobenzene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Pentachlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Phenanthrene	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Phenol	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
p-Nitroaniline	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Pyrene	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Pyridine	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
SVOCs, Method SW8270-SIM, µg/L						
1,4-Dioxane	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
2-Methylnaphthalene	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Acenaphthene	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
Acenaphthylene	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
Anthracene	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
Benzo(a)anthracene	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
Benzo(a)pyrene	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
Benzo(b)fluoranthene	µg/L	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
Benzo(g,h,i)perylene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Benzo(k)fluoranthene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Chrysene	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Dibenzo(a,h)anthracene	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Fluoranthene	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
Fluorene	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Indeno(1,2,3-cd)pyrene	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Naphthalene (SIM)	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Phenanthrene	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Pyrene	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N

Analyte	Unit	Location Group	Geologic Unit	Location ID	Sample Date	Sample Type
SVOCs, Method SW8270, µg/L						
1,2,4,5-Tetrachlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
1,2,4-Trichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
1,2,4-Trimethylbenzene	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
1,2-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
1,3-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
1,4-Dichlorobenzene	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
2,2-Oxybis(1-chloropropane)	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
2,3,4,6-Tetrachlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
2,4,5-Trichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
2,4,6-Trichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
2,4-Dichlorophenol	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
2,4-Dimethylphenol	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
2,4-Dinitrophenol	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
2,4-Dinitrotoluene	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
2,6-Dinitrotoluene	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
2-Chloronaphthalene	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
2-Chlorophenol	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
2-Methylnaphthalene	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
2-Nitroaniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
2-Nitrophenol	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
3,3'-Dichlorobenzidine	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
3-Nitroaniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
4-Bromophenyl phenyl ether	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
4-Chloro-3-methylphenol	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
4-Chlorophenyl phenyl ether	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
4-Nitrophenol	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Acenaphthene	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Acenaphthylene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Acetophenone	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Aniline	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Anthracene	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Atrazine	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Azobenzene	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Benzaldehyde	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Benzidine	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Benzo(a)anthracene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Benzo(a)pyrene	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Benzo(b)fluoranthene	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Benzo(g,h,i)perylene	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Benzo(k)fluoranthene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Benzoic acid	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Benzyl alcohol	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
Benzyl butyl phthalate	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
Biphenyl	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
Bis(2-chloroethoxy)methane	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
Bis(2-ethylhexyl)phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
Caprolactam	µg/L	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
Carbazole	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
Chrysene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N
Dibenz(a,h)anthracene	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	FD
Dibenzofuran	µg/L	AOC6	Shallow Overburden	MW-306S	15-Dec-20	N
Dibutyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	20-May-21	N
Dichloroethyl ether	µg/L	AOC6	Shallow Overburden	MW-306S	10-Feb-22	N
Diethyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	16-Jun-22	N
Dimethyl phthalate	µg/L	AOC6	Shallow Overburden	MW-306S	20-Oct-22	N
Dinitro-o-cresol	µg/L	AOC6	Shallow Overburden	MW-307S	22-Jun-17	N
Di-n-octyl phthalate	µg/L	AOC6	Shallow Overburden	MW-307S	05-Dec-17	N
Fluoranthene	µg/L	AOC6	Shallow Overburden	MW-307S	08-Dec-20	N
Fluorene	µg/L	AOC6	Shallow Overburden	MW-307S	15-May-21	N
Hexachlorobenzene	µg/L	AOC6	Shallow Overburden	MW-307S	02-Nov-21	N
Hexachlorobutadiene	µg/L	AOC6	Shallow Overburden	MW-307S	11-Feb-22	N
Hexachlorocyclopentadiene	µg/L	AOC6	Shallow Overburden	MW-307S	15-Jun-22	N
Hexachloroethane	µg/L	AOC6	Shallow Overburden	MW-307S	19-Oct-22	N
Indeno(1,2,3-cd)pyrene	µg/L	AOC6	Deep Overburden	MW-305D	05-Dec-17	N
Isophorone	µg/L	AOC6	Deep Overburden	MW-305D	16-Dec-20	N
Naphthalene	µg/L	AOC6	Deep Overburden	MW-305D	19-May-21	N
Nitrobenzene	µg/L	AOC6	Deep Overburden	MW-305D	10-Feb-22	N
n-Nitrosodimethylamine	µg/L	AOC6	Deep Overburden	MW-305D	16-Jun-22	N
n-Nitroso-n-propylamine	µg/L	AOC6	Deep Overburden	MW-305D	19-Oct-22	N
n-Nitrosodiphenylamine	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	N
o-Cresol	µg/L	AOC6	Shallow Overburden	MW-306S	05-Dec-17	N
p-Chloroaniline	µg/L	AOC6	Shallow Overburden	MW-306S	22-Jun-17	FD
p-Cresol	µg/L	AOC6	Shallow Overburden	MW-306S	04-Dec-17	N

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	Geologic Unit	Location ID	Sample Date	Sample Type	AOC6 MW-307D 18-May-21 N	AOC6 MW-307D 02-Nov-21 N	AOC6 MW-307D 11-Feb-22 N	AOC6 MW-307D 15-Jun-22 N	AOC6 MW-307D 19-Oct-22 N	AOC6 Bedrock MW-307B 20-Jun-17 N	AOC6 Bedrock MW-307B 20-Jun-17 FD	AOC6 Bedrock MW-307B 05-Dec-17 N	AOC6 Bedrock MW-307B 05-Dec-17 FD	AOC6 Bedrock MW-307B 08-Dec-20 N	AOC6 Bedrock MW-307B 18-May-21 N	AOC6 Bedrock MW-307B 02-Nov-21 N	AOC6 Bedrock MW-307B 11-Feb-22 N	AOC6 Bedrock MW-307B 15-Jun-22 N	AOC6 Bedrock MW-307B 19-Oct-22 N	AOC6 Bedrock MW-308B 21-Jun-17 N	AOC6 Bedrock MW-308B 09-Jan-18 N	AOC6 Bedrock MW-308B 08-Dec-20 N	AOC6 Bedrock MW-308B 19-May-21 N	AOC6 Bedrock MW-308B 02-Nov-21 N	AOC6 Bedrock MW-308B 11-Feb-22 N	AOC6 Bedrock MW-308B 15-Jun-22 N	AOC6 Bedrock MW-308B 19-Oct-22 N	AOC6 Deep Overburden OW-07 20-Jun-17 N	AOC6 Deep Overburden OW-07 09-Jan-18 N	AOC6 Deep Overburden OW-07 08-Dec-20 N	AOC6 Deep Overburden OW-07 19-May-21 N	AOC6 Deep Overburden OW-07 02-Nov-21 N	AOC6 Deep Overburden OW-07 11-Feb-22 N	AOC6 Deep Overburden OW-07 15-Jun-22 N	AOC6 Deep Overburden OW-07 19-Oct-22 N	AOC6 Shallow Overburden OW-08 20-Jun-17 N	AOC6 Shallow Overburden OW-08 09-Jan-18 N	AOC6 Shallow Overburden OW-08 08-Dec-20 N	AOC6 Shallow Overburden OW-08 19-May-21 N
SVOCs, Method SW8270, µg/L																																											
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526	< 0.568 J	< 0.490
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505 J	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526	< 0.568 J	< 0.490
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000										< 0.500										< 0.500																
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000						< 0.485		0.084 J	< 0.481	0.089 J	< 0.510	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	0.071 J	0.121 J	0.122 J	0.071 J	< 0.481	0.089 J	< 0.505 J	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526 J	< 0.568 J	< 0.490
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521 J	< 0.505	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505 J	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526 J	< 0.568 J	< 0.490
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521 J	0.109 J	0.105 J	< 0.495 J	< 0.481	0.103 J	< 0.505 J	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	0.177 J	0.131 J	0.693
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500						< 0.495	< 0.481	< 0.500			< 0.490	< 0.495	< 0.481	< 0.500			< 0.490	< 0.498	< 0.485	< 0.500			< 0.490
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000						< 1.94		< 1.96 J	< 1.92	< 2.00	< 2.04	< 2.04	< 10.6	< 10.0	< 2.00	< 1.98 J	< 1.92	< 2.00	< 2.08	< 2.02	< 1.96	< 1.98 J	< 1.92	< 2.00	< 2.02	< 2.20	< 1.96	< 1.99 J	< 1.94	< 2.00	< 2.10	< 2.27	< 1.96
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000						< 4.85		< 4.90	< 4.81	< 5.00	< 5.10	< 5.10	< 26.6	< 25.0	< 5.00	< 4.95	< 4.81	< 5.00	< 5.21	< 5.05	< 4.90	< 4.95	< 4.81	< 5.00	< 5.05	< 5.49	< 4.90	< 4.98	< 4.85	< 5.00	< 5.26	< 5.68	< 4.90
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																																			
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505 J	< 0.549 J	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568 J	< 0.490
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS						< 2.43		< 2.45	< 2.40	< 2.50	< 2.55	< 2.55	< 13.3	< 12.5	< 2.50	< 2.48	< 2.40	< 2.50	< 2.60	< 2.52	< 2.45	< 2.48	< 2.40	< 2.50	< 2.52	< 2.75	< 2.45	< 2.49	< 2.43	< 2.50	< 2.63	< 2.84	< 2.45
Acenaphthene	µg/L	NS	NS	NS	20	10,000																																			
Acenaphthylene	µg/L	NS	NS	NS	NS	40																																			
Acetophenone	µg/L	NS	NS	NS	NS	NS						< 0.971		< 0.980	< 0.962	< 1.00	< 1.02	< 1.02	< 5.32	< 5.00	< 1.00	< 0.990	< 0.962	< 1.00	< 1.04	< 1.01	< 0.980	< 0.990	< 0.962	< 1.00	< 1.01	< 1.10	< 0.980	< 0.995	< 0.971	< 1.00	< 1.05	< 1.14	< 0.980
Aniline	µg/L	NS	NS	NS	NS	NS											< 1.02	< 1.02	< 5.32	< 5.00					< 1.04	< 1.01					< 1.01	< 1.10					< 1.05	< 1.14	
Anthracene	µg/L	NS	NS	NS	60	30																																			
Atrazine	µg/L	3	3	3	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Azobenzene	µg/L	NS	NS	NS	NS	NS											< 0.510	< 0.510	< 2.66	< 2.50					< 0.521	< 0.505					< 0.505	< 0.549					< 0.526	< 0.568	
Benzaldehyde	µg/L	NS	NS	NS	NS	NS						< 1.94		< 1.96	< 1.92	< 2.00						< 1.98	< 1.92	< 2.00			< 1.96	< 1.98	< 1.92	< 2.00			< 1.96	< 1.99	< 1.94	< 2.00			< 1.96
Benzidine	µg/L	NS	NS	NS	NS	NS						< 19.4		< 19.6	< 19.2	< 20.0	< 20.4 J	< 20.4 J	< 106	< 100	< 20.0	< 19.8	< 19.2	< 20.0	< 20.8 J	< 20.2	< 19.6	< 19.8	< 19.2	< 20.0			R	< 19.9	< 19.4	< 20.0	< 21.0 J	R	< 19.6
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000																																			
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500																																			
Benzo(b)fluoranthene	µg/L	NS	NS	NS	NS	400																																			
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20																																			
Benzo(k)fluoranthene	µg/L	NS	NS	NS	NS	100																																			
Benzoic acid	µg/L	NS	NS	NS	NS	NS																																			
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Biphenyl	µg/L	NS	NS	NS	0.9	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521 J	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505 J	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526 J	< 0.568	< 0.490
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6						< 0.485		< 0.490	< 0.481	0.121 J	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	0.129 J	< 0.481	< 0.500	< 0.521	< 0.505	0.174 J	0.176 J	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	
Caprolactam	µg/L	NS	NS	NS	NS	NS						< 1.94		3.84	< 1.92	< 2.00					< 2.00	< 1.98	< 1.92	< 2.00			< 1.96	69.1	< 1.92	0.575 J			< 1.96	12.5	< 1.94	< 2.00			< 1.96
Carbazole	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Chrysene	µg/L	NS	NS	NS	2	70																																			
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40																																			
Dibenzofuran	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Dichloroethyl ether	µg/L	0.5	0.5	NS	NS	50,000						< 0.485		0.560	< 0.481	0.525	0.974	0.943	0.830	0.740 J	1.01	1.17	< 0.481	1.23	0.412 J	0.458 J	0.467 J	0.363 J	< 1.23	0.342 J	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000						< 1.94		< 1.96	< 1.92	< 2.00	< 2.04	< 2.04	< 10.6	< 10.0	< 2.00	< 1.98	< 1.92	< 2.00	< 2.08	< 2.02	< 1.96	< 1.98	< 1.92	< 2.00	< 2.02	< 2.20	< 1.96	< 1.99	< 1.94	< 2.00	< 2.10	< 2.27	< 1.96
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS						< 0.971		< 0.980	< 0.962	< 1.00	< 1.02	< 1.02	< 5.32	< 5.00	< 1.00	< 0.990	< 0.962	< 1.00	< 1.04	< 1.01	< 0.980	< 0.990	< 0.962	< 1.00	< 1.01	< 1.10	< 0.980	< 0.995	< 0.971	< 1.00	< 1.05	< 1.14	< 0.980
Fluoranthene	µg/L	NS	NS	NS	90	200																																			
Fluorene	µg/L	NS	NS	NS	30	40																																			
Hexachlorobenzene	µg/L	NS	NS	NS	1	6,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521 J	< 0.505 J	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505 J	< 0.549 J	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526 J	< 0.568 J	< 0.490
Hexachlorocyclopentadiene	µg/L	NS	NS	NS	50	NS						< 0.485		< 0.490 J	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495 J	< 0.481	< 0.500	< 0.521 J	< 0.505	< 0.490	< 0.495 J	< 0.481	< 0.500	< 0.505 J	< 0.549	< 0.490	< 0.498 J	< 0.485	< 0.500	< 0.526 J	< 0.568	< 0.490
Hexachloroethane	µg/L	NS	NS	NS	8	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521 J	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505 J	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526 J	< 0.568	< 0.490
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																																			
Isophorone	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Naphthalene	µg/L	NS	NS	NS	140	20,000																																			
Nitrobenzene	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
n-Nitroso-di-n-propylamine	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
o-Cresol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
p-Chloroaniline	µg/L	NS	NS	NS	20	300						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
p-Cresol	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																																			
Pentachlorophenol	µg/L	NS	NS	NS	1	200						< 1.94		< 1.96	< 1.92	< 2.00	< 2.04	< 2.04	< 10.6	< 10.0	< 2.00	< 1.98	< 1.92	< 2.00	< 2.08	< 2.02	< 1.96	< 1.98	< 1.92	< 2.00	< 2.02	< 2.20	< 1.96	< 1.99	< 1.94	< 2.00	< 2.10	< 2.27	< 1.96
Phenanthrene	µg/L	NS	NS	NS	NS	40																																			
Phenol	µg/L	NS	NS	NS	NS	1,000						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510 J	< 0.510 J	< 2.66	< 2.50	< 0.500	0.198 J	< 0.481	< 0.500	< 0.521 J	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505 J	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526 J	< 0.568	< 0.490
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS						< 0.485		< 0.490	< 0.481	< 0.500	< 0.510	< 0.510	< 2.66	< 2.50	< 0.500	< 0.495	< 0.481	< 0.500	< 0.521	< 0.505	< 0.490	< 0.495	< 0.481	< 0.500	< 0.505	< 0.549	< 0.490	< 0.498	< 0.485	< 0.500	< 0.526	< 0.568	< 0.490
Pyrene	µg/L	NS	NS	NS	60	20																																			
Pyridine	µg/L	NS	NS	NS	NS	NS											< 0.510 J	< 0

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	Geologic Unit	AOC6 Shallow Overburden	AOC6 Shallow Overburden	AOC6 Shallow Overburden	AOC6 Shallow Overburden	AOC6 Bedrock	AOC6 Bedrock	AOC6 Bedrock	AOC6 Bedrock	AOC6 Bedrock	AOC6 Bedrock	AOC6 Deep Overburden	AOC6 Deep Overburden	AOC6 Deep Overburden	AOC6 Deep Overburden	AOC6 Deep Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Shallow Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden	Downgradient Deep Overburden
							Location ID		OW-08	OW-08	OW-08	OW-08	OW-28	OW-28	OW-28	OW-28	OW-28	OW-28	OW-29	OW-29	OW-29	OW-29	OW-29	SEN-1S	SEN-1S	SEN-1S	SEN-1S	SEN-1S	SEN-1S	SEN-1S	SEN-1D	SEN-1D	SEN-1D	SEN-1D	SEN-1D	SEN-1D	SEN-1D
							Sample Date		02-Nov-21	11-Feb-22	15-Jun-22	19-Oct-22	21-Jun-17	04-Dec-17	18-Dec-20	20-May-21	11-Feb-22	16-Jun-22	20-Oct-22	15-Dec-20	29-May-21	10-Feb-22	16-Jun-22	20-Oct-22	13-May-21	25-Aug-21	10-Nov-21	17-Mar-22	23-Jun-22	24-Aug-22	18-Oct-22	13-May-21	26-Aug-21	10-Nov-21	16-Mar-22	23-Jun-22	25-Aug-22	25-Oct-22
							Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SVOCs, Method SW8270, µg/L																																						
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS				< 0.495 J	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500	< 0.500	< 0.485	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000				< 0.495 J	< 0.490		< 0.515	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500 J	< 0.500	< 0.485 J	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000					< 0.500																	< 0.500										
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000				< 0.495 J	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500	< 0.500	< 0.485 J	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000				< 0.495 J	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500	< 0.500	< 0.485 J	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000				0.237 J	< 0.490	0.319 J	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500	< 0.500	< 0.485 J	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495 J
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500												< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000				< 1.98 J	< 1.96	< 2.00	< 2.06	< 10.3										< 1.96	< 1.98	< 1.98	< 1.98 J	< 2.00	< 1.98	< 2.00	< 2.00	< 1.94	< 1.98	< 1.98 J	< 2.00	< 1.94	< 1.98
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000				< 4.95	< 4.90	< 5.00	< 5.15	< 25.8										< 4.90	< 4.95	< 4.95	< 4.95	< 5.00	< 4.95	< 5.00	< 5.00	< 4.85	< 4.95	< 4.95	< 5.00	< 4.85	< 4.95
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS				< 0.495 J	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	< 0.500 J	< 0.495 J	< 0.500	< 0.500	< 0.485	< 0.495 J	< 0.495 J	< 0.500 J	< 0.485	< 0.495
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																															
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS				< 2.48	< 2.45	< 2.50	< 2.58	< 12.9										< 2.45	< 2.48	< 2.48	< 2.48	< 2.50	< 2.48	< 2.50	< 2.50	< 2.43	< 2.48	< 2.48	< 2.50	< 2.43	< 2.48
Acenaphthene	µg/L	NS	NS	NS	20	10,000																															
Acenaphthylene	µg/L	NS	NS	NS	30	40																															
Acetophenone	µg/L	NS	NS	NS	NS	NS				< 0.990	< 0.980	< 1.00	< 1.03	< 5.15										< 0.980	< 0.990	< 0.990	< 0.990	< 1.00	< 0.990	< 1.00	< 1.00	< 0.971	< 0.990	< 0.990	< 1.00	< 0.971	< 0.990
Aniline	µg/L	NS	NS	NS	NS	NS							< 1.03	< 5.15																							
Anthracene	µg/L	NS	NS	NS	60	30																															
Atrazine	µg/L	3	3	3	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Azobenzene	µg/L	NS	NS	NS	NS	NS							< 0.515	< 2.58																							
Benzaldehyde	µg/L	NS	NS	NS	NS	NS				< 1.98	< 1.96	< 2.00												< 1.96	< 1.98	< 1.98	< 1.98	< 2.00	< 1.98	< 2.00	< 2.00	< 1.94	< 1.98	< 1.98	< 2.00	< 1.94	< 1.98
Benzidine	µg/L	NS	NS	NS	NS	NS				< 19.8	< 19.6	< 20.0	< 20.6 J	< 103										< 19.6	< 19.8	< 19.8	R	< 20.0	< 19.8	< 20.0	< 20.0	< 19.4	< 19.8	< 19.8 J	< 20.0	< 19.4	< 19.8
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000																															
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500																															
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400																															
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20																															
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100																															
Benzoic acid	µg/L	NS	NS	NS	NS	NS																															
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Biphenyl	µg/L	NS	NS	NS	0.5	50,000				< 0.495	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6	50,000			< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	1.02	2.32	< 0.772	0.483 J	0.082 J	0.084 J	0.090 J
Caprolactam	µg/L	NS	NS	NS	NS	NS				39.6	< 1.96	0.150 J												< 1.96	< 1.98	25.1	13.0 J	< 2.00	< 1.98	< 2.00	< 2.00	< 1.94	10.9	< 1.98	< 2.00	< 1.94	< 1.98
Carbazole	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Chrysene	µg/L	NS	NS	NS	2	70																															
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40																															
Dibenzofuran	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Dichloroethyl ether	µg/L	0.5	0.5	NS	30	50,000				< 0.495	< 0.490	< 0.500	0.194 J	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495 J
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000				< 1.98	< 1.96	< 2.00	< 2.06	< 10.3										< 1.96	< 1.98	< 1.98	< 1.98	< 2.00	< 1.98	< 2.00	< 2.00	< 1.94	< 1.98	< 1.98	< 2.00	< 1.94	< 1.98
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS				< 0.990	< 0.980	< 1.00	< 1.03	< 5.15										< 0.980	< 0.990	< 0.990	< 0.990	< 1.00	< 0.990	< 1.00	< 1.00	< 0.971	< 0.990	< 0.990	< 1.00	< 0.971	< 0.990
Fluoranthene	µg/L	NS	NS	NS	90	200																															
Fluorene	µg/L	NS	NS	NS	30	40																															
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Hexachlorobutadiene	µg/L	NS	NS	NS	0.6	3,000				< 0.495 J	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495 J	< 0.495 J	R	< 0.495 J	< 0.500	< 0.500	< 0.485 J	< 0.495 J	< 0.495 J	R	< 0.485	< 0.495
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS				< 0.495 J	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500 J	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500 J	< 0.485	< 0.495
Hexachloroethane	µg/L	NS	NS	8	8	50,000				< 0.495	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500 J	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500 J	< 0.485	< 0.495
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																															
Isophorone	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Naphthalene	µg/L	NS	NS	NS	140	20,000																															
Nitrobenzene	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
n-Nitroso-di-n-propylamine	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
o-Cresol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
p-Chloroaniline	µg/L	NS	NS	NS	20	300				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
p-Cresol	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																															
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200			< 1.98	< 1.96	< 2.00	< 2.06	< 10.3										< 1.96	< 1.98	< 1.98	< 1.98	< 2.00	< 1.98	< 2.00	< 2.00	< 1.94	< 1.98	< 1.98	< 2.00	< 1.94	< 1.98
Phenanthrene	µg/L	NS	NS	NS	NS	40	10,000																														
Phenol	µg/L	NS	NS	NS	NS	1,000	2,000			< 0.495	< 0.490	< 0.500	< 0.515 J	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS				< 0.495	< 0.490	< 0.500	< 0.515	< 2.58										< 0.490	< 0.495	< 0.495	< 0.495	< 0.500	< 0.495	< 0.500	< 0.500	< 0.485	< 0.495	< 0.495	< 0.500	< 0.485	< 0.495
Pyrene	µg/L	NS	NS	NS	NS	20																															
Pyridine	µg/L	NS	NS	NS	NS	NS							< 0.515 J	< 2.58																							
SVOCs, Method SW8270-SIM, µg/L																																					
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000	0.172				0.191 J	0.368	0.896 J	0.549	0.491	0.374	0.707	0.566	0.555	1.35	1.24	1.71	1.67	1.27														
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	0.00981	0.00418 J	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Acenaphthene	µg/L	NS	NS	NS	20	10,000				0.00339 J	< 0.00980	0.0128	< 0.0103	< 0.0100										< 0.00980	< 0.00990	0.00173 J	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00962	< 0.00980	< 0.00962	< 0.00962
Acenaphthylene	µg/L	NS	NS	NS	30	40				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	0.00200 J	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00962	< 0.00980	< 0.00962	< 0.00962
Anthracene	µg/L	NS	NS	NS	60	30				< 0.0100	< 0.00980	0.00557 J	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Chrysene	µg/L	NS	NS	NS	2	70				< 0.0100	< 0.00980	< 0.00952	< 0.0103	0.00197 J										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	0.00144 J	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40				< 0.0100	< 0.00980	< 0.00952	< 0.0103	< 0.0100										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.00962	< 0.00980	< 0.00962
Fluoranthene	µg/L	NS	NS	NS	90	200				0.00222 J	< 0.00980	0.00142 J	< 0.0103	0.00878 J										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	0.00999	< 0.00990	< 0.00980	0.00178 J	< 0.00962	< 0.00980	< 0.00962
Fluorene	µg/L	NS	NS	NS	30	40				0.00224 J	< 0.00980	0.00208 J	< 0.0103	0.00266 J										< 0.00980	< 0.00990	< 0.00971	< 0.0100	< 0.00962	< 0.00990	< 0.00990	< 0.00971	< 0.00990	< 0.00980	< 0.00971	< 0.

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
							Geologic Unit	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Deep Overburden	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Shallow Overburden	Shallow Overburden
							Location ID	SEN-1B	SEN-1B	SEN-1B	SEN-1B	SEN-1B	SEN-1B	SEN-1B	SEN-1B	SEN-2S	SEN-2S	SEN-2S	SEN-2S	SEN-2S	SEN-2S	SEN-2S	SEN-2D	SEN-2D	SEN-2D	SEN-2D	SEN-2D	SEN-2D	SEN-2D	SEN-2D	SEN-2B	SEN-2B	SEN-2B	SEN-2B	SEN-2B	SEN-2B	SEN-2B	SEN-2B	SEN-3S	SEN-3S
							Sample Date	13-May-21	25-Aug-21	10-Nov-21	17-Mar-22	23-Jun-22	24-Aug-22	25-Oct-22	13-May-21	25-Aug-21	11-Nov-21	17-Mar-22	30-Jun-22	24-Aug-22	18-Oct-22	13-May-21	20-Aug-21	11-Nov-21	16-Mar-22	30-Jun-22	24-Aug-22	18-Oct-22	13-May-21	25-Aug-21	11-Nov-21	17-Mar-22	30-Jun-22	25-Aug-22	18-Oct-22	19-May-21	20-Aug-21
							Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SVOCs, Method SW8270, µg/L																																					
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495 J	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485 J	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500 J
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000								< 0.490							< 0.500							< 0.485							< 0.490		
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495 J	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485 J	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500 J
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495 J	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485 J	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500 J
1,4-Dichlorobenzene	µg/L	S	S	75	5	8,000		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495 J	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485 J	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500 J
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490 J	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		< 2.00	< 1.98	< 1.94	< 1.98 J	< 1.96	< 2.00	< 1.96	< 1.96	< 1.98	< 1.96	< 1.98 J	< 2.00	< 2.00	< 2.00	< 2.02	< 1.94	< 1.96	< 1.94 J	< 2.00	< 1.94	< 1.94	< 1.98	< 1.94	< 2.00	< 2.00 J	< 2.00	< 1.96	< 1.96	< 1.96	< 2.00
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		< 5.00	< 4.95	< 4.85	< 4.95	< 4.90	< 5.00	< 4.90	< 4.90	< 4.95	< 4.90	< 4.95	< 5.00	< 5.00	< 5.00	< 5.05	< 4.85	< 4.90	< 4.85	< 5.00	< 4.85	< 4.85	< 4.95	< 4.85	< 5.00	< 5.00	< 5.00	< 4.90	< 4.90	< 4.90	< 5.00
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485 J	< 0.495 J	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																															
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		< 2.50	< 2.48	< 2.43	< 2.48	< 2.45	< 2.50	< 2.45	< 2.45	< 2.48	< 2.45	< 2.48	< 2.50	< 2.50	< 2.50	< 2.52	< 2.43	< 2.45	< 2.43	< 2.50	< 2.43	< 2.43	< 2.48	< 2.43	< 2.50	< 2.50	< 2.50	< 2.45	< 2.45	< 2.45	< 2.50
Acenaphthene	µg/L	NS	NS	NS	20	10,000																															
Acenaphthylene	µg/L	NS	NS	NS	30	40																															
Acetophenone	µg/L	NS	NS	NS	NS	NS		< 1.00	< 0.990	< 0.971	< 0.990	< 0.980	< 1.00	< 0.980	< 0.980	< 0.990	< 0.980	< 0.990	< 1.00	< 1.00	< 1.00	< 1.01	< 0.971	< 0.980	< 0.971	< 1.00	< 0.971	< 0.971	< 0.990	< 0.971	< 1.00	< 1.00	< 1.00	< 0.980	< 0.980	< 0.980	< 1.00
Aniline	µg/L	NS	NS	NS	NS	NS																															
Anthracene	µg/L	NS	NS	NS	60	30																															
Atrazine	µg/L	3	3	3	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	0.197 J	< 0.500
Azobenzene	µg/L	NS	NS	NS	NS	NS																															
Benzaldehyde	µg/L	NS	NS	NS	NS	NS		< 2.00	< 1.98	< 1.94	< 1.98	< 1.96	< 2.00	< 1.96	< 1.96	< 1.98	< 1.96	< 1.98	< 2.00	< 2.00	< 2.00	< 2.02	< 1.94	< 1.96	< 1.94	< 2.00	< 1.94	< 1.94	< 1.98	< 1.94	< 2.00	< 2.00	< 2.00	< 1.96	< 1.96	< 1.96	< 2.00
Benzidine	µg/L	NS	NS	NS	NS	NS		< 20.0	< 19.8	< 19.4	< 19.8 J	< 19.6	< 20.0	< 19.6	< 19.6	R	< 19.6	< 19.8 J	< 20.0	< 20.0	< 20.0	< 20.2	< 19.4	< 19.6	< 19.4 J	< 20.0	< 19.4	< 19.4	< 19.8	< 19.4	< 20.0	< 20.0 J	< 20.0	< 19.6	< 19.6	< 19.6	< 20.0
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000																															
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500																															
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400																															
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20																															
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100																															
Benzoic acid	µg/L	NS	NS	NS	NS	NS																															
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	0.404 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	0.397 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	0.398 J	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Biphenyl	µg/L	NS	NS	NS	0.5	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	0.853	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	0.081 J	0.141 J	< 0.485	< 0.485	< 0.495	< 0.485	0.192 J	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Caprolactam	µg/L	NS	NS	NS	NS	NS		< 2.00	< 1.98	10.7	4.28	0.454 J	< 2.00	< 1.96	< 1.96	< 1.98	17.2	< 1.98	< 2.00	< 2.00	< 2.00	< 2.02	< 1.94	4.22	< 1.94	< 2.00	< 1.94	< 1.94	< 1.98	< 1.94	13.7	< 2.00	< 2.00	< 1.96	< 1.96	< 1.96	< 2.00
Carbazole	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Chrysene	µg/L	NS	NS	NS	2	70																															
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40																															
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	0.129 J	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Dichlorodiethyl ether	µg/L	0.5	0.5	NS	NS	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	0.216 J	< 0.490	< 0.490	< 0.490	< 0.490	< 0.500
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		< 2.00	< 1.98	< 1.94	< 1.98	< 1.96	< 2.00	< 1.96	< 1.96	< 1.98	< 1.96	< 1.98	< 2.00	< 2.00	< 2.00	< 2.02	< 1.94	< 1.96	< 1.94	< 2.00	< 1.94	< 1.94	< 1.98	< 1.94	< 2.00	< 2.00	< 2.00	< 1.96	< 1.96	< 1.96	< 2.00
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		< 1.00	< 0.990	< 0.971	< 0.990	< 0.980	< 1.00	< 0.980	< 0.980	< 0.990	< 0.980	< 0.990	< 1.00	< 1.00	< 1.00	< 1.01	< 0.971	< 0.980	< 0.971	< 1.00	< 0.971	< 0.971	< 0.990	< 0.971	< 1.00	< 1.00	< 1.00	< 0.980	< 0.980	< 0.980	< 1.00
Fluoranthene	µg/L	NS	NS	NS	90	200																															
Fluorene	µg/L	NS	NS	NS	30	40																															
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Hexachlorobutadiene	µg/L	NS	NS	0.6	0.6	3,000		< 0.500	< 0.495	< 0.485 J	< 0.495 J	R	< 0.500	< 0.490	< 0.490	< 0.495 J	< 0.490	< 0.495 J	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485 J	< 0.490	< 0.485 J	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500 J	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500 J
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Hexachloroethane	µg/L	NS	NS	NS	1	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490 J	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																															
Isophorone	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
Naphthalene	µg/L	NS	NS	NS	140	20,000																															
Nitrobenzene	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
n-Nitrosodimethylamine	µg/L	NS	NS	0.01	0.01	50,000		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
n-Nitroso-di-n-propylamine	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
o-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
p-Chloroaniline	µg/L	NS	NS	NS	20	300		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485	< 0.495	< 0.485	< 0.500	< 0.500	< 0.500	< 0.490	< 0.490	< 0.490	< 0.500
p-Cresol	µg/L	NS	NS	NS	NS	NS		< 0.500	< 0.495	< 0.485	< 0.495	< 0.490	< 0.500	< 0.490	< 0.490	< 0.495	< 0.490	< 0.495	< 0.500	< 0.500	< 0.500	< 0.505	< 0.485	< 0.490	< 0.485	< 0.500	< 0.485	< 0.485

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	MA-GW-3-2020	Location Group	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
							Geologic Unit	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden	Shallow Overburden
							Location ID	SEN-3S	SEN-3S	SEN-3S	SEN-3S	SEN-3S
							Sample Date	08-Nov-21	16-Mar-22	20-Jun-22	24-Aug-22	18-Oct-22
							Sample Type	N	N	N	N	N
SVOCs, Method SW8270, µg/L												
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000						*< 0.485*
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000		*< 1.98*	*< 2.00 J*	*< 1.98*	*< 1.98*	*< 1.94*
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000		*< 4.95*	*< 5.00*	*< 4.95*	*< 4.95*	*< 4.85*
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000						
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS		*< 2.48*	*< 2.50*	*< 2.48*	*< 2.48*	*< 2.43*
Acenaphthene	µg/L	NS	NS	NS	20	10,000						
Acenaphthylene	µg/L	NS	NS	NS	30	40						
Acetophenone	µg/L	NS	NS	NS	NS	NS		*< 0.990*	*< 1.00*	*< 0.990*	*< 0.990*	*< 0.971*
Aniline	µg/L	NS	NS	NS	NS	NS						
Anthracene	µg/L	NS	NS	NS	60	30						
Atrazine	µg/L	3	3	3	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Azobenzene	µg/L	NS	NS	NS	NS	NS						
Benzaldehyde	µg/L	NS	NS	NS	NS	NS		*< 1.98*	*< 2.00*	*< 1.98*	*< 1.98*	*< 1.94*
Benzidine	µg/L	NS	NS	NS	NS	NS		*< 19.8*	*< 20.0 J*	*< 19.8*	*< 19.8*	*< 19.4*
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000						
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500						
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400						
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20						
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100						
Benzoic acid	µg/L	NS	NS	NS	NS	NS						
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Biphenyl	µg/L	NS	NS	NS	0.5	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	6	6		*< 0.497*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Caprolactam	µg/L	NS	NS	NS	NS	NS		5.22	*< 2.00*	*< 1.98*	*< 1.98*	*< 1.94*
Carbazole	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Chrysene	µg/L	NS	NS	NS	2	70						
Dibenzo(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40						
Dibenzofuran	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Dichloromethyl ether	µg/L	0.5	0.5	NS	30	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000		*< 1.98*	*< 2.00*	*< 1.98*	*< 1.98*	*< 1.94*
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS		*< 0.990*	*< 1.00*	*< 0.990*	*< 0.990*	*< 0.971*
Fluoranthene	µg/L	NS	NS	NS	90	200						
Fluorene	µg/L	NS	NS	NS	30	40						
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Hexachlorobutadiene	µg/L	NS	NS	0.6	0.6	3,000		*< 0.495 J*	*< 0.500 J*	*< 0.495*	*< 0.495*	*< 0.485*
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Hexachloroethane	µg/L	NS	NS	8	8	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100						
Isophorone	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Naphthalene	µg/L	NS	NS	NS	140	20,000						
Nitrobenzene	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
n-Nitroso-n-propylamine	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
o-Cresol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
p-Chloroaniline	µg/L	NS	NS	NS	20	300		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
p-Cresol	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS						
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200	*< 1.98*	*< 2.00*	*< 1.98*	*< 1.98*	*< 1.94*
Phenanthrene	µg/L	NS	NS	NS	40	10,000						
Phenol	µg/L	NS	NS	NS	1,000	2,000		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS		*< 0.495*	*< 0.500*	*< 0.495*	*< 0.495*	*< 0.485*
Pyrene	µg/L	NS	NS	NS	60	20						
Pyridine	µg/L	NS	NS	NS	NS	NS						
SVOCs, Method SW8270-SIM, µg/L												
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000						
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Acenaphthene	µg/L	NS	NS	NS	20	10,000		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	0.0112
Acenaphthylene	µg/L	NS	NS	NS	30	40		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Anthracene	µg/L	NS	NS	NS	60	30		0.0182	0.00605 *J*	0.0112	0.00635 *J*	0.0361
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Benzo(a)pyrene	µg/L	NS	NS	NS	0.2	0.2	500	*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Chrysene	µg/L	NS	NS	NS	2	70		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Dibenzo(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Fluoranthene	µg/L	NS	NS	NS	90	200		*< 0.0100*	0.00169 *J*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Fluorene	µg/L	NS	NS	NS	30	40		*< 0.0100*	*< 0.00980*	0.00337 *J*	0.00212 *J*	0.0127
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000		*< 0.0100*	*< 0.00980*	*< 0.0100*	*< 0.0101*	*< 0.00952*
Phenanthrene	µg/L	NS	NS	NS	40	10,000		*< 0.0100*	0.00486 *J*	*< 0.0100*	*< 0.0101*	0.0145
Pyrene	µg/L	NS	NS	NS	60	20		0.0252	0.0202	0.0223	0.0285	0.0276

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
R = Rejected. Quality control indicates that the data are unusable (compound may or not be present).
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of I
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Reco
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 11
Summary of Groundwater Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	5006-GPS-RES-CCC	5006-GPS-RES-NCCC	EPA-RSL-MCL-WG-THQ1.0	MA-GW-1-2020	Location Group Geologic Unit Location ID Sample Date Sample Type MA-GW-3-2020	Downgradient Deep Overburden SEN-3D 19-May-21 N	Downgradient Deep Overburden SEN-3D 20-Aug-21 N	Downgradient Deep Overburden SEN-3D 20-Aug-21 FD	Downgradient Deep Overburden SEN-3D 08-Nov-21 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 N	Downgradient Deep Overburden SEN-3D 16-Mar-22 FD	Downgradient Deep Overburden SEN-3D 20-Jun-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 N	Downgradient Deep Overburden SEN-3D 25-Aug-22 FD	Downgradient Deep Overburden SEN-3D 18-Oct-22 N	Downgradient Bedrock SEN-3B 19-May-21 N	Downgradient Bedrock SEN-3B 20-Aug-21 N	Downgradient Bedrock SEN-3B 08-Nov-21 N	Downgradient Bedrock SEN-3B 16-Mar-22 N	Downgradient Bedrock SEN-3B 20-Jun-22 N	Downgradient Bedrock SEN-3B 24-Aug-22 N	Downgradient Bedrock SEN-3B 18-Oct-22 N
SVOCs, Method SW8270, µg/L																							
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
1,2,4-Trichlorobenzene	µg/L	NS	NS	70	70	50,000	< 0.490	< 0.472 J	< 0.490 J	< 0.495 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490		< 0.490	< 0.485 J	< 0.495 J	< 0.495 J	< 0.485	< 0.490	
1,2,4-Trimethylbenzene	µg/L	NS	NS	70	70	50,000										< 0.485							< 0.485
1,2-Dichlorobenzene	µg/L	NS	NS	600	600	2,000	0.109 J	0.105 J	0.091 J	0.107 J	0.079 J	0.087 J	0.074 J	0.080 J	0.082 J	0.101 J	< 0.490	< 0.485 J	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
1,3-Dichlorobenzene	µg/L	NS	NS	NS	100	50,000	< 0.490	< 0.472 J	< 0.490 J	< 0.495 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485 J	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
1,4-Dichlorobenzene	µg/L	5	5	75	5	8,000	0.102 J	0.096 J	0.083 J	0.110 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490	0.086 J	< 0.490	< 0.485 J	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	30	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	200	3,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	10	500	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,4-Dichlorophenol	µg/L	NS	NS	NS	10	2,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,4-Dimethylphenol	µg/L	NS	NS	NS	60	50,000	< 1.96	< 1.89	< 1.96	< 1.98	< 1.94 J	< 1.96 J	< 1.96	< 2.00	< 1.96	< 1.94	< 1.96	< 1.94	< 1.98	< 1.98 J	< 1.94	< 1.96	< 1.94
2,4-Dinitrophenol	µg/L	NS	NS	NS	200	20,000	< 4.90	< 4.72	< 4.90	< 4.95	< 4.85	< 4.90	< 4.90	< 5.00	< 4.90	< 4.85	< 4.90	< 4.85	< 4.95	< 4.95	< 4.85	< 4.90	< 4.85
2,4-Dinitrotoluene	µg/L	NS	NS	NS	30	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2-Chloronaphthalene	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
2-Chlorophenol	µg/L	NS	NS	NS	10	7,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000																	
2-Nitroaniline	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
2-Nitrophenol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	80	2,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
3-Nitroaniline	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
4-Nitrophenol	µg/L	NS	NS	NS	NS	NS	< 2.45	< 2.36	< 2.45	< 2.48	< 2.43	< 2.45	< 2.45	< 2.50	< 2.45	< 2.43	< 2.45	< 2.43	< 2.48	< 2.48	< 2.43	< 2.45	< 2.43
Acenaphthene	µg/L	NS	NS	NS	20	10,000																	
Acenaphthylene	µg/L	NS	NS	NS	30	40																	
Acetophenone	µg/L	NS	NS	NS	NS	NS	< 0.980	< 0.943	< 0.980	< 0.990	< 0.971	< 0.980	< 0.980	< 1.00	< 0.980	< 0.971	< 0.980	< 0.971	< 0.990	< 0.990	< 0.971	< 0.980	< 0.971
Aniline	µg/L	NS	NS	NS	NS	NS																	
Anthracene	µg/L	NS	NS	NS	60	30																	
Atrazine	µg/L	3	3	3	NS	NS	0.358 J	< 0.472	< 0.490	0.246 J	0.166 J	0.209 J	0.160 J	< 0.500	< 0.490	0.214 J	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Azobenzene	µg/L	NS	NS	NS	NS	NS																	
Benzaldehyde	µg/L	NS	NS	NS	NS	NS	< 1.96	< 1.89	< 1.96	< 1.98	< 1.94	< 1.96	< 1.96	< 2.00	< 1.96	< 1.94	< 1.96	< 1.94	< 1.98	< 1.98	< 1.94	< 1.96	< 1.94
Benzidine	µg/L	NS	NS	NS	NS	NS	< 19.6	< 18.9	< 19.6	< 19.8	< 19.4 J	< 19.6 J	< 19.6	< 20.0	< 19.6	< 19.4	< 19.6	< 19.4	< 19.8	< 19.8 J	< 19.4	< 19.6	< 19.4
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000																	
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500																	
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400																	
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20																	
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100																	
Benzoic acid	µg/L	NS	NS	NS	NS	NS																	
Benzyl alcohol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	0.103 J	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Biphenyl	µg/L	NS	NS	NS	0.5	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	6	6	50,000	< 0.490	0.095 J	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	0.720	< 0.506	< 0.495	0.151 J	< 0.490	< 0.485
Caprolactam	µg/L	NS	NS	NS	NS	NS	< 1.96	< 1.89	< 1.96	50.4	< 1.94	< 1.96	< 1.96	< 2.00	< 1.96	< 1.94	< 1.96	< 1.94	< 1.98	2.47	< 1.94	< 1.96	< 1.94
Carbazole	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Chrysene	µg/L	NS	NS	NS	2	70																	
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40																	
Dibenzofuran	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Dibutyl phthalate	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Dichlorvos	µg/L	0.5	0.5	NS	NS	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Diethyl phthalate	µg/L	NS	NS	NS	2,000	9,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Dimethyl phthalate	µg/L	NS	NS	NS	300	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Dinitro-o-cresol	µg/L	NS	NS	NS	30,000	50,000	< 1.96	< 1.89	< 1.96	< 1.98	< 1.94	< 1.96	< 1.96	< 2.00	< 1.96	< 1.94	< 1.96	< 1.94	< 1.98	< 1.98	< 1.94	< 1.96	< 1.94
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS	NS	< 0.980	< 0.943	< 0.980	< 0.990	< 0.971	< 0.980	< 0.980	< 1.00	< 0.980	< 0.971	< 0.980	< 0.971	< 0.990	< 0.990	< 0.971	< 0.980	< 0.971
Fluoranthene	µg/L	NS	NS	NS	90	200																	
Fluorene	µg/L	NS	NS	NS	30	40																	
Hexachlorobenzene	µg/L	NS	NS	1	1	6,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Hexachlorobutadiene	µg/L	NS	NS	0.6	0.6	3,000	< 0.490	< 0.472 J	< 0.490 J	< 0.495 J	< 0.485 J	< 0.490 J	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485 J	< 0.495 J	< 0.495 J	< 0.485	< 0.490	< 0.485
Hexachlorocyclopentadiene	µg/L	NS	NS	50	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Hexachloroethane	µg/L	NS	NS	8	NS	50,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100																	
Isophorone	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Naphthalene	µg/L	NS	NS	NS	140	20,000																	
Nitrobenzene	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
n-Nitrosodimethylamine	µg/L	NS	NS	NS	0.01	50	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
n-Nitroso-di-n-propylamine	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
o-Cresol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
p-Chloroaniline	µg/L	NS	NS	NS	20	300	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
p-Cresol	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS	NS																	
Pentachlorophenol	µg/L	NS	NS	NS	1	1	200	< 1.96	< 1.89	< 1.96	< 1.98	< 1.94	< 1.96	< 1.96	< 2.00	< 1.96	< 1.94	< 1.96	< 1.94	< 1.98	< 1.98	< 1.94	< 1.96	< 1.94
Phenanthrene	µg/L	NS	NS	NS	NS	40	10,000																	
Phenol	µg/L	NS	NS	NS	NS	1,000	2,000	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
p-Nitroaniline	µg/L	NS	NS	NS	NS	NS	< 0.490	< 0.472	< 0.490	< 0.495	< 0.485	< 0.490	< 0.490	< 0.500	< 0.490	< 0.485	< 0.490	< 0.485	< 0.495	< 0.495	< 0.485	< 0.490	< 0.485
Pyrene	µg/L	NS	NS	NS	NS	60	20																	
Pyridine	µg/L	NS	NS	NS	NS	NS																	
SVOCs, Method SW8270-SIM, µg/L																							
1,4-Dioxane	µg/L	NS	NS	NS	0.3	50,000																	
2-Methylnaphthalene	µg/L	NS	NS	NS	10	20,000	0.0410	0.00340 J	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	0.00182 J	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Acenaphthene	µg/L	NS	NS	NS	20	10,000	0.00416 J	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	0.00534 J	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Acenaphthylene	µg/L	NS	NS	NS	30	40	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Anthracene	µg/L	NS	NS	NS	60	30	0.00638 J	0.00417 J	< 0.0100 J	0.00453 J	< 0.00980	< 0.00990	0.00424 J	0.00416 J	0.00681 J	0.00864 J	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00239 J	0.00199 J
Benzo(a)anthracene	µg/L	NS	NS	NS	1	1,000	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	0.00174 J	< 0.0100	< 0.00990	< 0.00980	0.00217 J	< 0.00990
Benzo(a)pyrene	µg/L	NS	NS	0.2	0.2	500	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00159 J	< 0.00990
Benzo(b)fluoranthene	µg/L	NS	NS	NS	1	400	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00720 J	< 0.00990
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	50	20	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00227 J	< 0.00990
Benzo(k)fluoranthene	µg/L	NS	NS	NS	1	100	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00588 J	< 0.00990
Chrysene	µg/L	NS	NS	NS	2	70	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	0.000989 J	< 0.00971	< 0.00952	0.000982 J	0.00378 J	0.00119 J	0.00182 J	< 0.00980	0.00896 J	< 0.00990
Dibenz(a,h)anthracene	µg/L	0.1	0.1	NS	0.5	40	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Fluoranthene	µg/L	NS	NS	NS	90	200	0.00821 J	< 0.00990	< 0.0100 J	0.00500 J	0.00288 J	0.00336 J	< 0.00990	0.00308 J	0.00302 J	0.00208 J	0.00397 J	0.0181	0.00433 J	0.00370 J	< 0.00980	0.00919 J	0.00328 J
Fluorene	µg/L	NS	NS	NS	30	40	0.00222 J	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	0.00288 J	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	0.5	100	< 0.00971	< 0.00990	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	< 0.00990	< 0.00980	< 0.0100	< 0.00990	< 0.00980	0.00253 J	< 0.00990
Naphthalene (SIM)	µg/L	NS	NS	NS	140	20,000	< 0.0375	0.00403 J	< 0.0100 J	< 0.0100	< 0.00980	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	0.00290 J	0.00216 J	< 0.0100	< 0.00990	< 0.00980	< 0.0100	< 0.00990
Phenanthrene	µg/L	NS	NS	NS	40	10,000	0.0190	< 0.00990	< 0.0100 J	< 0.0100	0.00254 J	< 0.00990	< 0.00990	< 0.0101	< 0.00971	< 0.00952	0.00398 J	< 0.00980	< 0.0100	0.00197 J	< 0.00980	< 0.0100	< 0.00990
Pyrene	µg/L	NS	NS	NS	60	20	0.0192	0.0273	0.0113 J	0.0240	0.0223	0.0261	0.0228	0.0303	0.0302	0.0306	0.00548 J	0.0147	0.00436 J	0.00371 J	< 0.00980	0.0115	< 0.00990

Notes:
< = Compound not detected at
concentrations
above the laboratory reporting detection
limit.
The laboratory reporting detection limit is
shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
R = Rejected. Quality control indicates that the data are unusable (compound may or not be present).
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

5006-GPS-RES-CCC = Groundwater Performance Standards, Residential Scenario, Carcinogenic Chemicals of Concern, OU4 Record of I
5006-GPS-RES-NCCC = Groundwater Performance Standards, Residential Scenario, Non-Carcinogenic Chemicals of Concern, OU4 Reco
EPA-RSL-MCL-WG-THQ1.0 = RSL Maximum Contaminant Level (MCL) for groundwater (TR=1E-06, THQ=1),Nov 2022.
MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group / Location Desc / Location ID / Sample Date / Sample Type: MA-GW-3-2020	28-Nov-22 FB	28-Nov-22 EB	28-Nov-22 EB	28-Nov-22 EB	28-Nov-22 EB	28-Nov-22 EB	29-Nov-22 FB	29-Nov-22 EB	30-Nov-22 FB	30-Nov-22 EB	01-Dec-22 FB	01-Dec-22 EB
PFC, ng/l															
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	5.12 J	12.7 J	10.5 J	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	1.15 J	1.44 J
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	1.18 J	*< 1.81*	*< 1.88*	*< 1.82*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79 J*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81 J*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.84*	*< 1.79*	*< 1.79*	*< 1.74*	*< 1.77*	*< 1.84*	*< 1.81*	*< 1.78 J*	*< 1.85*	*< 1.81*	*< 1.88*	*< 1.82*
PFOA/PFOS, TOTAL	ng/l	NS	NS												
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS												

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in ng/l = nanogram per liter
Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1, 2020.
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3, 2020.

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group Location Desc Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Bedrock MW-213B 01-Dec-22 N	AOC1 Deep Overburden MW-213D 30-Nov-22 N	AOC1 Shallow Overburden MW-213S 01-Dec-22 N	AOC1 Shallow Overburden MW-214S 29-Nov-22 N	AOC1 Bedrock MW-215B 29-Nov-22 N	AOC1 Deep Overburden MW-215D 29-Nov-22 N
PFC, ng/l									
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	*< 51.4*	*< 8.12*	*< 2.70*	*< 2.10*	*< 6.46*	*< 2.93*
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	182 J	*< 2.10*	*< 1.84*	*< 1.81*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80 J*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	1.45 J	2.21	*< 1.80*	*< 2.10*	*< 1.84*	2.61
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	6.51	11.4	29.0	1.05 J	3.01	5.43
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.86*	*< 1.97*	4.25	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	1.41 J	1.26 J	8.61	*< 2.10*	0.955 J	3.55
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	1.94	2.84	19.5	*< 2.10*	1.14 J	2.28
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	1.56 J	1.18 J	6.88	*< 2.10*	1.50 J	3.76
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	*< 1.86*	0.709 J	1.58 J	*< 2.10*	*< 1.84*	0.724 J
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	8.78	12.6	71.6	*< 2.10*	4.08	7.64
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	10.4	17.6	56.9	1.51 J	2.20	14.3
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.86*	0.906 J	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	4.13	1.50 J	*< 1.80 J*	*< 2.10*	2.79	5.43
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.86*	*< 1.97*	*< 1.80*	*< 2.10*	*< 1.84*	*< 1.81*
PFOA/PFOS, TOTAL	ng/l	NS	NS	19.18	30.2	128.5	1.51 J	6.28	21.94
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS	**22.53 J**	**35.0 J**	**158.19 J**	1.51 J	8.38 J	**28.49 J**

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting de
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
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Units are in ng/l = nanogram per liter
Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte ir
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group Location Desc Location ID Sample Date Sample Type MA-GW-3-2020	AOC1 Shallow Overburden MW-215S 29-Nov-22 N	AOC1 Bedrock OW-49 29-Nov-22 N	AOC1 Deep Overburden OW-50 29-Nov-22 N	AOC1 Shallow Overburden OW-51 29-Nov-22 N	AOC2 Shallow Overburden MW-210S 29-Nov-22 N	AOC2 Bedrock MW-210B 29-Nov-22 N	AOC2 Shallow Overburden MW-211S 30-Nov-22 N
PFC, ng/l										
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73 J*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	3.10	1.75 J	1.68 J	2.49	2.49	1.71 J	5.41
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	13.2	5.75	3.45	6.63	6.29	5.38	8.15
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	5.80	1.03 J	*< 1.91*	3.64	2.99	2.60	3.92
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	2.06	2.28	2.34	1.69 J	1.37 J	1.82	1.94
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	8.69	0.990 J	*< 1.91*	4.02	4.18	2.35	6.00
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	2.06	*< 1.90*	0.689 J	0.843 J	0.738 J	*< 1.78*	0.936 J
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	8.58	8.04	6.24	5.79	7.31	3.46	8.39
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	14.1	10.8	6.32	9.54	8.61	8.20	11.5
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	8.00	*< 1.90*	*< 1.91*	4.94	4.43	2.39	6.69
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.80*	*< 1.90*	*< 1.91*	*< 1.92*	*< 1.76*	*< 1.78*	*< 1.73*
PFOA/PFOS, TOTAL	ng/l	NS	NS	22.68	18.84	12.56	15.33	15.92	11.66	19.89
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS	**32.6**	**22.15 J**	15.59 J	**21.50 J**	**21.02 J**	16.08	**26.69 J**

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting de
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in ng/l = nanogram per liter
Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte ir
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group	AOC2	AOC2	AOC2	AOC2	AOC3A	AOC3A	AOC3A
			Location Desc	Deep Overburden	Shallow Overburden	Shallow Overburden	Deep Overburden	Shallow Overburden	Deep Overburden	Shallow Overburden
			Location ID	MW-211D	MW-212S	MW-212S	MW-212D	MW-206S	MW-206D	OW-40
			Sample Date	30-Nov-22	30-Nov-22	30-Nov-22	30-Nov-22	01-Dec-22	01-Dec-22	01-Dec-22
			Sample Type	N	N	FD	N	N	N	N
			MA-GW-3-2020							
PFC, ng/l										
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 3.23*	*< 3.12*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	*< 14.6*	*< 10.7*	*< 3.20*	*< 2.19*	*< 1.80*	*< 1.81*	*< 2.06*
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	3.61	3.02	2.71	2.50	2.16	1.99	1.52 J
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	7.30	10.0	10.0	5.67	13.7	9.18	11.2
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	1.11 J
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	3.40	3.40	3.27	2.75	4.00	3.16	2.72
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	2.24	1.46 J	1.83	1.84	1.87	1.45 J	1.52 J
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	5.26	5.17	6.12	4.14	6.95	4.97	2.22
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	0.982 J	*< 1.73*	*< 1.76*	0.834 J	1.15 J	1.45 J	2.18
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	9.72	5.48	5.24	5.98	4.90	7.25	8.28
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	12.2	10.2	9.33	8.97	11.6	8.52	6.22
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	4.77	6.24	7.11	3.82	7.13	6.16	2.31
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.75*	*< 1.73*	*< 1.76*	*< 1.74*	*< 1.80*	*< 1.81*	*< 2.06*
PFOA/PFOS, TOTAL	ng/l	NS	NS	21.92	15.68	14.57	14.95	16.5	15.77	14.5
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS	**28.54 J**	**20.54 J**	19.67	**20.37 J**	**23.52 J**	**21.83 J**	**22.03 J**

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting de
Empty cells = Not analyzed
NS = No Standard
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Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte ir
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MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group Location Desc Location ID Sample Date Sample Type MA-GW-3-2020	AOC3B Shallow Overburden MW-204S 01-Dec-22 N	AOC3B Shallow Overburden MW-204S 01-Dec-22 FD	AOC4 Shallow Overburden MW-301S 28-Nov-22 N	AOC4 Shallow Overburden MW-303S 28-Nov-22 N	Downgradient Bedrock MW-01 01-Dec-22 N	Downgradient Deep Overburden MW-01A 01-Dec-22 N	Downgradient Shallow Overburden SEN-1S 30-Nov-22 N
PFC, ng/l										
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90 J*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	1.09 J	1.50 J	*< 1.85*	*< 1.90*	*< 1.90*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	55.6	29.6	*< 3.44*	*< 1.90*	*< 1.90*
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	4.11	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	1.62 J	1.39 J	6.22	*< 1.93*	0.777 J	5.39	2.89
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	7.18	6.83	76.8	3.13	0.814 J	3.49	6.78
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.78*	1.19 J	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	2.46	2.99	156	1.70 J	0.703 J	2.16	3.58
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	0.810 J	2.06	6.04	*< 1.93*	*< 1.85*	2.13	1.86 J
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	3.20	3.66	151	1.35 J	0.962 J	2.92	6.85
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	*< 1.84*	*< 1.78*	12.1	0.849 J	*< 1.85*	*< 1.90*	0.952 J
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	1.77 J	2.06	37.5	2.74	1.59 J	6.72	5.71
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	8.06	8.54	62.8	3.59	2.07	8.05	9.06
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.84*	*< 1.78*	1.02 J	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	4.08	5.05	304	1.00 J	1.22 J	2.85	5.52
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.84*	*< 1.78*	*< 1.76*	*< 1.93*	*< 1.85*	*< 1.90*	*< 1.90*
PFOA/PFOS, TOTAL	ng/l	NS	NS	9.83 J	10.6	100.3	6.33	3.66 J	14.77	14.77
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS	13.1 J	15.65	**275.63 J**	8.88 J	4.36 J	19.06	**21.16 J**

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting de
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in ng/l = nanogram per liter
Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte ir
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3

Table 12
Summary of Groundwater Analytical Data - PFAS

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	MA-GW-1-2020	Location Group Location Desc Location ID Sample Date Sample Type MA-GW-3-2020	Downgradient Deep Overburden SEN-1D 30-Nov-22 N	Downgradient Bedrock SEN-1B 30-Nov-22 N	Downgradient Shallow Overburden SEN-2S 30-Nov-22 N	Downgradient Deep Overburden SEN-2D 30-Nov-22 N	Downgradient Bedrock SEN-2B 30-Nov-22 N
PFC, ng/l								
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ng/l	NS	NS	*< 1.89*	136	*< 1.84*	*< 9.75*	*< 16.6*
8:2 Fluorotelomer sulfonic acid (8:2FTS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Hexafluoropropylene oxide dimer acid, GenX (HxFPO-DA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoro-3-methyoxypropanoic acid (PFMPA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoro-4-methoxybutanoic acid (PFMBA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluorobutane sulfonic acid (PFBS)	ng/l	NS	NS	2.15	2.12	1.80 J	1.79 J	0.621 J
Perfluorobutanoic acid (PFBA)	ng/l	NS	NS	5.93	6.72	5.07	5.11	2.01
Perfluorodecanoic acid (PFDA)	ng/l	NS	40,000,000	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluorododecanoic acid (PFDoDA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoroheptane sulfonic acid (PFHpS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoroheptanoic acid (PFHpA)	ng/l	NS	40,000,000	3.21	3.56	3.01	3.40	0.841 J
Perfluorohexane sulfonic acid (PFHxS)	ng/l	NS	500,000	1.32 J	2.23	1.69 J	1.46 J	0.694 J
Perfluorohexanoic acid (PFHxA)	ng/l	NS	NS	6.99	10.3	4.77	5.66	2.67
Perfluorononanoic acid (PFNA)	ng/l	NS	40,000,000	0.794 J	*< 1.86*	0.624 J	*< 1.83*	*< 1.83*
Perfluorooctane sulfonic acid (PFOS)	ng/l	NS	500,000	5.36	6.57	3.67	3.91	1.54 J
Perfluorooctanoic acid (PFOA)	ng/l	NS	40,000,000	9.86	10.5	9.80	11.0	1.90
Perfluoropentane sulfonic acid (PFPeS)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
Perfluoropentanoic acid (PFPeA)	ng/l	NS	NS	6.92	6.31	5.88	6.50	2.52
Perfluoroundecanoic acid (PFUnDA)	ng/l	NS	NS	*< 1.89*	*< 1.86*	*< 1.84*	*< 1.83*	*< 1.83*
PFOA/PFOS, TOTAL	ng/l	NS	NS	15.22	17.07	13.47	14.91	3.44 J
Summation of PFHpA, PFHxS, PFOA, PFNA, PFOS, PFDA (6)	ng/l	**20**	NS	**20.54 J**	**22.86**	18.79 J	19.77 J	4.98 J

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting de
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in ng/l = nanogram per liter
Analyses performed by Alpha Analytical Westborough, ALPHA.

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte ir
UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

MA-GW-1-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-1
MA-GW-3-2020 = Massachusetts Contingency Plan, 310 CMR 40, Method 1 Groundwater Standards, Category GW-3

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-01	29-Jun-17	N		-	170	2.05	-	237.4	5.42	192	18.90	-
MW-01	10-Jan-18	N		-	136.2	2.02	-	116.0	5.66	201.4	8.1	-
MW-01	11-Dec-20	N		-	104	0.42	-	138.7	5.47	140	11.44	1.30
MW-01	20-May-21	N		-	-	8.87	-	49.9	6.97	170	15.92	38.90
MW-01	10-Nov-21	N		colorless	-	1.84	odorless	89.4	6.93	179.3	14.3	28.5
MW-01	21-Jun-22	N		colorless	-	2.27	odorless	35.5	6.91	189	16.50	
MW-01	25-Oct-22	N		colorless	-	4.01	odorless	-21.5	6.58	194	14.61	4.65
MW-01	01-Dec-22	N		colorless	-	0.95	odorless	71.4	6.73	1,863	10.4	6.15
MW-01A	01-Dec-22	N		colorless	-	0.99	odorless	159.6	5.80	340	10.8	0.02
MW-01A-POST	18-Nov-22	N		clear	254.6	3.23	none	172.3	5.32	352.5	10.5	0.24
MW-01A-PRE	18-Nov-22	N		clear	268.6	4	none	116.5	6.18	361.1	11.6	1.5
MW-01B	30-Jun-17	N		-	272	2.96	-	103.5	6.76	323	16.59	-
MW-01B	09-Jan-18	N		-	210.0	3.73	-	36.7	6.76	296.0	9.8	-
MW-01B	15-Dec-20	N		-	215	3.73	-	28.8	6.11	318	8.16	25.1
MW-01B	20-May-21	N		-	-	3.02	-	85.5	5.67	422	19.20	NM
MW-01B	10-Nov-21	N		light orange-ish	-	1.97	odorless	50.8	6.07	367.3	13.0	101
MW-01B	21-Jun-22	N		colorless	-	2.09	odorless	65.9	6.57	390	16.00	
MW-01B	25-Oct-22	N		colorless	-	4.82	odorless	-9.2	6.61	377	14.59	32.9
MW-01-POST	17-Nov-22	N		-	168	6.11	-	167.3	7.05	183	13.43	6.62
MW-01-PRE	15-Nov-22	N		clear	178	5.32	-	160.2	7.09	196	13.67	11.03
MW-202B	18-Dec-20	N		-	140.4	0.84	-	128.5	7.93	302.3	11.70	31.2
MW-202B	14-May-21	N		-	-	3.48	-	163.0	5.96	53.0	22.04	8.87
MW-202B	03-Nov-21	N		colorless	-	2.67	odorless	-17.5	7.54	83.5	14.2	25.2
MW-202B	20-Jun-22	N		colorless	-	0.44	odorless	29.9	7.53	72	16.50	11.90
MW-202B	18-Oct-22	N		colorless	-	0.45	odorless	-22.9	7.33	83	14.88	0.02
MW-202D	06-Jun-17	N		-	690	3.16	-	261.5	5.75	896	12.95	-
MW-202D	06-Dec-17	N		-	455.2	2.49	-	95.2	5.92	586.7	13.3	-
MW-202D	18-Dec-20	N		-	516	1.62	-	241.6	5.81	1,106	11.60	2.84
MW-202D	18-May-21	N		-	-	0.94	-	78.2	5.93	572	19.97	5.62
MW-202D	03-Nov-21	N		colorless	-	0.74	odorless	85.7	6.08	415.9	13.9	6.24
MW-202D	22-Jun-22	N		colorless	-	0.18	odorless	81.5	5.76	489	13.90	16.70
MW-202D	18-Oct-22	N		colorless	-	0.50	sulfur-like	147.5	5.61	245	14.91	2.09
MW-202S	06-Jun-17	N		-	365	0.20	-	-11.7	5.84	483	12.19	-
MW-202S	06-Dec-17	N		-	244.6	0.28	-	2.2	6.58	300.1	15.3	-
MW-202S	09-Dec-20	N		-	339	0.19	-	-76.6	6.07	433	13.50	3.10
MW-202S	14-May-21	N		-	-	0.05	-	-35.5	6.02	511	14.59	4.17
MW-202S	03-Nov-21	N		colorless	-	0.19	odorless	-14.2	6.20	348.1	15.0	3.35
MW-202S	22-Jun-22	N		colorless	-	1.00	sulfur-like	2.6	5.94	404	15.90	0.02
MW-202S	19-Oct-22	N		slightly cloudy	-	0.34	slightly musty	21.7	5.66	2.40	18.16	0.02
MW-203S	06-Jun-17	N		-	344	0.19	-	-43.2	5.98	473	10.78	-
MW-203S	06-Dec-17	N		-	285.4	0.37	-	-133.4	6.06	378.6	12.1	-
MW-203S	09-Dec-20	N		-	370	0.33	-	-57.3	6.20	486	12.52	94.4
MW-203S	12-May-21	N		-	-	0.82	-	-4.8	6.03	645	10.98	174.0
MW-203S	03-Nov-21	N		red floc	-	1.01	sulfur-like	-53.1	6.02	462.8	12.8	17.9
MW-203S	17-Jun-22	N		colorless	-	0.23	odorless	-22.9	5.56	457	12.50	1.23
MW-203S	21-Oct-22	N		colorless	-	0.45	odorless	-129.4	5.93	838	14.64	3.85
MW-204S	23-Jun-17	N		-	4,321	0.39	-	220.3	4.79	5,485	13.90	-
MW-204S	29-Sep-17	N		-	4,050	0.55	-	207.0	4.85	4,902	15.80	-
MW-204S	07-Dec-17	N		-	3,955	0.57	-	228.7	4.43	5,184	12.6	-
MW-204S	14-Dec-20	N		-	3,516	0.49	-	115.8	5.35	4,718	11.66	10.4
MW-204S	21-May-21	N		-	-	0.14	-	94.5	5.48	3,533	11.05	4.82

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-204S	11-Nov-21	N		colorless	-	7.91	odorless	94.1	5.94	3,930	14.2	29.0
MW-204S	20-Jun-22	N		colorless	-	0.08	odorless	26.0	5.61	591	11.90	0.02
MW-204S	21-Oct-22	N			-	2.93		105.4	5.71	7,387	13.81	5.32
MW-204S	01-Dec-22	N		colorless	-	0.04	odorless	203.7	5.24	6,737	12.5	0.02
MW-204S-POST	17-Nov-22	N		clear	5,804	4.41	-	72.9	5.37	7,487	13.1	30.86
MW-204S-PRE	17-Nov-22	N		initial brown slug	6,265	2.94	-	121.7	5.05	6,933	12.3	196.22
MW-205S	16-Jun-17	N		-	2,004	0.59	-	58.1	6.61	2,681	11.78	-
MW-205S	08-Jan-18	N		-	2,467	2.67	-	97.6	6.69	3,445	10.1	-
MW-206D	11-Dec-20	N		-	3,018	0.43	-	168.3	6.23	4,054	11.65	4.34
MW-206D	18-May-21	N		-	-	0.25	-	122.0	6.16	3,335	13.58	Clear
MW-206D	05-Nov-21	N		colorless	-	1.27	odorless	196.4	6.05	1,469.0	11.5	2.29
MW-206D	20-Jun-22	N		colorless	-	1.17	odorless	142.3	6.00	1,045	13.40	0.02
MW-206D	25-Oct-22	N		colorless	-	0.53	odorless	181.5	5.93	5,269	13.68	0.02
MW-206D	01-Dec-22	N		colorless	-	0.03	odorless	219.8	6.60	4,518	11.3	2.94
MW-206D-POST	18-Nov-22	N		clear	4,036	2.20	none	210.7	5.69	5,422	11.6	0.11
MW-206D-PRE	18-Nov-22	N		clear	4,112	6.30	none	202.4	5.75	5,438	12.2	22.10
MW-206S	13-Jun-17	N		-	958	1.24	-	168.3	6.37	1,197	14.53	-
MW-206S	08-Jan-18	N		-	921	1.08	-	59.8	6.47	1,348	8.3	-
MW-206S	18-Dec-20	N		-	1,218	3.30	-	80.5	6.39	1,666	10.87	4.84
MW-206S	18-May-21	N		-	-	0.35	-	-5.6	6.47	1,189	13.13	30.90
MW-206S	05-Nov-21	N		light orange-ish	-	0.74	odorless	78.8	6.39	890.0	12.9	16.4
MW-206S	20-Jun-22	N		colorless	-	0.44	odorless	76.4	6.33	557	12.30	3.03
MW-206S	25-Oct-22	N		colorless	-	1.05	odorless	58.1	6.41	2,413	14.68	1.58
MW-206S	01-Dec-22	N		colorless	-	0.01	odorless	84.6	7.10	1,955	11.3	0.79
MW-206S-POST	18-Nov-22	N		clear	2,292	3.93	-	57.0	6.28	3,043	12.1	3.57
MW-206S-PRE	18-Nov-22	N		clear w/brown slug	2,422	5.44	-	204.1	6.11	3,209	12.3	12.64
MW-207B	07-Jun-17	N		-	15,200	0.35	-	278.7	6.57	19,911	12.63	-
MW-207B	08-Dec-17	N		-	13,347	0.73	-	119.2	6.78	18,696	10.0	-
MW-207B	12-May-21	N		-	-	0.79	-	-111.5	7.43	14,776	27.10	3.88
MW-207B	05-Nov-21	N		colorless	-	0.46	odorless	56.0	6.56	18,061.0	13.0	7.79
MW-207B	21-Jun-22	N		colorless	-	0.42	odorless	278.1	6.62	1,605	14.00	10.40
MW-207B	20-Oct-22	N		colorless	-	0.57	sulfur-like	46.5	6.84	12,633	12.65	0.02
MW-210B	14-Jun-17	N		-	357	2.46	-	103.5	6.77	456	13.66	-
MW-210B	05-Dec-17	N		-	406.9	0.54	-	-65.5	6.82	551.3	11.3	-
MW-210B	16-Dec-20	N		-	546	2.39	-	104.3	6.82	773	9.64	2.01
MW-210B	10-May-21	N		-	-	3.11	-	53.1	6.85	921	10.44	13.60
MW-210B	09-Nov-21	N		colorless	-	2.72	odorless	70.4	6.93	374.7	12.2	13.6
MW-210B	29-Jun-22	N		colorless	-	1.27	odorless	58.4	6.78	647	11.80	4.99
MW-210B	27-Oct-22	N		clear	-	0.55	none	63.1	6.03	635	12.73	0.02
MW-210B	29-Nov-22	N		clear	-	5.68	none	159.9	6.78	571	10.5	0.02
MW-210B-POST	15-Nov-22	N		clear	506	3.14	none	14.4	6.85	684	11.2	6.05
MW-210B-PRE	15-Nov-22	N		brown	497	3.63	none	-95.8	6.61	675	11.2	24.59
MW-210S	14-Jun-17	N		-	668	0.19	-	-54.1	6.33	873	12.72	-
MW-210S	05-Dec-17	N		-	546	0.22	-	-134.1	6.13	759	10.3	-
MW-210S	09-Dec-20	N		-	499	5.39	-	30.6	6.04	699	10.00	14.7
MW-210S	10-May-21	N		-	-	0.74	-	-6.4	6.32	537	9.45	33.60
MW-210S	09-Nov-21	N		colorless	-	0.30	odorless	-29.0	6.43	433.3	12.3	18.9
MW-210S	29-Jun-22	N		colorless	-	0.31	odorless	-3.9	6.40	891	14.40	5.28
MW-210S	27-Oct-22	N		clear	-	0.17	none	7.9	5.86	879	14.73	4.69
MW-210S	29-Nov-22	N		clear	-	0.27	none	136.5	6.26	605	10.9	4.91
MW-210S-POST	15-Nov-22	N		clear	425	-	none	-91	6.27	574	11.4	27

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte Method	Color/Appearance, Field FIELD	Conductivity, Field FIELD	Dissolved Oxygen, Field FIELD	Odor, Field FIELD	Oxidation-Reduction Potential, Field FIELD	pH, Field FIELD	Specific Conductivity FIELD	Temperature, Field FIELD	Turbidity, Field FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-210S-PRE	15-Nov-22	N		reddish brown	564	-	none	-117	6.18	761	11.2	137
MW-211D	07-Jun-17	N		-	609	0.17	-	-56.9	6.33	829	11.16	-
MW-211D	04-Dec-17	N		-	586	0.72	-	-28.7	6.40	783	11.7	-
MW-211D	15-Dec-20	N		-	586	3.87	-	-65.1	6.62	824	9.81	17.5
MW-211D	10-May-21	N		-	-	0.41	-	-53.4	6.48	691	9.06	7.61
MW-211D	09-Nov-21	N		colorless	-	0.24	odorless	-14.3	6.36	851	13.4	4.93
MW-211D	28-Jun-22	N		colorless	-	1.36	odorless	-3.9	6.33	876	13.20	7.48
MW-211D	27-Oct-22	N		clear	-	2.55	none	-20.4	7.13	858	12.19	2.73
MW-211D	30-Nov-22	N		clear	-	0.26	none	115.7	6.45	904	10.9	15.8
MW-211D-POST	15-Nov-22	N		clear	668	0.23	-	-61.6	5.70	903	11.4	0.96
MW-211D-PRE	15-Nov-22	N		light brown	614	2.57	-	-68	6.00	884	9.0	13.01
MW-211S	07-Jun-17	N		-	415	0.26	-	-3.7	6.31	528	13.82	-
MW-211S	04-Dec-17	N		-	629	0.66	-	-25.2	6.34	854	11.2	-
MW-211S	15-Dec-20	N		-	456	0.21	-	-60.5	6.59	641	9.82	24.7
MW-211S	10-May-21	N		-	-	0.04	-	-86.8	6.54	383	9.50	4.22
MW-211S	09-Nov-21	N		colorless	-	0.81	odorless	-11.9	6.46	724	13.2	6.12
MW-211S	28-Jun-22	N		light brown	-	0.90	odorless	-17.0	6.44	892	14.00	5.00
MW-211S	27-Oct-22	N		light brown to clear	-	1.93		-10.5	6.70	725	12.83	13.7
MW-211S	30-Nov-22	N		clear	-	0.23	none	111.3	6.58	872	10.1	0.02
MW-211S-POST	15-Nov-22	N		clear	653	1.15	-	-66.5	5.83	878	11.6	14.09
MW-211S-PRE	15-Nov-22	N		brown	-	4.20	-	-67.3	5.90	-	10.6	348.90
MW-212D	13-Jun-17	N		-	663	0.20	-	-33.2	6.67	861	12.93	-
MW-212D	04-Dec-17	N		-	625	1.55	-	9.6	6.64	830	11.9	-
MW-212D	15-Dec-20	N		-	701	0.32	-	-53.1	6.57	978	10.19	4.44
MW-212D	10-May-21	N		-	-	0.28	-	3.7	6.60	861	9.53	17.00
MW-212D	11-Nov-21	N		colorless	-	0.55	odorless	-106.1	6.19	937	14.53	0.22
MW-212D	28-Jun-22	N		colorless	-	0.63	odorless	-40.4	6.67	911	10.70	0.02
MW-212D	27-Oct-22	N		colorless	-	0.44	odorless	-42.5	6.53	998	15.17	2.14
MW-212D	30-Nov-22	N		colorless	-	0.28	odorless	81.0	6.79	850	11.5	2.05
MW-212D-POST	15-Jan-22	N		clear	723	-	-	-88.4	6.07	952	12.5	2.93
MW-212D-PRE	15-Nov-22	N		turbid brown	670	-	-	-105.9	7.03	921	11.0	19.50
MW-212S	12-Jun-17	N		-	686	1.49	-	50.9	5.48	882	13.36	-
MW-212S	04-Dec-17	N		-	679	1.61	-	33.6	6.38	890	12.6	-
MW-212S	15-Dec-20	N		-	658	1.12	-	28.5	6.24	954	8.74	96.0
MW-212S	10-May-21	N		-	-	1.07	-	71.2	6.50	703	9.36	18.4
MW-212S	11-Nov-21	N		orange-ish	-	0.25	odorless	-162.6	6.15	785	15.42	33.3
MW-212S	28-Jun-22	N		colorless	-	0.12	odorless	-6.0	6.46	872	11.40	23.00
MW-212S	27-Oct-22	N		yellow-ish	-	0.42	odorless	-17.8	6.36	879	15.58	82.2
MW-212S	30-Nov-22	N		colorless	-	0.47	odorless	142.3	6.56	596	10	0.02
MW-212S-POST	15-Nov-22	N		clear	710	-	-	-58.2	6.47	925	12.7	6.74
MW-212S-PRE	15-Nov-22	N		clear	641	-	-	-60.0	6.44	860	11.7	69.90
MW-213B	26-Jun-17	N		-	250	1.80	-	18.7	7.01	322	13.28	-
MW-213B	10-Jan-18	N		-	508	0.60	-	18.1	6.79	704	10.4	-
MW-213B	16-Dec-20	N		-	483	0.96	-	-15.6	6.33	708	8.46	16.0
MW-213B	11-May-21	N		-	-	0.26	-	-27.7	6.59	603	11.60	18.8
MW-213B	04-Nov-21	N		colorless/white floc	-	0.61	odorless	-18.9	6.49	604.8	10.6	13.4
MW-213B	29-Jun-22	N		colorless	-	0.21	odorless	27.3	6.63	635	12.90	19.00
MW-213B	26-Oct-22	N		clear	-	0.23		-3.7	6.02	609	12.90	0.02
MW-213B	01-Dec-22	N		clear	-	1.06	none	-47.6	6.57	474.3	11.1	0.19
MW-213B-POST	14-Nov-22	N		-	335	1.74	-	-41	6.62	466	10.2	0
MW-213B-PRE	14-Nov-22	N		-	383	3.90	-	-63	6.81	538	9.9	55

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-213D	27-Jun-17	N		-	561	0.49	-	89.2	6.29	747	11.96	-
MW-213D	10-Jan-18	N		-	586	0.41	-	76.5	6.63	811	10.4	-
MW-213D	10-Dec-20	N		-	611	3.73	-	41.4	6.26	850	10.24	6.30
MW-213D	04-Nov-21	N		colorless	-	0.40	slight egg-like	16.8	6.26	819	11.6	9.05
MW-213D	29-Jun-22	N		colorless	-	6.80	odorless	80.2	6.43	811	12.10	1.64
MW-213D	26-Oct-22	N		clear	-	0.34	none	66	5.85	900	12.8	0.02
MW-213D	30-Nov-22	N		clear	-	0.03	egglike	80.5	5.96	903	12	0.21
MW-213D-POST	14-Nov-22	N		clear	493.1	1.86	-	72.4	6.27	676	16.8	1.34
MW-213D-PRE	14-Nov-22	N		turbid brown	-	3.77	-	116	6.44	680	10.2	64.16
MW-213S	26-Jun-17	N		-	1,197	0.17	-	-107.1	7.18	1,562	12.74	-
MW-213S	10-Jan-18	N		-	781	0.06	-	-87.1	6.57	1,054	11.4	-
MW-213S	10-Dec-20	N		-	1,415	0.06	-	-150.8	7.17	1,951	10.62	15.3
MW-213S	11-May-21	N		-	-	3.48	-	-78.5	7.27	1.5	10.24	5.85
MW-213S	04-Nov-21	N		slight yellow-ish	-	0.31	odorless	-56.7	6.27	934	14.5	22.6
MW-213S	22-Jun-22	N		colorless	-	3.77	odorless	-15.1	6.60	908	16.20	47.70
MW-213S	27-Oct-22	N		transluc/shinyfilm	-	0.64	faint solvent-like	59.4	6.56	818	16.57	2.68
MW-213S	01-Dec-22	N		clear w/brown flecks	-	0	none	-87.0	6.73	1,254	12.2	3.85
MW-213S-POST	12-Nov-22	N		clear	1,010	3.84	-	-101.8	7.01	1,285	14	4.19
MW-213S-PRE	12-Nov-22	N		turbid brown	624	4.55	-	-36.8	6.51	841	11.5	35.78
MW-214B	10-Dec-20	N		-	160	0.44	-	-152.3	7.58	228	9.23	48.3
MW-214B	12-May-21	N		-	-	7.67	-	68.2	8.04	187	13.81	120.0
MW-214B	04-Nov-21	N		colorless	-	0.51	odorless	-56.3	9.48	198	13.92	14.2
MW-214D	28-Jun-17	N		-	370	0.61	-	145.3	6.28	494	11.88	-
MW-214D	11-Jan-18	N		-	414.4	0.23	-	61.9	6.20	576.2	10.3	-
MW-214D	10-Dec-20	N		-	604	0.31	-	60.2	6.11	850	9.86	13.8
MW-214D	11-May-21	N		-	-	0.43	-	167.2	6.18	708	12.46	0.31
MW-214S	28-Jun-17	N		-	234	2.51	-	-76.0	6.73	312	11.81	-
MW-214S	11-Jan-18	N		-	228.7	0.41	-	-83.6	6.60	317.7	10.4	-
MW-214S	15-Dec-20	N		-	198	1.10	-	-99.2	6.51	280	9.72	31.0
MW-214S	11-May-21	N		-	-	1.65	-	-55.8	6.66	319	11.37	31.0
MW-214S	22-Jun-22	N		colorless	-	0.13	odorless	39.3	5.30	237	12.80	9.80
MW-214S	28-Oct-22	N		colorless	-	314	odorless	50.1	5.46	259	12.58	40.5
MW-214S	29-Nov-22	N		colorless	-	0.54	odorless	187.1	5.42	210	10.8	0.02
MW-214S-POST	14-Nov-22	N		-	192	1.32	-	-5.1	5.95	262	11.3	0.61
MW-214S-PRE	14-Nov-22	N		-	259	3.59	-	-53	6.05	335	13.1	770
MW-215B	04-Nov-21	N		colorless	-	2.60	odorless	50.5	8.15	254.7	12.2	27.7
MW-215B	22-Jun-22	N		colorless	-	0.85	odorless	70.5	7.96	232	13.10	16.00
MW-215B	26-Oct-22	N		colorless	-	5.11	odorless	47.2	7.98	276	18.76	13.2
MW-215B	29-Nov-22	N		colorless	-	0.12	odorless	47.3	7.61	309.6	13.0	3.40
MW-215B-POST	14-Nov-22	N		clear	-	3.72	-	76.4	7.34	270.9	12.4	5.43
MW-215B-PRE	14-Nov-22	N		clear	-	-	-	34.8	8.23	282.4	11.8	3.88
MW-215D	29-Jun-17	N		-	281	0.36	-	199.9	5.78	375	11.92	-
MW-215D	11-Jan-18	N		-	290.0	0.18	-	84.8	5.87	399.7	10.6	-
MW-215D	11-Nov-21	N		colorless	-	1.78	sulfur-like	99.3	5.89	519.0	12.2	2.50
MW-215D	22-Jun-22	N		colorless	-	2.42	odorless	205.9	5.76	485	13.10	1.70
MW-215D	26-Oct-22	N		none	-	0.86	none	129	5.21	555	15.79	7.56
MW-215D	29-Nov-22	N		none	-	0.07	none	107.5	5.85	482.7	14.4	0.59
MW-215D-POST	14-Nov-22	N		clear	301.3	2.49	-	147.3	5.90	392.1	12.9	0.06
MW-215D-PRE	14-Nov-22	N		clear	316.8	4.70	-	51.7	6.78	406.1	13.5	22.50
MW-215S	28-Jun-17	N		-	311	0.29	-	117.9	6.31	408	12.56	-
MW-215S	11-Jan-18	N		-	259.7	0.16	-	64.2	6.22	361.7	10.2	-

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte Method	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Fraction	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Unit	-	-	-	-	-	-	-	-	-
				-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-215S	09-Nov-21	N		colorless	-	0.65	odorless	21.7	6.02	299.9	13.6	4.30
MW-215S	22-Jun-22	N		colorless	-	0.19	odorless	128.4	5.65	338	12.70	0.68
MW-215S	26-Oct-22	N		colorless	-	4.05	odorless	51.8	6.13	95	19.55	5.6
MW-215S	29-Nov-22	N		none	-	0.02	none	0.5	6.05	324.2	15.4	1.83
MW-215S-POST	14-Nov-22	N		clear	-	1.81	-	32.9	6.14	328.0	18.0	6.96
MW-215S-PRE	14-Nov-22	N		brown	-	3.31	-	12.9	6.22	303.1	17.4	39.17
MW-301S	12-Jun-17	N		-	215	0.17	-	-36.7	5.72	271	14.33	-
MW-301S	28-Sep-17	N		-	498	0.73	-	-33.4	6.15	593	16.60	-
MW-301S	06-Dec-17	N		-	261.8	0.26	-	-52.7	7.06	339.4	13.0	-
MW-301S	09-Dec-20	N		-	183	1.14	-	-39.8	6.57	254	10.30	69.4
MW-301S	14-May-21	N		-	-	0.30	-	-7.5	6.62	232	10.80	23.3
MW-301S	03-Nov-21	N		colorless	-	0.44	odorless	-20.9	6.48	303.4	15.4	12.5
MW-301S	16-Jun-22	N		yellowish	-	0.29	egg-like	-38.8	6.19	554	11.30	12.20
MW-301S	21-Oct-22	N		clear	-	0.20	sulfur-like	-61.7	6.64	313	15.02	0.02
MW-301S	28-Nov-22	N		clear	-	0.05	none	-38.4	6.3	415.3	13.2	2.48
MW-301S-POST	17-Nov-22	N		clear w/brown slug	347.1	4.91	organic-like	-50.1	6.29	453.3	12.9	0.11
MW-301S-PRE	17-Nov-22	N		clear w/brown slug	326.3	4.73	organic-like	-7.7	6.07	425.0	12.9	64.13
MW-302S	09-Dec-20	N		-	166	2.15	-	144.5	6.58	250	7.75	3.84
MW-302S	12-May-21	N		-	-	0.76	-	81.9	6.93	227	13.25	1.35
MW-302S	03-Nov-21	N		colorless	-	0.87	odorless	107.5	6.50	128.3	14.8	0.02
MW-302S	17-Jun-22	N		colorless	-	0.22	odorless	60.4	6.82	319	15.80	0.40
MW-302S	21-Oct-22	N		colorless	-	3.62	odorless	5.4	6.77	486	15.78	1.21
MW-303S	06-Jun-17	N		-	207	3.52	-	5.7	6.24	275	12.05	-
MW-303S	06-Dec-17	N		-	107.2	0.44	-	72.5	6.55	144.4	11.5	-
MW-303S	09-Dec-20	N		-	120	0.37	-	11.1	5.94	163	11.04	15.6
MW-303S	12-May-21	N		-	-	1.84	-	30.8	6.12	216	10.36	2.37
MW-303S	03-Nov-21	N		colorless	-	0.63	odorless	25.5	6.14	223.4	15.0	3.53
MW-303S	17-Jun-22	N		colorless	-	0.08	egg-like	8.9	6.22	444	13.50	2.99
MW-303S	21-Oct-22	N		clear	-	0.25	slight sulfur-like	17.6	6.27	203	16.29	4.05
MW-303S	28-Nov-22	N		clear	-	0.70	none	154.5	6.06	211.2	12.2	3.64
MW-303S-POST	17-Nov-22	N		clear	172.1	2.85	organic-like	22.1	5.79	2,190	13.8	1.95
MW-303S-PRE	17-Nov-22	N		clear w/brown slugs	432.2	7.95	-	205.9	6.34	560	13.3	80.69
MW-304S	07-Jun-17	N		-	385	1.32	-	135.5	6.22	476	15.05	-
MW-304S	04-Dec-17	N		-	141.7	3.76	-	121.7	6.45	181.9	13.5	-
MW-305D	21-Jun-17	N		-	1,019	0.17	-	-27.4	7.13	1,353	12.08	-
MW-305D	05-Dec-17	N		-	941	0.25	-	-74.5	7.81	1,286	11.0	-
MW-305D	16-Dec-20	N		-	916	0.51	-	12.5	7.26	1,262	10.51	16.7
MW-305D	19-May-21	N		-	-	0.45	-	-6.3	7.47	1,203	10.30	2.0
MW-305D	10-Feb-22	N		Clear	-	0.48	None	18.7	7.3	1,276	9.5	9.25
MW-305D	16-Jun-22	N		colorless	-	0.19	odorless	30.5	7.53	1,307	10.70	0.02
MW-305D	19-Oct-22	N		none	-	1.86	none	-242.1	7.41	1,369	11.78	0.01
MW-305S	21-Jun-17	N		-	224	1.24	-	-40.6	6.56	261	17.55	-
MW-305S	05-Dec-17	N		-	658	0.18	-	-186.2	6.57	901	10.9	-
MW-305S	18-Dec-20	N		-	794	0.54	-	-68.2	6.80	1,112	10.01	14.7
MW-305S	19-May-21	N		-	-	1.06	-	2.1	6.89	922	9.27	2.68
MW-305S	10-Feb-22	N		Clear	-	0.39	None	9.9	6.84	947	7.5	5.71
MW-305S	16-Jun-22	N		colorless	-	0.29	odorless	10.8	6.96	697	11.10	0.02
MW-305S	19-Oct-22	N		none	-	0.53	none	-293.2	6.83	1,030	12.89	2.2
MW-306S	22-Jun-17	N		-	225	0.22	-	-129.1	7.33	282	14.45	-
MW-306S	04-Dec-17	N		-	203.3	0.61	-	-76.7	7.92	292.4	9.0	-
MW-306S	15-Dec-20	N		-	257	0.42	-	-111.2	7.41	372	8.67	2.0

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
MW-306S	20-May-21	N		-	-	0.21	-	-127.0	7.43	326	13.83	3.50
MW-306S	10-Feb-22	N		Clear	-	1.06	None	-72.3	7.27	359.8	7.9	1.08
MW-306S	16-Jun-22	N		colorless	-	1.57	odorless	-79.9	7.54	324	13.50	0.72
MW-306S	19-Oct-22	N		clear	-	0.65	yes	-76.8	7	250	12.45	0.02
MW-307B	20-Jun-17	N		-	260	0.27	-	-58.6	7.48	342	12.45	-
MW-307B	05-Dec-17	N		-	240.1	0.55	-	-133.7	7.31	339.7	9.6	-
MW-307B	08-Dec-20	N		-	241	1.19	-	-0.5	7.54	360	7.84	1.37
MW-307B	18-May-21	N		-	-	0.39	-	-47.0	7.42	362	13.81	9.86
MW-307B	02-Nov-21	N		colorless	-	0.57	odorless	12.3	7.50	369.3	11.5	0.71
MW-307B	11-Feb-22	N		Clear	-	0.08	None	151.3	7.37	381.8	10.1	5.83
MW-307B	15-Jun-22	N		colorless	-	0.28	odorless	-58.7	7.27	377	10.70	12.00
MW-307B	19-Oct-22	N		colorless	-	0.51	odorless	17	6.66	401	10.44	0.02
MW-307D	22-Jun-17	N		-	578	0.07	-	22.1	7.41	795	10.71	-
MW-307D	05-Dec-17	N		-	503	0.45	-	-84.3	7.21	704	10.1	-
MW-307D	08-Dec-20	N		-	589	1.07	-	39.3	7.31	880	7.74	23.9
MW-307D	18-May-21	N		-	-	0.16	-	56.6	7.29	830	10.95	3.96
MW-307D	02-Nov-21	N		colorless	-	0.20	odorless	58.6	7.33	887	10.9	1.59
MW-307D	11-Feb-22	N		Clear	-	0.55	None	66.9	7.16	910	10	8.77
MW-307D	15-Jun-22	N		milky color to clear	-	0.24	odorless	30.4	7.34	864	11.60	2.43
MW-307D	19-Oct-22	N		colorless	-	0.40	odorless	52.7	6.82	976	10.64	0.02
MW-307S	22-Jun-17	N		-	510	5.54	-	-40.6	6.88	697	10.96	-
MW-307S	05-Dec-17	N		-	584	0.82	-	-196.2	6.60	807	10.5	-
MW-307S	08-Dec-20	N		-	569	0.19	-	-119.1	6.49	822	8.91	4.50
MW-307S	18-May-21	N		-	-	0.06	-	-127.8	6.90	558	9.74	11.40
MW-307S	02-Nov-21	N		slight yellow-ish	-	2.28	odorless	-15.4	6.95	698	13.5	22.8
MW-307S	11-Feb-22	N		Clear	-	3.38	Sulfur-like	-2.5	6.34	737	9.4	7.33
MW-307S	15-Jun-22	N		colorless blk specks	-	6.03	organic-like	-4.3	6.75	682	11.40	13.30
MW-307S	19-Oct-22	N		colorless	-	0.23	odorless	12.6	5.88	774	11.94	0.02
MW-308B	21-Jun-17	N		-	593	17.54	-	8.0	7.66	809	11.02	-
MW-308B	09-Jan-18	N		-	553	0.34	-	-17.5	6.89	829	7.6	-
MW-308B	08-Dec-20	N		-	639	0.42	-	-90.4	7.15	937	8.46	212
MW-308B	19-May-21	N		-	-	9.97	-	-20.3	7.26	885	10.57	138
MW-308B	02-Nov-21	N		cloudy	-	0.52	odorless	21.2	7.21	895	10.7	184
MW-308B	11-Feb-22	N		Clear	-	6.84	None	79.7	7	920	9.7	130
MW-308B	15-Jun-22	N		slightly cloudy	-	0.07	odorless	-50.7	6.98	930	10.70	8.72
MW-308B	19-Oct-22	N		colorless	-	0.12	sulfur-like	-17.6	6.86	917	10.35	9.91
OW-07	20-Jun-17	N		-	536	1.79	-	76.6	6.54	635	13.74	-
OW-07	09-Jan-18	N		-	412.9	1.24	-	7.4	6.57	630.2	6.9	-
OW-07	08-Dec-20	N		-	870	0.34	-	40.5	6.65	1,253	8.98	12.2
OW-07	19-May-21	N		-	-	0.38	-	52.6	6.79	1,067	11.19	2.12
OW-07	02-Nov-21	N		colorless	-	7.11	odorless	88.2	6.77	592.6	10.4	3.31
OW-07	11-Feb-22	N		Clear	-	1.01	None	80.1	6.55	741	9.1	4.19
OW-07	15-Jun-22	N		colorless	-	0.14	odorless	27.8	6.63	789	10.40	0.02
OW-07	19-Oct-22	N		colorless	-	0.25	odorless	86.0	6.47	1,107	10.5	0.02
OW-08	20-Jun-17	N		-	416	4.71	-	-42.6	6.98	518	14.69	-
OW-08	09-Jan-18	N		-	386.0	2.15	-	-51.5	7.08	554.1	9.2	-
OW-08	08-Dec-20	N		-	400	1.36	-	-56.0	6.68	576	9.22	4.74
OW-08	19-May-21	N		-	-	0.22	-	-23.2	6.62	328	10.69	15.9
OW-08	02-Nov-21	N		colorless	-	8.47	odorless	-31.3	6.77	527.0	11.7	2.11
OW-08	11-Feb-22	N		Yellow	-	0.19	None	-31.4	6.71	459.6	9.5	101
OW-08	15-Jun-22	N		light brown	-	0.28	odorless	-103.6	5.63	482	9.90	12.50

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
OW-08	19-Oct-22	N		colorless	-	0.24	odorless	-25.2	6.28	530	10.36	0.02
OW-25	08-Jun-17	N		-	2,402	0.22	-	-121.8	7.76	3,113	13.05	-
OW-25	08-Dec-17	N		-	2,191	0.33	-	32.2	8.35	2,985	11.1	-
OW-25	11-Dec-20	N		-	2,106	2.98	-	-40.8	7.96	2,857	11.30	2.32
OW-25	11-May-21	N		-	-	0.22	-	-58.1	7.92	2,028	12.30	0.5
OW-25	05-Nov-21	N		colorless	-	7.14	odorless	44.3	7.68	3,338	12.2	3.77
OW-25	21-Jun-22	N		colorless	-	0.24	odorless	3.9	7.75	2,656	12.80	3.09
OW-25	20-Oct-22	N		colorless	-	0.30	odorless	-66.2	8.07	2,323	13.38	0.02
OW-26	08-Jun-17	N		-	498	0.19	-	-156.3	8.38	646	13.02	-
OW-26	28-Sep-17	N		-	816	0.49	-	-149.5	8.29	978	16.30	-
OW-26	08-Dec-17	N		-	633	0.91	-	-145.7	8.24	870	10.8	-
OW-26	10-Dec-20	N		-	796	0.32	-	-198.7	8.30	1,097	10.62	2.03
OW-26	11-May-21	N		-	-	0.41	-	-36.4	7.98	1,039	14.06	3.86
OW-26	03-Nov-21	N		colorless	-	4.21	odorless	-49.6	8.40	545.1	13.0	0.74
OW-26	20-Jun-22	N		colorless	-	1.40	odorless	-139.2	8.42	379	12.60	0.02
OW-26	20-Oct-22	N		colorless	-	0.25	hydrocarbon - like	-189.4	8.54	394	13.61	0.02
OW-28	21-Jun-17	N		-	6,899	0.86	-	-7.8	7.96	8,547	14.87	-
OW-28	04-Dec-17	N		-	4,654	0.43	-	133.5	8.49	6,355	11.0	-
OW-28	18-Dec-20	N		-	4,783	0.49	-	112.4	8.80	6,502	10.81	5.11
OW-28	20-May-21	N		-	-	0.48	-	22.6	9.29	6,086	23.1	0.02
OW-28	11-Feb-22	N		Clear	-	4.61	Slight egg-like	-35.9	8.42	5,951	8.8	1.95
OW-28	16-Jun-22	N		colorless	-	0.95	odorless	-9.9	8.34	9,511	12.00	0.02
OW-28	20-Oct-22	N		colorless	-	0.51	odorless	115.3	8.07	8,498	12.98	0.02
OW-29	15-Dec-20	N		-	834	10.95	-	92.4	9.35	1,144	10.77	170
OW-29	20-May-21	N		-	-	1.47	-	60.7	7.26	986	11.6	43.1
OW-29	10-Feb-22	N		Light brown	-	2.7	None	44.7	7.17	1,155	10.3	43.9
OW-29	16-Jun-22	N		slightly cloudy	-	0.58	yes	6.2	7.17	1,074	11.40	2.42
OW-29	20-Oct-22	N		colorless	-	0.39	odorless	-25.0	7.02	719	13.39	4.71
OW-34	26-Jun-17	N		-	517	0.84	-	14.5	8.51	640	14.98	-
OW-34	06-Dec-17	N		-	455.7	1.35	-	215.5	7.43	594.6	12.8	-
OW-34	10-Dec-20	N		-	443	1.45	-	15.2	7.32	620	10.06	2.95
OW-34	17-May-21	N		-	-	0.83	-	116.8	7.19	570	13.74	1.55
OW-34	03-Nov-21	N		white floc	-	6.15	odorless	89.5	7.24	366.7	13.6	26.4
OW-34	23-Jun-22	N		colorless	-	0.50	odorless	62.8	7.25	501	14.70	4.93
OW-34	27-Oct-22	N		colorless	-	0.88	none	328.3	7.16	429	14.55	1.24
OW-35	06-Jun-17	N		-	412	2.75	-	87.5	7.25	567	10.66	-
OW-35	06-Dec-17	N		-	419.1	0.50	-	-44.4	7.19	546.3	12.8	-
OW-35	08-Dec-20	N		-	390	0.63	-	17.2	7.20	528	11.33	5.73
OW-35	18-May-21	N		-	-	0.16	-	-3.2	7.19	555	13.41	12.9
OW-35	05-Nov-21	N		colorless	-	0.41	odorless	7.7	7.20	325.5	12.4	4.81
OW-35	23-Jun-22	N		colorless	-	0.18	odorless	-1.4	7.17	458	13.30	18.40
OW-35	21-Oct-22	N		clear	-	3.90	none	23.9	7.10	380	14.76	10.5
OW-36	06-Jun-17	N		-	66	5.29	-	111.1	5.99	94	9.48	-
OW-36	29-Sep-17	N		-	279	1.30	-	131.4	6.45	333	16.70	-
OW-36	06-Dec-17	N		-	332.1	0.43	-	193.6	6.68	417.4	14.3	-
OW-36	16-Dec-20	N		-	147	2.40	-	132.7	6.37	191	12.94	0.02
OW-36	17-May-21	N		-	-	3.97	-	170.2	6.39	558	10.58	5.83
OW-36	05-Nov-21	N		colorless	-	0.25	odorless	133.7	6.38	116.5	15.7	0.20
OW-36	17-Jun-22	N		colorless	-	5.84	odorless	161.7	6.58	595	11.30	0.02
OW-36	21-Oct-22	N		clear	-	0.54	none	135.0	6.15	278	16.58	0.02
OW-37	23-Jun-17	N		-	840	0.47	-	63.3	6.52	954	18.80	-

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte Method	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Fraction	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Unit	-	-	-	-	-	-	-	-	-
				-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
OW-37	07-Dec-17	N		-	781	0.33	-	58.8	6.21	1,013	13.0	-
OW-37	08-Nov-21	N		colorless	-	1.10	odorless	4.3	6.32	1,244	15.5	13.5
OW-37	23-Jun-22	N		colorless	-	0.31	odorless	85.1	6.15	1,251	14.70	12.90
OW-37	21-Oct-22	N			-	0.39		72.5	6.25	1,386	15.32	0.02
OW-38	08-Jun-17	N		-	340	2.38	-	120.5	6.31	456	11.70	-
OW-38	07-Dec-17	N		-	565	1.66	-	142.7	6.39	699	14.9	-
OW-38	08-Nov-21	N		colorless brown floc	-	0.43	odorless	83.3	6.15	385.7	14.6	1.28
OW-38	23-Jun-22	N		colorless	-	0.12	odorless	137.3	5.85	432	14.30	1.94
OW-38	21-Oct-22	N			-	0.21		96.5	5.75	611	16.15	0.51
OW-40	29-Jun-17	N		-	213	0.42	-	-86.6	6.83	239	19.37	-
OW-40	05-Dec-17	N		-	203.5	0.28	-	-206.9	7.03	289.5	9.5	-
OW-40	20-May-21	N		-	-	0.30	-	-39.1	6.51	235	12.57	3.76
OW-40	10-Nov-21	N		colorless	-	0.17	odorless	-81.3	6.82	276.3	14.1	27.0
OW-40	21-Jun-22	N		colorless	-	0.07	odorless	-79.4	6.89	286	15.40	2.64
OW-40	21-Oct-22	N		brownish to clear	-	2.32	none	-55.6	6.56	317	15.53	13.5
OW-40	01-Dec-22	N		orangish to clear	-	0.01	none	1.8	6.81	318.6	9.8	0.81
OW-40-POST	17-Nov-22	N		clear	255.4	3.47	-	-69.5	6.67	341.1	11.9	20.73
OW-40-PRE	17-Nov-22	N		brown	524	5.35	-	-189	6.81	692	12.4	320
OW-49	30-Jun-17	N		-	400	0.42	-	181.9	6.65	502	14.35	-
OW-49	11-Jan-18	N		-	369.2	9.34	-	60.7	7.00	517.9	10.0	-
OW-49	14-Dec-20	N		-	402	0.41	-	6.4	6.64	609	7.13	1.98
OW-49	18-May-21	N		-	-	1.36	-	-21.0	6.58	606	18.27	0.88
OW-49	04-Nov-21	N		colorless	-	10.23	odorless	23.0	6.87	615	12.02	3.44
OW-49	23-Jun-22	N		colorless	-	12.50	odorless	74.2	6.61	549	12.80	0.39
OW-49	25-Oct-22	N		colorless	-	0.55	odorless	116.8	5.86	738	12.90	0.02
OW-49	29-Nov-22	N		colorless	-	0.05	none	30.8	6.36	723	10.5	0.79
OW-49-POST	15-Nov-22	N		clear	684	2.67	-	37.4	6.36	934	10.9	1.75
OW-49-PRE	15-Nov-22	N		clear	288.6	4.69	-	29.2	6.46	402.3	10.2	8.15
OW-50	14-Dec-20	N		-	534	3.80	-	80.1	6.14	751	9.90	29.1
OW-50	13-May-21	N		-	-	0.42	-	70.3	6.27	704	9.93	128
OW-50	04-Nov-21	N		colorless	-	0.34	odorless	48.5	6.08	791	13.3	3.94
OW-50	21-Jun-22	N			-	5.51		144.0	6.08	701	10.50	18.70
OW-50	20-Oct-22	N		none	-	0.78	none	-301.8	6.05	854	11.65	0.02
OW-50	29-Nov-22	N		none	-	0.08	none	70.3	5.99	741	10.8	4.18
OW-50-POST	15-Nov-22	N		clear	575	0.80	none	20.9	6.08	769	11.8	56.35
OW-50-PRE	15-Nov-22	N		brown	573	2.91	none	26.5	6.20	773	11.4	89.4
OW-51	14-Dec-20	N		-	216	0.79	-	-40.8	6.32	314	8.60	19.6
OW-51	13-May-21	N		-	-	1.64	-	-15.3	6.52	353	8.88	6.81
OW-51	04-Nov-21	N		colorless	-	1.89	sulfur-like	-9.3	6.26	325.0	14.6	4.14
OW-51	21-Jun-22	N		colorless	-	2.88	odorless	14.5	6.11	302	10.10	2.90
OW-51	20-Oct-22	N		none	-	0.47	none	-346.1	6.18	412	13.20	0.02
OW-51	29-Nov-22	N		none	-	0.07	none	-46.7	6.05	377.8	12.0	3.31
OW-51-POST	15-Nov-22	N		clear	299.0	1.07	-	-55.3	5.50	391.1	12.7	0.19
OW-51-PRE	15-Nov-22	N		turbid brown	296.0	1.74	-	-29.9	5.51	394.5	11.9	5.93
SEN-1B	13-May-21	N		-	-	1.34	-	-32.8	10.62	1,221	11.36	13
SEN-1B	25-Aug-21	N		-	-	0.73	-	200.3	7.44	1,400	13	2.93
SEN-1B	10-Nov-21	N		colorless	-	0.85	odorless	174.4	6.27	2,162	9.9	2.18
SEN-1B	17-Mar-22	N		colorless	-	0.99	odorless	97.1	6.12	1,267	10.10	3.70
SEN-1B	23-Jun-22	N		colorless	-	1.19	odorless	132.8	6.11	937	10.70	0.02
SEN-1B	24-Aug-22	N		Clear	-	0.71	None	159.6	5.95	1,041	12.7	4.73
SEN-1B	25-Oct-22	N		none	-	1.14	none	178.1	5.89	785	11.66	0.02

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte Method	Color/Appearance, Field FIELD	Conductivity, Field FIELD	Dissolved Oxygen, Field FIELD	Odor, Field FIELD	Oxidation-Reduction Potential, Field FIELD	pH, Field FIELD	Specific Conductivity FIELD	Temperature, Field FIELD	Turbidity, Field FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
SEN-1B	30-Nov-22	N		none	-	0.17	none	177.0	5.99	1,091	10	0.02
SEN-1B-POST	16-Nov-22	N		clear	835	4.57	-	183.5	5.76	1,137	11.1	9.87
SEN-1B-PRE	16-Nov-22	N		brown murky	870	6.02	-	181.3	5.96	1,182	11.2	447.32
SEN-1D	13-May-21	N		-	-	5.39	-	-79.8	12.28	3,016	11.46	3.37
SEN-1D	20-Aug-21	N		-	-	1.34	-	-46.9	11.55	1,504	12.3	1.23
SEN-1D	10-Nov-21	N		colorless	-	2.47	odorless	63.5	10.00	2,087	9.6	3.81
SEN-1D	16-Mar-22	N		colorless	-	5.47	odorless	211.6	6.98	1,554	10.40	20.30
SEN-1D	23-Jun-22	N		colorless	-	2.27	odorless	131.5	6.71	1,017	11.00	0.02
SEN-1D	25-Aug-22	N		Colorless	-	1.71	None	72.0	6.71	1,021	11.0	0.02
SEN-1D	25-Oct-22	N		none	-	1.78	none	181.7	6.15	741	11.09	0.02
SEN-1D	30-Nov-22	N		none	-	0.58	none	164.2	6.37	1,042	10.3	0.02
SEN-1D-POST	16-Nov-22	N		clear	790	6.78	-	124.4	6.39	1,076	11.3	0.80
SEN-1D-PRE	16-Nov-22	N		clear	808	4.07	-	118.6	6.35	1,101	11.1	3.61
SEN-1S	13-May-21	N		-	-	2.66	-	280.9	5.48	952	10.07	3.48
SEN-1S	25-Aug-21	N		-	-	1.69	-	192.4	5.31	882	12.5	9.16
SEN-1S	10-Nov-21	N		colorless	-	1.52	odorless	257.1	5.39	1,471	10.9	3.22
SEN-1S	17-Mar-22	N		colorless	-	1.16	odorless	136.4	5.34	1,115	10.10	0.50
SEN-1S	23-Jun-22	N		colorless	-	3.98	odorless	166.8	5.16	955	10.60	13.00
SEN-1S	24-Aug-22	N		Clear	-	5.31	None	285.6	5.20	854	12.6	3.93
SEN-1S	18-Oct-22	N		clear	-	3.80	none	244.1	5.17	968	11.74	0.02
SEN-1S	30-Nov-22	N		clear	-	1.08	none	245.3	5.25	938	11.2	0.48
SEN-1S-POST	16-Nov-22	N		colorless	738	4.27	none	167	5.16	994	11.5	10.1
SEN-1S-PRE	16-Nov-22	N		light brown	721	3.21	none	118	5.16	972	11.5	89
SEN-2B	13-May-21	N		-	-	0.46	-	-33.4	7.39	708	12.87	124
SEN-2B	25-Aug-21	N		-	-	0.38	-	-83.9	6.76	509	13.3	4.39
SEN-2B	11-Nov-21	N		colorless	-	0.35	odorless	-69.9	6.91	412.1	9.4	8.36
SEN-2B	17-Mar-22	N		colorless	-	0.89	odorless	-34.7	6.81	418.1	9.50	5.78
SEN-2B	30-Jun-22	N		colorless	-	5.11	odorless	53.2	6.78	376.5	10.70	2.59
SEN-2B	25-Aug-22	N		Colorless	-	0.80	Odorless	17.6	6.89	340.0	12.9	3.54
SEN-2B	18-Oct-22	N		clear	-	5.35	none	76.7	6.53	355	11.5	0.02
SEN-2B	30-Nov-22	N		clear	-	0.14	none	-18.1	6.78	384.4	9.9	0.09
SEN-2B-POST	16-Nov-22	N		colorless	292	3.95	none	59	6.43	404	10.5	0.75
SEN-2B-PRE	16-Nov-22	N		colorless	486	4.08	none	167	6.60	666	10.8	44
SEN-2D	13-May-21	N		-	-	0.87	-	30.5	6.11	980	11.12	4.16
SEN-2D	20-Aug-21	N		-	-	0.48	-	83.1	6.46	1,141	11.5	3.89
SEN-2D	11-Nov-21	N		colorless	-	0.28	odorless	104.4	6.19	998	9.3	3.41
SEN-2D	16-Mar-22	N		colorless	-	2.96	odorless	210.0	6.43	1,083	10.30	30.30
SEN-2D	30-Jun-22	N		colorless	-	3.49	odorless	125.9	6.53	949	10.70	6.35
SEN-2D	24-Aug-22	N		Colorless	-	0.27	Odorless	107.7	6.20	884	11.4	0.02
SEN-2D	18-Oct-22	N		clear	-	1.48		103.5	6.27	846	11.34	0.02
SEN-2D	30-Nov-22	N		clear	-	0.15	none	97.6	6.26	1,011	10.8	1.61
SEN-2D-POST	16-Nov-22	N		clear	774	3.48	-	115.3	6.03	1,036	11.8	24.40
SEN-2D-PRE	16-Nov-22	N		opaque brown	908	3.56	-	197.5	6.64	1,258	10.5	141.05
SEN-2S	13-May-21	N		-	-	1.82	-	47.9	6.34	960	10.67	14.3
SEN-2S	25-Aug-21	N		-	-	7.46	-	171	5.82	940	12.6	0.99
SEN-2S	11-Nov-21	N		colorless	-	0.33	odorless	116.5	5.71	1,040	10.5	8.57
SEN-2S	17-Mar-22	N		colorless	-	0.45	odorless	81.2	5.69	962	9.50	4.34
SEN-2S	30-Jun-22	N		colorless	-	0.30	odorless	135.0	5.94	856	10.60	0.02
SEN-2S	24-Aug-22	N		Colorless	-	0.42	Odorless	233.9	5.61	769	12.4	0.02
SEN-2S	18-Oct-22	N		clear	-	0.27	none	136.9	5.88	786	12.15	0.02
SEN-2S	30-Nov-22	N		clear	-	0.09	none	193.8	5.73	930	10.8	0.66

Table 13
Summary of Groundwater Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte	Color/Appearance, Field	Conductivity, Field	Dissolved Oxygen, Field	Odor, Field	Oxidation-Reduction Potential, Field	pH, Field	Specific Conductivity	Temperature, Field	Turbidity, Field
			Method	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
			Fraction	-	-	-	-	-	-	-	-	-
			Unit	-	uS/cm	mg/L	-	mV	pH units	uS/cm	deg C	NTU
SEN-2S-POST	16-Nov-22	N		clear	732	2.98	-	205.6	5.57	978	11.8	7.54
SEN-2S-PRE	16-Nov-22	N		light brown	831	4.00	-	234.9	5.19	1,121	11.4	94.0
SEN-3B	19-May-21	N		-	-	0.72	-	-95.2	7.53	483	12.86	95.1
SEN-3B	20-Aug-21	N		-	-	0.73	-	-80.4	7.32	525	14.7	16.8
SEN-3B	08-Nov-21	N		colorless	-	0.29	odorless	-115.7	7.47	281.8	10.2	4.62
SEN-3B	16-Mar-22	N		colorless	-	0.30	odorless	-104.2	7.41	527	9.50	14.60
SEN-3B	20-Jun-22	N		Milky	-	0.25	odorless	-102.1	7.32	808	11.20	16.60
SEN-3B	24-Aug-22	N		Colorless	-	0.15	Odorless	-60.1	7.21	470.9	12.1	12.9
SEN-3B	18-Oct-22	N		colorless	-	1.41	odorless	-10.3	6.39	517	12.30	0.02
SEN-3B-POST	29-Nov-22	N		clear	-	0.93	-	-89.7	7.36	487	10.5	7.32
SEN-3B-PRE	29-Nov-22	N		black	-	0.77	-	-13.9	7.24	54	10.3	-
SEN-3D	19-May-21	N		-	-	0.04	-	9.6	6.78	862	10.56	4.7
SEN-3D	20-Aug-21	N		-	-	1.43	-	61	6.66	953	12.8	4.38
SEN-3D	08-Nov-21	N		colorless	-	2.65	odorless	-265.2	6.62	870	12.40	13.9
SEN-3D	16-Mar-22	N		colorless	-	0.25	odorless	30.3	6.64	1,020	9.70	4.67
SEN-3D	20-Jun-22	N		milky	-	0.18	odorless	24.3	6.54	1,568	12.10	4.32
SEN-3D	25-Aug-22	N		Colorless	-	0.20	Odorless	50.0	6.77	873	13.0	0.27
SEN-3D	18-Oct-22	N		colorless	-	4.27	odorless	61.5	6.68	744	11.85	1.92
SEN-3D-POST	29-Nov-22	N		clear	-	0.69	-	14.5	6.71	930	11.1	-
SEN-3D-PRE	29-Nov-22	N		brown	-	0.67	-	-37.6	6.61	904	10.8	-
SEN-3S	19-May-21	N		-	-	0.03	-	-47.7	6.91	884	9.86	4.21
SEN-3S	20-Aug-21	N		-	-	4.14	-	215.1	6.78	832	14.5	2.46
SEN-3S	08-Nov-21	N		colorless	-	0.22	odorless	-302.6	6.74	723	12.26	3.90
SEN-3S	16-Mar-22	N		brown	-	3.32	odorless	201.8	6.52	925	7.00	259.00
SEN-3S	20-Jun-22	N		colorless	-	0.96	odorless	-14.7	6.45	822	11.30	3.20
SEN-3S	24-Aug-22	N		Colorless	-	1.70	Odorless	22.4	6.49	710	14.7	2.95
SEN-3S	18-Oct-22	N		colorless	-	0.47	odorless	-48.2	6.68	464	13.36	5.47
SEN-3S-POST	29-Nov-22	N		clear	-	1.58	-	-39.5	6.62	716	10.9	-
SEN-3S-PRE	29-Nov-22	N		brown	-	2.70	-	-14.0	6.83	742	9.5	-

Notes:
< = Compound not detected. Reportable detection limit shown.
- = Not analyzed.
uS/cm = microSiemens per centimeter
mg/L = milligrams per liter
mV = millivolts
pH units = pH units
deg C = degrees Celsius
NTU = nephelometric turbidity units
- = No Unit
N = Normal Environmental Sample

Table 16
Summary of Surface Water Exceedances - June 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Landfill Indicator Parameters					
SW-A2	6	Chloride	EPA RWQC FW CALC 2016	Yes	Below standard in November of 2021, but has been above standard in the past
SW-A3	3A			Yes	
SW-A1	1	Iron	EPA RWQC FW CALC 2016	Yes	
SW-A2	6			Yes	Below standard in November of 2021, but has been above standard in the past
SW-A1	1	Manganese	EPA RWQC HH CCO 2015 EPA RWQC HH CCWO 2015	Yes	
SW-A2	6			Yes	
SW-A3	3A			Yes	
SW-A1	1	Nitrate	EPA RWQC FW AALC 2016 EPA RWQC FW CALC 2016	Yes	
SW-A2	6			Yes	
SW-A3	3A			Yes	
SW-A1	1	Total Dissolved Solids	EPA RWQC HH CCWO 2015	No	Below standard in both 2021 events, has been above standard historically
SW-A2	6			Yes	
SW-A3	3A			Yes	
Metals					
SW-A1	1	Arsenic	EPA RWQC HH CCO 2015 EPA RWQC HH CCWO 2015	Yes	
SW-A2	6			Yes	
SW-A3	3A			Yes	
SW-A2	6	Chromium	EPA RWQC HH CCO 2015 EPA RWQC HH CCWO 2015	No	Non-detect in previous events
SW-A2	6	Lead	EPA RWQC FW CALC 2016	No	Below standards historically

Notes:
AOC is Area of Concern.
RWQC is Recommended Water Quality Critiera
FW AALC is Freshwater Acute Aquatic Life Criteria
FW CALC is Freshwater Chronic Aquatic Life Criteria
HH CCO is Human Health Criteria for the Consumption of Organisms
HH CCWO is Human Health Criteria for the Consumption of Water and Organisms

Table 17
Summary of Surface Water Exceedances - October 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC/Location	Compound	Standard(s) Exceeded	Observed Previously?	Comments
Landfill Indicator Parameters					
SW-A3	3A	Chloride	EPA RWQC FW CALC 2016	Yes	
SW-A1	1	Iron	EPA RWQC FW CALC 2016	Yes	Below standards in previous 3 events, has been above historically
SW-A2	6			Yes	
SW-A3	3A			No	
SW-A1	1	Manganese	EPA RWQC HH CCO 2015 EPA RWQC HH CCWO 2015	Yes	
SW-A2	6			Yes	
SW-A3	3A			Yes	
SW-A1	1	Nitrate	EPA RWQC FW AALC 2016 EPA RWQC FW CALC 2016	Yes	
SW-A2	6			Yes	
SW-A3	3A			Yes	
SW-A2	6	Total dissolved solids	EPA RWQC HH CCWO 2015	Yes	
SW-A3	3A			Yes	
PCBs					
SW-A1	1	Total PCBs	EPA RWQC FW CALC 2016 EPA RWQC HH CCO 2015 EPA RWQC HH CCWO 2015	No	Exceedance is in the field duplicate

Notes:

AOC is Area of Concern.
RWQC is Recommended Water Quality Critiera
FW AALC is Freshwater Acute Aquatic Life Criteria
FW CALC is Freshwater Chronic Aquatic Life Criteria
HH CCO is Human Health Criteria for the Consumption of Organisms
HH CCWO is Human Health Criteria for the Consumption of Water and Organisms

Table 18
Summary of Surface Water Analytical Data - Landfill Indicator Parameters, Metals, PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	EPA RWQC FW AALC 2016	EPA RWQC FW CALC 2016	EPA RWQC HH CCO 2015	Location ID Sample Date Sample Type EPA RWQC HH CCWO 2015	SW-A1 14-Jun-17 N	SW-A1 16-Dec-20 N	SW-A1 16-Dec-20 FD	SW-A1 18-May-21 N	SW-A1 18-May-21 FD	SW-A1 09-Nov-21 N	SW-A1 09-Nov-21 FD	SW-A1 28-Jun-22 N	SW-A1 28-Jun-22 FD	SW-A1 26-Oct-22 N	SW-A1 26-Oct-22 FD	SW-A2 20-Jan-16 N	SW-A2 14-Jun-17 N	SW-A2 14-Jun-17 FD	SW-A2 16-Dec-20 N	SW-A2 18-May-21 N	SW-A2 09-Nov-21 N	SW-A2 27-Jun-22 N	SW-A2 25-Oct-22 N	SW-A3 20-Jan-16 N	SW-A3 14-Jun-17 N	SW-A3 08-Jan-18 N	SW-A3 16-Dec-20 N	SW-A3 18-May-21 N	SW-A3 09-Nov-21 N	SW-A3 27-Jun-22 N	SW-A3 25-Oct-22 N	SW-A4 16-Dec-20 N	SW-A4 18-May-21 N	SW-A4 18-May-21 FD
Cyanide, µg/L																																				
Cyanide	µg/L	22	5.2	400	4	< 5											< 5	2 J	4 J						< 5	< 5	< 5								
Landfill Indicator Parameters, µg/L																																				
Alkalinity, Total as CaCO3	µg/L	NS	20,000,000	NS	NS	51,000	45,300	47,100	30,200 J	43,900 J	40,000	37,800	49,800	49,500	41,000	38,800	25,600	37,100	37,000	37,400	42,800	30,100	49,500	36,800	92,000	28,200	21,500	28,200	28,000	26,200	25,000	30,400				
Nitrate as N	µg/L	0.32	0.32	NS	NS	24 J	226	240	66 J	65 J	190	193	76 J	96 J	55 J	57 J	582	632	627	477	401	755	56 J	397	476	1,490	1,930	1,040	963	1,240	1,180	645				
Chloride	µg/L	860,000	230,000	NS	NS	85,000	74,000	71,000	88,000	95,000	82,000	84,000	88,000	91,000	71,000	70,000	330,000	250,000	250,000	270,000	270,000	220,000	240,000	200,000	310,000	280,000	300,000	310,000	320,000	270,000	310,000	280,000				
Sulfate	µg/L	NS	NS	NS	NS	8,900 J	15,000	15,000	22,000	14,000	9,200 J	9,000 J	6,900 J	6,900 J	12,000	13,000	19,000	16,000	17,000	19,000	18,000	18,000 J	7,200 J	14,000	40,000	20,000	24,000	21,000	11,000	19,000 J	18,000	19,000				
Total dissolved solids	µg/L	NS	NS	NS	250,000	230,000	200,000	170,000	260,000	250,000	230,000	210,000	250,000	220,000	210,000	190,000	570,000	510,000	510,000	520,000	540,000	450,000	480,000	420,000	670,000	590,000	560,000	570,000	610,000	540,000	630,000	540,000				
Calcium	µg/L	NS	NS	NS	NS	22,000 J	< 22,100	< 22,200	22,100		19,800	19,500 J	18,900 J	20,500 J	15,800	16,100	22,600	28,600 J	28,400 J	< 23,400	27,400	24,700 J	21,000	20,000	71,600	31,100 J	34,400	< 26,400	27,200	25,600 J	24,600	24,000				
Iron	µg/L	NS	1,000	NS	NS	4,430	1,680	1,680	2,400		1,340	1,360	2,330	2,760	1,880 J	1,910 J	871	1,070	1,050	2,140	2,340	719	9,230	1,700	470	1,150	1,870	3,220	905	398	589	1,360				
Manganese	µg/L	NS	NS	100	50	1,116	511.0	512.7	486.8		335.2	335.1	990.8	1,124	445.1	450.8	581.4	1,296	1,251	932.5	849.4	191.7	1,108	585.6	240.8	586.5	565.6	551.3	312.6	280.1	311.6	667.4		1,440	1,413	
Sodium	µg/L	NS	NS	NS	NS	49,600 J	< 45,500	< 45,900	62,900		50,100	50,000	52,300	51,700	39,800 J	40,300 J	176,000	150,000 J	149,000 J	168,000	184,000	144,000	141,000	120,000	156,000	180,000 J	189,000	189,000	208,000	174,000	182,000	166,000				
Chemical oxygen demand	µg/L	NS	NS	NS	NS	< 20,000	20,000	< 20,000	20,000	13,000 J	26,000	20,000	21,000	24,000	23,000	19,000 J	34,000	11,000 J	< 20,000	30,000	20,000	22,000	39,000	14,000 J	46,000	< 20,000	20,000	39,000	36,000	26,000	30,000	21,000				
Hardness as CaCO3	µg/L	NS	NS	NS	NS	64,900			70,470		62,880	61,660	62,000	66,700	49,730	50,690		87,100	85,200		90,360	80,680	69,210	65,550		94,900	116,500		90,180	84,530	84,000	80,120		95,020	89,400	
Metals, µg/L																																				
Arsenic	µg/L	340	150	0.14	0.018	3.03	2.06	1.92	2.05		1.59	1.39	2.62	2.63			0.87	0.90	0.70	1.83	1.42	1.08	19.79		0.38 J	1.19	1.11	1.40	0.91	0.49 J	0.55		4.82	3.81		
Barium	µg/L	NS	NS	NS	1,000	69.87	56.07	55.00									77.15	98.54	96.80	90.70					82.56	109.3	141.0	104.4								
Cadmium	µg/L	1.8	0.72	NS	NS	< 0.20	< 0.20	< 0.20	0.15 J		< 0.20	< 0.20	< 0.20	< 0.20			0.22	0.17 J	0.18 J	< 0.20	< 0.20	< 0.20	0.12 J		0.13 J	0.13 J	0.21	< 0.20	0.10 J	0.09 J	0.10 J			< 0.20	< 0.20	
Calcium	µg/L	NS	NS	NS	NS	22,000 J	< 22,100	< 22,200	22,100		19,800	19,500 J	18,900 J	20,500 J	15,800	16,100	22,600	28,600 J	28,400 J	< 23,400	27,400	24,700 J	21,000	20,000	71,600	31,100 J	34,400	< 26,400	27,200	25,600 J	24,600	24,000				
Chromium	µg/L	570	74	0.1	0.1	< 1.00	2.59	1.22			< 1.00	< 1.00	< 1.00	< 1.00			< 2.00	< 1.00	< 1.00	< 1.00		< 1.00	1.76		< 2.00	< 1.00	< 1.00	< 1.00		< 1.00	< 1.00		< 1.00	0.66 J	0.34 J	
Copper	µg/L	NS	NS	NS	1,300	1.66	2.81	2.38			0.91 J	0.95 J	0.89 J	1.46			2.41	1.51	1.41	2.10		1.34	11.41		14.37	1.72	< 2.24	4.31		1.60	2.04		3.26	1.76	< 1.00	
Iron	µg/L	NS	1,000	NS	NS	4,430	1,680	1,680	2,400		1,340	1,360	2,330	2,760	1,880 J	1,910 J	871	1,070	1,050	2,140	2,340	719	9,230	1,700	470	1,150	1,870	3,220	905	398	589	1,360				
Lead	µg/L	65	2.5	NS	NS	1.10	1.76	1.25	3.50		0.53 J	0.55 J	0.97 J	1.61			1.19	0.68 J	0.65 J	2.72	2.29	0.67 J	27.86		2.63	1.50	5.49	6.88	1.31	1.48	1.77		2.71	2.46	0.69 J	
Manganese	µg/L	NS	NS	100	50	1,116	511.0	512.7	486.8		335.2	335.1	990.8	1,124	445.1	450.8	581.4	1,296	1,251	932.5	849.4	191.7	1,108	585.6	240.8	586.5	565.6	551.3	312.6	280.1	311.6	667.4		1,440	1,413	
Mercury	µg/L	1.4	0.77	NS	NS	< 0.20	< 0.20	< 0.20									< 0.20	< 0.20	< 0.20	< 0.20					< 0.20	< 0.20	< 0.20	< 0.20								
Selenium	µg/L	NS	NS	4,200	170	< 5.00	< 5.00	< 5.00									< 5.00	< 5.00	< 5.00	< 5.00					1.11 J	< 5.00	< 5.00	< 5.00								
Silver	µg/L	3.2	NS	NS	NS	< 0.40	< 0.40	< 0.40									< 0.40	< 0.40	< 0.40	< 0.40					< 0.40	< 0.40	< 0.40	< 0.40								
Sodium	µg/L	NS	NS	NS	NS	49,600 J	< 45,500	< 45,900	62,900		50,100	50,000	52,300	51,700	39,800 J	40,300 J	176,000	150,000 J	149,000 J	168,000	184,000	144,000	141,000	120,000	156,000	180,000 J	189,000	189,000	208,000	174,000	182,000	166,000				
Vanadium	µg/L	NS	NS	NS	NS						< 5.00	< 5.00	< 5.00	< 5.00								< 5.00	1.97 J										< 5.00	< 5.00	< 5.00
Zinc	µg/L	120	120	26,000	7,400	11.59	48.79	44.36			< 17.12	< 18.53	11.25	6.93 J			27.60	15.92	32.19	33.25		< 24.00	26.48		30.36	15.20	12.01	31.92		< 25.70	15.54		33.86	19.10	14.32	
Hardness as CaCO3	µg/L	NS	NS	NS	NS	64,900			70,470		62,880	61,660	62,000	66,700	49,730	50,690		87,100	85,200		90,360	80,680	69,210	65,550		94,900	116,500		90,180	84,530	84,000	80,120		95,020	89,400	
PCBs, µg/L																																				
Aroclor 1016	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1221	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1232	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1242	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1248	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1254	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	0.054 J	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1260	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	0.036 J																				
Aroclor 1262	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Aroclor 1268	µg/L	NS	NS	NS	NS		< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250																				
Total PCBs	µg/L	NS	0.014	0.000064	0.000064		< 0.250	< 0.250	0.054 J	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	0.036 J																				
Pesticides, µg/L																																				
4,4'-DDD	µg/L	NS	NS	0.00012	0.00012		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
4,4'-DDE	µg/L	NS	NS	0.000018	0.000018		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
4,4'-DDT	µg/L	1.1	0.001	0.00003	0.00003		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Aldrin	µg/L	3	NS	0.00000077	0.00000077		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
alpha-BHC/HCH	µg/L	NS	NS	0.00039	0.00036		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
alpha-Chlordane	µg/L	NS	NS	NS	NS		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
trans-Chlordane	µg/L	NS	NS	NS	NS		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
Chlordane	µg/L	2.4	0.0043	0.00032	0.00031		< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143																				
beta-BHC/HCH	µg/L	NS	NS	0.014	0.008		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
delta-BHC/HCH	µg/L	NS	NS	NS	NS		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
Dieldrin	µg/L	0.24	0.056	0.0000012	0.0000012		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Endosulfan I (Alpha)	µg/L	0.22	0.22	30	20		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
Endosulfan II (Beta)	µg/L	0.056	0.056	40	20		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Endosulfan sulfate	µg/L	NS	NS	40	20		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Endrin	µg/L	0.086	0.036	0.03	0.03		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Heptachlor	µg/L	0.52	0.0038	0.0000059	0.0000059		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
Heptachlor epoxide	µg/L	0.52	0.0038	NS	NS		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
gamma-BHC/HCH (Lindane)	µg/L	0.95	NS	4.4	4.2		< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014																				
Endrin aldehyde	µg/L	NS	NS	1	1		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Endrin ketone	µg/L	NS	NS	NS	NS		< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029	< 0.029																				
Chlorinated camphene/ Toxaphene	µg/L	0.73	0.0002	0.00071	0.0007		< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143																				
Methoxychlor	µg/L	NS	0.03	0.02	0.02		< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143	< 0.143																				

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

Qualifiers - Inorganic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

EPA RWQC FW AALC 2016 = USEPA Recommended Water Quality Criteria - Freshwater Acute Aquatic Life Criteria, 2012. Nitrate value from USEPA Ecoregional Nutrient Criteria for Lakes and Reservoirs, June 2002. Note: Cd, Cr, Pb, Zn hardness dependent.
EPA RWQC FW CALC 2016 = USEPA Recommended Water Quality Criteria - Freshwater Chronic Aquatic Life Criteria, 2012. Nitrate value from USEPA Ecoregional Nutrient Criteria for Lakes and Reservoirs, June 2002. Note: Cd, Cr, Pb, Zn hardness dependent.
EPA RWQC HH CCO 2015 = United States Environmental Protection Agency National Recommended Water Quality Criteria Human Health Criteria for the Consumption of Organisms only, 2015.
EPA RWQC HH CCWO 2015 = United States Environmental Protection Agency National Recommended Water Quality Criteria - Human Health Criteria for the Consumption of Water and Organisms, 2015.

Table 18
Summary of Surface Water Analytical Data - Landfill Indicator Parameters, Metals, PCBs, Pesticides, Cyanide

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	EPA RWQC FW AALC 2016	EPA RWQC FW CALC 2016	EPA RWQC HH CCO 2015	EPA RWQC HH CCWO 2015	SW-A4 09-Nov-21 N	SW-A4 09-Nov-21 FD	SW-A4 28-Jun-22 N	SW-A4 28-Jun-22 FD	SW-A4 25-Oct-22 N	SW-A4 25-Oct-22 FD	SW-A5 16-Dec-20 N	SW-A5 18-May-21 N	SW-A5 09-Nov-21 N	SW-A5 27-Jun-22 N	SW-A5 25-Oct-22 N	SW-RP 14-Jun-17 N
Cyanide, µg/L																	
Cyanide	µg/L	22	5.2	400	**4**												*< 5*
Landfill Indicator Parameters, µg/L																	
Alkalinity, Total as CaCO3	µg/L	NS	20,000,000	NS	NS												16,700
Nitrate as N	µg/L	**0.32**	**0.32**	NS	NS												*< 100*
Chloride	µg/L	860,000	**230,000**	NS	NS												100,000
Sulfate	µg/L	NS	NS	NS	NS												13,000
Total dissolved solids	µg/L	NS	NS	NS	**250,000**												**250,000**
Calcium	µg/L	NS	NS	NS	NS												14,100 J
Iron	µg/L	NS	**1,000**	NS	NS												268
Manganese	µg/L	NS	NS	**100**	**50**								**432.3**				**90.06**
Sodium	µg/L	NS	NS	NS	NS												65,300 J
Chemical oxygen demand	µg/L	NS	NS	NS	NS												14,000 J
Hardness as CaCO3	µg/L	NS	NS	NS	NS								84,930				41,100
Metals, µg/L																	
Arsenic	µg/L	340	150	**0.14**	**0.018**								**0.98**				**1.10**
Barium	µg/L	NS	NS	NS	1,000												14.08
Cadmium	µg/L	1.8	0.72	NS	NS								0.09 J				*< 0.20*
Calcium	µg/L	NS	NS	NS	NS												14,100 J
Chromium	µg/L	570	74	**0.1**	**0.1**	*< 1.00*	*< 1.00*	**0.39 J**	**0.32 J**	**1.73**	**1.73**	*< 1.00*	**0.19 J**	*< 1.00*	**0.19 J**	**0.34 J**	*< 1.00*
Copper	µg/L	NS	NS	NS	1,300	0.83 J	0.84 J	1.87	1.47	8.78	9.13	2.02	1.11	1.63	2.10	2.44	0.84 J
Iron	µg/L	NS	**1,000**	NS	NS												268
Lead	µg/L	65	**2.5**	NS	NS	0.64 J	0.96 J	1.78	1.33	**22.66**	**23.06**	**2.59**	1.12	1.98	**2.83**	**2.98**	1.03
Manganese	µg/L	NS	NS	**100**	**50**								**432.3**				**90.06**
Mercury	µg/L	1.4	0.77	NS	NS												*< 0.20*
Selenium	µg/L	NS	NS	4,200	170												*< 5.00*
Silver	µg/L	3.2	NS	NS	NS												*< 0.40*
Sodium	µg/L	NS	NS	NS	NS												65,300 J
Vanadium	µg/L	NS	NS	NS	NS	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	1.83 J	1.78 J	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	*< 5.00*	
Zinc	µg/L	120	120	26,000	7,400	*< 10.00*	*< 17.55*	18.54	6.74 J	53.64	52.03	28.46	16.84	*< 21.39*	15.61	27.43	*< 10.00*
Hardness as CaCO3	µg/L	NS	NS	NS	NS								84,930				41,100
PCBs, µg/L																	
Aroclor 1016	µg/L	NS	NS	NS	NS												
Aroclor 1221	µg/L	NS	NS	NS	NS												
Aroclor 1232	µg/L	NS	NS	NS	NS												
Aroclor 1242	µg/L	NS	NS	NS	NS												
Aroclor 1248	µg/L	NS	NS	NS	NS												
Aroclor 1254	µg/L	NS	NS	NS	NS												
Aroclor 1260	µg/L	NS	NS	NS	NS												
Aroclor 1262	µg/L	NS	NS	NS	NS												
Aroclor 1268	µg/L	NS	NS	NS	NS												
Total PCBs	µg/L	NS	**0.014**	**0.000064**	**0.000064**												
Pesticides, µg/L																	
4,4'-DDD	µg/L	NS	NS	0.00012	0.00012												
4,4'-DDE	µg/L	NS	NS	0.000018	0.000018												
4,4'-DDT	µg/L	1.1	0.001	0.00003	0.00003												
Aldrin	µg/L	3	NS	0.00000077	0.00000077												
alpha-BHC/HCH	µg/L	NS	NS	0.00039	0.00036												
alpha-Chlordane	µg/L	NS	NS	NS	NS												
trans-Chlordane	µg/L	NS	NS	NS	NS												
Chlordane	µg/L	2.4	0.0043	0.00032	0.00031												
beta-BHC/HCH	µg/L	NS	NS	0.014	0.008												
delta-BHC/HCH	µg/L	NS	NS	NS	NS												
Dieldrin	µg/L	0.24	0.056	0.0000012	0.0000012												
Endosulfan I (Alpha)	µg/L	0.22	0.22	30	20												
Endosulfan II (Beta)	µg/L	0.056	0.056	40	20												
Endosulfan sulfate	µg/L	NS	NS	40	20												
Endrin	µg/L	0.086	0.036	0.03	0.03												
Heptachlor	µg/L	0.52	0.0038	0.0000059	0.0000059												
Heptachlor epoxide	µg/L	0.52	0.0038	NS	NS												
gamma-BHC/HCH (Lindane)	µg/L	0.95	NS	4.4	4.2												
Endrin aldehyde	µg/L	NS	NS	1	1												
Endrin ketone	µg/L	NS	NS	NS	NS												
Chlorinated camphene/ Toxaphene	µg/L	0.73	0.0002	0.00071	0.0007												
Methoxychlor	µg/L	NS	0.03	0.02	0.02												

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit.
The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
Units are in µg/L = micrograms per liter
All analyses performed by Alpha Analytical Westborough

Qualifiers - Organic:
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EPA RWQC FW AALC 2016 = USEPA Recommended Water Quality Criteria - Freshwater Acute Aquatic Life Criteria, 2012. Nitrate value from USEPA Ecoregional Nutrient Criteria for Lakes and Reservoirs, June 2002. Note: Cd, Cr, Pb, Zn hardness dependent.
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EPA RWQC HH CCWO 2015 = United States Environmental Protection Agency National Recommended Water Quality Criteria - Human Health Criteria for the Consumption of Water and Organisms, 2015.

Table 19
Summary of Surface Water Analytical Data - VOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	EPA RWQC FW AALC 2016	EPA RWQC FW CALC 2016	EPA RWQC HH CCO 2015	Location ID Sample Date Sample Type EPA RWQC HH CCWO 2015	SW-A1 14-Jun-17 N	SW-A1 16-Dec-20 N	SW-A1 16-Dec-20 FD	SW-A1 18-May-21 N	SW-A1 18-May-21 FD	SW-A1 09-Nov-21 N	SW-A1 09-Nov-21 FD	SW-A1 28-Jun-22 N	SW-A1 28-Jun-22 FD	SW-A1 26-Oct-22 N	SW-A1 26-Oct-22 FD	SW-A2 20-Jun-16 N	SW-A2 14-Jun-17 N	SW-A2 14-Jun-17 FD	SW-A2 16-Dec-20 N	SW-A2 18-May-21 N	SW-A2 09-Nov-21 N	SW-A2 27-Jun-22 N	SW-A2 25-Oct-22 N	SW-A3 20-Jun-16 N	SW-A3 14-Jun-17 N	SW-A3 08-Jun-18 N	SW-A3 16-Dec-20 N	SW-A3 18-May-21 N	SW-A3 09-Nov-21 N	SW-A3 27-Jun-22 N	SW-A3 25-Oct-22 N	SW-A5 18-May-21 N	SW-RP 14-Jun-17 N
VOCs, Method 8260, µg/L																																			
1,1,1,2-Tetrachloroethane	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane	µg/L	NS	NS	200,000	10,000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	µg/L	NS	NS	3	**0.2**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**
1,1,2-Trichloroethane	µg/L	NS	NS	8.9	**0.55**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**	**< 0.75**
1,1-Dichloroethane	µg/L	NS	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	µg/L	NS	NS	20,000	300	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
1,2,4,5-Tetramethylbenzene	µg/L	NS	NS	NS	NS	< 2.0											< 2.0	< 2.0	< 2.0							< 2.0	< 2.0	< 2.0								< 2.0
1,2,4-Trichlorobenzene	µg/L	NS	NS	**0.076**	**0.071**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**			**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**			**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**		**< 2.5**	**< 2.5**
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trimethylbenzene	µg/L	NS	NS	**0.076**	**0.071**										**< 2.5**	**< 2.5**																		**< 2.5**		
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dichlorobenzene	µg/L	NS	NS	3,000	1,000	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
1,2-Dichloroethane	µg/L	NS	NS	650	9.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethene	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane	µg/L	NS	NS	31	**0.9**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8 J**	**< 1.8 J**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8 J**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8 J**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8**	**< 1.8 J**	**< 1.8**
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichlorobenzene	µg/L	NS	NS	10	7	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dichloropropene	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/L	NS	NS	900	300	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dichlorobutane	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Butanone	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Chlorotoluene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Ethyltoluene	µg/L	NS	NS	NS	NS	< 2.0											< 2.0	< 2.0	< 2.0							< 2.0	< 2.0	< 2.0								< 2.0
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methyl-2-pentanone	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**1.7 J**	**1.9 J**	**1.7 J**	**2.0 J**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**3.5 J**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acrolein	µg/L	**3**	**3**	400	**3**	**< 5.0**											**< 5.0**	**< 5.0**	**< 5.0**							**< 5.0**	**< 5.0**	**< 5.0**							**< 5.0**
Acrylonitrile	µg/L	NS	NS	7	**0.061**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0 J**	**< 5.0 J**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**
Benzene	µg/L	NS	NS	58	2.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromobenzene	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bromodichloromethane	µg/L	NS	NS	27	0.95	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	µg/L	NS	NS	120	7	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon disulfide	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	µg/L	NS	NS	5	**0.4**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**
Chlorobenzene	µg/L	NS	NS	800	100	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobromomethane	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Chloroethane	µg/L	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0
Chloroform	µg/L	NS	NS	2,000	60	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
cis-1,2-Dichloroethene	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyclohexane	µg/L	NS	NS	NS	NS	< 10											< 10	< 10	< 10							< 10	< 10	< 10								< 10
Dibromochloromethane	µg/L	NS	NS	21	0.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibromomethane	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl acetate	µg/L	NS	NS	NS	NS	< 10											< 10	< 10	< 10							< 10	< 10	< 10								< 10
Ethyl ether	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Ethyl methacrylate	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
Ethylbenzene	µg/L	NS	NS	130	68	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylene dibromide	µg/L	NS	NS	NS	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethyl-tert-butyl ether	µg/L	NS	NS	NS	NS	< 2.0											< 2.0	< 2.0	< 2.0							< 2.0	< 2.0	< 2.0								< 2.0
Freon 11	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5
Freon 113	µg/L	NS	NS	NS	NS	< 10											< 10	< 10	< 10							< 10	< 10	< 10								< 10
Freon 12	µg/L	NS	NS	NS	NS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	µg/L	NS	NS	**0.01**	**0.01**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**
Isopropyl ether	µg/L	NS	NS	NS	NS	< 2.0											< 2.0	< 2.0	< 2.0							< 2.0	< 2.0	< 2.0								< 2.0
Isopropylbenzene (Cumene)	µg/L	NS	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl bromide	µg/L	NS	NS	10,000	100	< 1.0	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0
Methyl chloride	µg/L	NS	NS	NS	NS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Methyl tert-butyl ether	µg/L	NS	NS	NS	NS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylcyclohexane	µg/L	NS	NS	NS	NS	< 10											< 10	< 10	< 10							< 10	< 10	< 10								< 10
Methylene chloride	µg/L	NS	NS	1,000	20	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

Table 20
Summary of Surface Water Analytical Data - SVOCs

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	EPA RWQC FW AALC 2016	EPA RWQC FW CALC 2016	EPA RWQC HH CCO 2015	EPA RWQC HH CCWO 2015	Location ID	Sample Date	Sample Type	SW-A1 14-Jun-17 N	SW-A1 16-Dec-20 N	SW-A1 16-Dec-20 FD	SW-A1 18-May-21 N	SW-A1 18-May-21 FD	SW-A1 09-Nov-21 N	SW-A1 09-Nov-21 FD	SW-A1 28-Jun-22 N	SW-A1 28-Jun-22 FD	SW-A1 26-Oct-22 N	SW-A1 26-Oct-22 FD	SW-A2 14-Jun-17 N	SW-A2 14-Jun-17 FD	SW-A3 14-Jun-17 N	SW-A3 08-Jan-18 N	SW-A3 16-Dec-20 N	SW-A3 18-May-21 N	SW-A3 09-Nov-21 N	SW-A3 27-Jun-22 N	SW-A3 25-Oct-22 N	SW-A4 16-Dec-20 N	SW-A4 18-May-21 N	SW-A4 09-Nov-21 N	SW-A4 28-Jun-22 N	SW-A4 25-Oct-22 N	SW-A5 16-Dec-20 N	SW-A5 18-May-21 N	SW-A5 09-Nov-21 N	SW-A5 27-Jun-22 N	SW-A5 25-Oct-22 N	SW-RP 14-Jun-17 N
SVOCs, Method SW8270, µg/L																																						
1,2,4,5-Tetrachlorobenzene	µg/L	NS	NS	NS	NS			R		R		< 0.472	< 0.485	< 0.500 J	< 0.500 J	< 0.500	< 0.505	< 0.472	< 0.500					R	< 0.485	< 0.485 J	< 0.500	< 0.500	R	< 0.485	< 0.490 J	< 0.500	< 0.952	R	< 0.500	< 0.500 J	< 0.505	< 0.485
1,2,4-Trichlorobenzene	µg/L	NS	NS	**0.076**	**0.071**			R		R		**< 0.472**	**< 0.485**	**< 0.500 J**	**< 0.500 J**	**< 0.500**	**< 0.505**							R	**< 0.485**	**< 0.485 J**	**< 0.500**	**< 0.500**	R	**< 0.485**	**< 0.490 J**	**< 0.500**		R	**< 0.500**	**< 0.500 J**	**< 0.505**	
1,2,4-Trimethylbenzene	µg/L	NS	NS	**0.076**	**0.071**							**< 0.472**	**< 0.500**											< 4.72	< 4.85	< 4.85	< 5.00	< 5.00	< 4.76	< 4.85	< 4.90	< 5.00	< 9.52					**< 0.485**
1,2-Dichlorobenzene	µg/L	NS	NS	3,000	1,000			R		R		< 0.472	< 0.485	< 0.500 J	< 0.500 J	< 0.500	< 0.505	< 0.472	< 0.500					R	< 0.485	< 0.485 J	< 0.500	< 0.500	R	< 0.485	< 0.490 J	< 0.500	< 0.952	R	< 0.500	< 0.500 J	< 0.505	< 0.485
1,3-Dichlorobenzene	µg/L	NS	NS	10	7			R		R		< 0.472	< 0.485	< 0.500 J	< 0.500 J	< 0.500	< 0.505	< 0.472	< 0.500					R	< 0.485	< 0.485 J	< 0.500	< 0.500	R	< 0.485	< 0.490 J	< 0.500	< 0.952	R	< 0.500	< 0.500 J	< 0.505	< 0.485
1,4-Dichlorobenzene	µg/L	NS	NS	900	300			R		R		< 0.472	< 0.485	< 0.500 J	< 0.500 J	< 0.500	< 0.505	< 0.472	< 0.500					R	< 0.485	< 0.485 J	< 0.500	< 0.500	R	< 0.485	< 0.490 J	< 0.500	< 0.952	R	< 0.500	< 0.500 J	< 0.505	< 0.485
2,2-Oxybis(1-chloropropane)	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472 J	< 0.500 J							< 0.472 J	< 0.485	< 0.485	< 0.500	< 0.500 J	< 0.476 J	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476 J	< 0.500	< 0.500	< 0.505	< 0.485 J
2,3,4,6-Tetrachlorophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2,4,5-Trichlorophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2,4,6-Trichlorophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2,4-Dichlorophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2,4-Dimethylphenol	µg/L	NS	NS	NS	NS			< 1.90	< 1.98	R	< 1.94	< 2.00 J	< 2.00	< 2.00	< 2.02	< 1.89	< 2.00							< 1.89	< 1.94	< 1.94	< 2.00	< 2.00	< 1.90	< 1.94	< 1.96	< 2.00	< 3.81	< 1.90	< 2.00	< 2.00	< 2.02	< 1.94
2,4-Dinitrophenol	µg/L	NS	NS	NS	NS			< 4.76	< 4.95	< 4.72	< 4.85	< 5.00	< 5.00	< 5.00	< 5.05	< 4.72	< 5.00							< 4.72	< 4.85	< 4.85	< 5.00	< 5.00	< 4.76	< 4.85	< 4.90	< 5.00	< 9.52	< 4.76	< 5.00	< 5.00	< 5.05	< 4.85
2,4-Dinitrotoluene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2,6-Dinitrotoluene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2-Chloronaphthalene	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J	< 0.472	< 0.485	< 0.500 J	< 0.500 J	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472 J	< 0.485	< 0.485 J	< 0.500	< 0.500	< 0.476 J	< 0.485 J	< 0.490 J	< 0.500	< 0.952	< 0.476 J	< 0.500	< 0.500 J	< 0.505	< 0.485
2-Chlorophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472 J	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2-Methylnaphthalene	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J															< 0.472 J					< 0.476 J					< 0.476 J				
2-Nitroaniline	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
2-Nitrophenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
3,3'-Dichlorobenzidine	µg/L	NS	NS	NS	NS			R	< 0.495	< 0.472 J	< 0.485	< 0.500	< 0.500	< 0.500 J	< 0.505	R	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
3-Nitroaniline	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
4-Bromophenyl phenyl ether	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
4-Chloro-3-methylphenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
4-Chlorophenyl phenyl ether	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
4-Nitrophenol	µg/L	NS	NS	NS	NS			< 2.38	< 2.48	< 2.36	< 2.43	< 2.50	< 2.50	< 2.50	< 2.52	< 2.36	< 2.50							< 2.36	< 2.43	< 2.43	< 2.50	< 2.50	< 2.38	< 2.43	< 2.45	< 2.50	< 4.76	< 2.38	< 2.50	< 2.50	< 2.52	< 2.43
Acenaphthene	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J															< 0.472 J					< 0.476 J					< 0.476 J				
Acenaphthylene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Acetophenone	µg/L	NS	NS	NS	NS			< 0.952	< 0.990	< 0.943	< 0.971	< 1.00	< 1.00	< 1.00	< 1.01	< 0.943	< 1.00							< 0.943	< 0.971	< 0.971	< 1.00	< 1.00	< 0.952	< 0.971	< 0.980	< 1.00	< 1.90	< 0.952	< 1.00	< 1.00	1.20	< 0.971
Aniline	µg/L	NS	NS	NS	NS			< 0.952	< 0.990															< 0.943					< 0.952					< 0.952				
Anthracene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Atrazine	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Azobenzene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzaldehyde	µg/L	NS	NS	NS	NS			< 1.90	< 1.98	< 1.89	< 1.94	< 2.00	< 2.00	< 2.00 J	< 2.02	< 1.89	< 2.00							< 1.89	< 1.94	< 1.94	< 2.00	< 2.00	< 1.90	< 1.94	< 1.96	0.205 J	< 3.81	< 1.90	< 2.00	< 2.00	< 2.02	< 1.94
Benzidine	µg/L	NS	NS	NS	NS			R	< 19.8	R	< 19.4	R	< 20.0	R	< 20.2	R	< 20.0							< 18.9	< 19.4	< 19.4	< 20.0	< 20.0	< 19.0	< 19.4	< 19.6	< 20.0	< 38.1	< 19.0	< 20.0	< 20.0	< 20.2	< 19.4
Benzo(a)anthracene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzo(a)pyrene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzo(b)fluoranthene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzo(g,h,i)perylene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzo(k)fluoranthene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Benzoic acid	µg/L	NS	NS	NS	NS			R	< 39.6															< 37.7					< 38.1					< 38.1				
Benzyl alcohol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	0.173 J	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Benzyl butyl phthalate	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	0.103 J	0.152 J	< 0.500	< 0.500	< 0.500	< 0.505	0.092 J	0.097 J							< 0.472	0.122 J	< 0.485	< 0.500	< 0.500	< 0.476	0.130 J	< 0.490	< 0.500	< 0.952	< 0.476	0.131 J	< 0.500	< 0.505	< 0.485
Biphenyl	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Bis(2-chloroethoxy)methane	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Bis(2-ethylhexyl)phthalate	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	0.539	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	0.459 J	< 0.500	0.116 J	< 0.476	< 0.485	0.448 J	0.095 J	0.217 J	< 0.476	< 0.500	0.638	< 0.505	0.083 J
Caprolactam	µg/L	NS	NS	NS	NS			< 1.90	< 1.98	< 1.89	< 1.94	< 2.00 J	< 2.00	< 2.00 J	< 2.02 J	< 1.89	< 2.00							< 1.89	< 1.94	< 1.94	< 2.00	< 1.90	< 1.94	< 1.94	0.209 J	< 2.00 J	< 3.81	< 1.90	< 2.00	< 2.00 J	< 2.02	< 1.94
Carbazole	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Chrysene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Dibenzo(a,h)anthracene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Dibenzofuran	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Dibutyl phthalate	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	0.102 J								< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	0.188 J	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	0.111 J	< 0.485
Dichloroethyl ether	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500 J	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485 J
Diethyl phthalate	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Dimethyl phthalate	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Dinitro-o-cresol	µg/L	NS	NS	NS	NS			< 1.90	< 1.98	< 1.89	< 1.94	< 2.00	< 2.00	< 2.00	< 2.02	< 1.89	< 2.00							< 1.89	< 1.94	< 1.94	< 2.00	< 2.00	< 1.90	< 1.94	< 1.96	< 2.00	< 3.81	< 1.90	< 2.00	< 2.00	< 2.02	< 1.94
Di-n-octyl phthalate	µg/L	NS	NS	NS	NS			< 0.952	< 0.990	< 0.943	< 0.971	< 1.00	< 1.00	< 1.00	< 1.01	< 0.943	< 1.00							< 0.943	< 0.971	< 0.971	< 1.00	< 1.00	< 0.952	< 0.971	< 0.980	< 1.00	< 1.90	< 0.952	< 1.00	< 1.00	< 1.01	< 0.971
Fluoranthene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Fluorene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Hexachlorobenzene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Hexachlorobutadiene	µg/L	NS	NS	**0.01**	**0.01**			R	R	**< 0.472**	**< 0.485**	**< 0.500 J**	**< 0.500 J**	**< 0.500**	**< 0.505**	**< 0.472**	**< 0.500**							R	**< 0.485**	**< 0.485 J**	**< 0.500**	**< 0.500**	R	**< 0.485**	**< 0.490 J**	**< 0.500**	**< 0.952**	R	**< 0.500**	**< 0.500 J**	**< 0.505**	**< 0.485**
Hexachlorocyclopentadiene	µg/L	NS	NS	NS	NS			R	< 0.495 J	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472 J	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476 J	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476 J	< 0.500	< 0.500	< 0.505	< 0.485
Hexachloroethane	µg/L	NS	NS	NS	NS			R	< 0.495 J	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472 J	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476 J	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476 J	< 0.500	< 0.500	< 0.505	< 0.485
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Isophorone	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Naphthalene	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J															< 0.472 J					< 0.476 J					< 0.476 J				
Nitrobenzene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
n-Nitrosodimethylamine	µg/L	NS	NS	NS	NS			< 0.476 J	< 0.495 J	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472 J	< 0.500							< 0.472 J	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476 J	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476 J	< 0.500	< 0.500	< 0.505	< 0.485
n-Nitroso-di-n-propylamine	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
n-Nitrosodiphenylamine	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
o-Cresol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
p-Chloroaniline	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
p-Cresol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Pentachloronitrobenzene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Pentachlorophenol	µg/L	19	15	NS	NS			< 1.90	< 1.98	< 1.89	< 1.94	< 2.00	< 2.00	< 2.00	< 2.02	< 1.89	< 2.00							< 1.89	< 1.94	< 1.94	< 2.00	< 2.00	< 1.90	< 1.94	< 1.96	< 2.00	< 3.81	< 1.90	< 2.00	< 2.00	< 2.02	< 1.94
Phenanthrene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Phenol	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
p-Nitroaniline	µg/L	NS	NS	NS	NS			< 0.476	< 0.495	< 0.472	< 0.485	< 0.500	< 0.500	< 0.500	< 0.505	< 0.472	< 0.500							< 0.472	< 0.485	< 0.485	< 0.500	< 0.500	< 0.476	< 0.485	< 0.490	< 0.500	< 0.952	< 0.476	< 0.500	< 0.500	< 0.505	< 0.485
Pyrene	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
Pyridine	µg/L	NS	NS	NS	NS			< 0.476	< 0.495															< 0.472					< 0.476					< 0.476				
SVOCs, Method SW8270-SIM, µg/L																																						
1,4-Dioxane	µg/L	NS	NS	NS	NS			< 0.144	< 0.163	< 0.139	< 0.15	< 0.144	0.0373 J	< 0.144	< 0.144	< 0.144	< 0.147	< 0.15	< 0.144	< 0.163	< 0.142	< 0.147	< 0.139	< 0.134	< 0.15	< 0.147	< 0.144											< 0.147
2-Methylnaphthalene	µg/L	NS	NS	NS	NS				< 0.00971	< 0.00990	0.0127	0.00848 J	0.0165	0.0143	0.0116	0.0113	< 0.0100	< 0.0100							< 0.00952	< 0.00943	< 0.00971	< 0.0101	< 0.0100	< 0.00952	< 0.00990	0.00215 J	< 0.00926	< 0.00952	< 0.0100	< 0.00971	0.00234 J	< 0.00980	
Acenaphthene	µg/L	NS	NS	NS	NS				0.157	0.167	0.143	0.121	0.0695	0.0688	0.0937	0.102	0.00734 J	0.00723 J							< 0.00952	< 0.00943	< 0.00971	0.00202 J	0.00169 J	0.0191	0.0327	0.0173	0.0137	0.0150	0.0109	0.00177 J	0.00287 J	0.00875 J	0.00418 J	
Acenaphthylene	µg/L	NS	NS	NS	NS				< 0.00971	< 0.00990	0.00311 J	0.00318 J	< 0.0118	< 0.0111	0.00246 J	0.00183 J	< 0.0100	< 0.0100							< 0.00952	< 0.00943	< 0.00971	< 0.0101	0.00328 J	< 0.00952	< 0.00971	0.00384 J	0.

Table 21
Summary of Surface Water Field Parameters

Iron Horse Park
Billerica, Massachusetts

Location ID	Sample Date	Sample Type	Analyte Method Unit	Color/Appearance, Field FIELD -	Conductivity, Field FIELD uS/cm	Dissolved Oxygen, Field FIELD mg/L	Odor, Field FIELD -	Oxidation-Reduction Potential, Field FIELD mV	pH, Field FIELD pH units	Specific Conductivity FIELD uS/cm	Temperature, Field FIELD deg C	Turbidity, Field FIELD NTU
SW-A1	16-Dec-20	N			346	7.61		188.1	7.22	630	1.43	-
SW-A1	18-May-21	N				2.23		94.9	6.60	436	20.62	1.93
SW-A1	09-Nov-21	N		colorless		6.20	Odorless	-75.0	7.30	371	7.82	6.14
SW-A1	28-Jun-22	N		Colorless		2.25	Odorless	79.8	6.55	417.2	21.2	6.09
SW-A1	26-Oct-22	N				1.22		147.8	6.65	307	14.36	0.02
SW-A2	16-Dec-20	N			813	6.71		-27.2	6.52	1,441	2.11	-
SW-A2	18-May-21	N				8.05		93.4	6.94	985	16.47	6.02
SW-A2	09-Nov-21	N		colorless		7.14	Odorless	-139.8	6.90	583	6.51	1.09
SW-A2	27-Jun-22	N		Brown		1.44	Odorless	-11.5	6.45	862	19.9	27.2
SW-A2	25-Oct-22	N		colorless		3.33	Odorless	123.6	6.56	697	12.97	2.4
SW-A3	16-Dec-20	N			685	7.19		-57.6	6.54	1,191	2.76	-
SW-A3	18-May-21	N				10.56		105.9	6.45	1,146	22.02	2.04
SW-A3	09-Nov-21	N		colorless		7.23	Odorless	-143.2	6.78	680	9.87	2.51
SW-A3	27-Jun-22	N		Colorless		6.44	Odorless	109.3	6.12	1,041	16.9	0.02
SW-A3	25-Oct-22	N		colorless		4.01	Odorless	102.5	6.23	942	13.05	2.46
SW-A4	16-Dec-20	N			292	2.43		-7.5	6.51	502	3.09	-
SW-A4	18-May-21	N				2.29		-27.9	6.54	820	18.03	22.6
SW-A4	09-Nov-21	N		colorless		1.35	Odorless	-166.5	6.56	310	7.36	8.3
SW-A4	28-Jun-22	N		Colorless		1.88	Odorless	39.8	6.35	339.2	18.1	3.14
SW-A4	25-Oct-22	N		greyish		2.87		140.7	6.56	242	13.36	62.1
SW-A5	16-Dec-20	N			808	4.25		18.5	6.02	1,460	2.53	-
SW-A5	18-May-21	N				11.79		152.0	6.43	989	18.22	6.74
SW-A5	09-Nov-21	N		colorless		7.57	Odorless	-116.5	6.52	579	7.78	1.67
SW-A5	27-Jun-22	N		Colorless		3.25	Odorless	149.7	6.51	903	22.6	0.02
SW-A5	25-Oct-22	N		clear		3.97	Odorless	192.8	6.26	592	13.12	1.5

Notes:
< = Compound not detected. Reportable detection limit shown.
Empty cells = Not analyzed.
uS/cm = microSiemens per centimeter
mg/L = milligrams per liter
mV = millivolts
pH units = pH units
deg C = degrees Celsius
NTU = nephelometric turbidity units

Table 22
Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
MW-01	DG	Arsenic	7	6	1	85.71%	0.17	2.7	1.123	0.96	1.022	91.06%	Normal	Not Significant		
		Barium	5	5	0	100.00%	3.08	56.6	24.1	7.41	26.7	110.79%	Lognormal	Decreasing		
		Cadmium	7	6	1	85.71%	0.1	0.3	0.1529	0.11	0.07544	49.35%	Lognormal	Not Significant		
		Lead	7	6	1	85.71%	0.41	5.75	2.184	1.1	2.303	105.43%	Lognormal	Not Significant		
		Manganese	5	5	0	100.00%	26.77	638.6	165.4	55.99	264.9	160.16%	Lognormal	Not Significant	GPS-NCCC	
MW-01B	DG	Arsenic	7	6	1	85.71%	0.21	0.73	0.4529	0.44	0.1947	42.98%	Normal	Not Significant		
		Barium	5	5	0	100.00%	19.59	25.62	22.73	23.15	2.178	9.58%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.28	11.17	2.27	0.58	3.962	174.53%	Lognormal	Not Significant	GPS-NCCC, MCL, GW-1, GW-3	
		Lead	7	6	1	85.71%	0.66	3.6	1.363	1.13	1.049	76.99%	Lognormal	Not Significant		
		Manganese	5	5	0	100.00%	99.91	228.3	162	172.4	56.14	34.65%	Normal	Decreasing		
MW-202D	4	Cadmium	5	5	0	100.00%	1.9	23.8	10.14	6.62	9.173	90.48%	Normal	Not Significant	GPS-NCCC, MCL, GW-1, GW-3	
		Lead	5	5	0	100.00%	2.53	5.69	4.012	4.06	1.139	28.39%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	22.06	149.9	68.85	57.62	48.43	70.34%	Normal	Not Significant		
MW-202S	4	1,1-Dichloroethane	7	6	1	85.71%	0.28	5.4	2.444	0.68	2.523	103.26%	NDD	Not Significant		
		1,2-Dichloroethene	7	6	1	85.71%	0.26	6.1	1.416	0.5	2.114	149.34%	Lognormal	Not Significant		
		Arsenic	7	7	0	100.00%	6.18	30.43	17.93	18.85	10.31	57.52%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Chlorobenzene	7	6	1	85.71%	0.3	3.1	1.241	0.79	1.198	96.49%	Lognormal	Not Significant		
		cis-1,2-Dichloroethene	7	6	1	85.71%	0.26	6.1	1.416	0.5	2.114	149.34%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	261.1	495.1	395.8	439.3	97.56	24.65%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Vinyl chloride	7	5	2	71.43%	0.29	1.3	0.6471	0.54	0.3273	50.58%	Normal	Not Significant		
MW-203S	4	Arsenic	7	7	0	100.00%	10.32	189.1	57.54	24.72	63.53	110.40%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Manganese	7	7	0	100.00%	1476	2333	1815	1677	334.8	18.45%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
MW-204S	3	Acenaphthene	9	5	4	55.56%	0.00195	0.00232	0.03005	0.00232	0.08062	268.25%	NDD	Not Significant		
		Alkalinity, Total as CaCO3	9	9	0	100.00%	6200	74200	28690	22200	22000	76.68%	Normal	Increasing		
		Arsenic	9	9	0	100.00%	0.56	2.44	1.474	1.62	0.6757	45.83%	Normal	Not Significant		
		Barium	8	8	0	100.00%	338.2	1209	829.9	936.2	319.5	38.50%	Normal	Decreasing		
		Cadmium	9	9	0	100.00%	0.33	2.52	1.373	1.16	0.8658	63.04%	Normal	Not Significant		
		Calcium	9	9	0	100.00%	71100	217000	152800	180000	52330	34.25%	Normal	Not Significant		
		Chemical oxygen demand	9	9	0	100.00%	88000	220000	154200	160000	42250	27.40%	Normal	Not Significant		
		Chloride	9	9	0	100.00%	1400000	2800000	1722000	1600000	420600	24.42%	NDD	Not Significant		
		Copper	8	7	1	87.50%	3.17	38.78	13.88	5.265	15.7	113.14%	Lognormal	Not Significant		
		Iron	9	9	0	100.00%	7910	37800	16000	14700	9693	60.58%	Lognormal	Not Significant		
		Lead	9	8	1	88.89%	2.89	45.92	16	5.66	17.28	108.05%	Lognormal	Decreasing	GPS-NCCC, MCL, GW-1, GW-3	
		Manganese	9	9	0	100.00%	4065	14750	9484	9294	4362	45.99%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Nitrate as N	9	7	2	77.78%	27	1200	168.8	42	386.8	229.18%	NDD	Not Significant		
		Sodium	9	9	0	100.00%	642000	1300000	847400	801000	213900	25.24%	Lognormal	Increasing		
		Sulfate	9	9	0	100.00%	13000	51000	31560	29000	10900	34.54%	Normal	Not Significant		
		Total dissolved solids	9	9	0	100.00%	2400000	4900000	3122000	2800000	764500	24.49%	Lognormal	Not Significant		
		Zinc	8	6	2	75.00%	18.36	59.13	35.04	30.445	18.96	54.10%	Normal	Decreasing		
MW-206S	3	Alkalinity, Total as CaCO3	7	7	0	100.00%	50700	176000	99500	82300	45790	46.02%	Normal	Not Significant		
		Anthracene	7	6	1	85.71%	0.00265	0.00556	0.03722	0.00381	0.08854	237.85%	NDD	Not Significant		
		Arsenic	7	7	0	100.00%	0.89	8.52	3.616	2.36	3.051	84.37%	Normal	Not Significant		
		Barium	5	5	0	100.00%	24.1	159.2	79.66	71.96	53.31	66.92%	Normal	Not Significant		
		Cadmium	7	6	1	85.71%	0.07	0.99	0.2543	0.1	0.3295	129.57%	Lognormal	Not Significant		
		Calcium	7	7	0	100.00%	32000	108000	79130	88400	29890	37.77%	Normal	Not Significant		
		Chemical oxygen demand	7	6	1	85.71%	21000	33000	23000	24000	6880	29.91%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	120000	680000	344300	290000	184300	53.53%	Normal	Not Significant		
		Iron	7	7	0	100.00%	98.7	6300	2162	941	2418	111.81%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	29.3	649.2	251.2	222.1	202.2	80.48%	Normal	Not Significant	GPS-NCCC	
		Nitrate as N	7	7	0	100.00%	63	617	355	352	211.6	59.60%	Normal	Not Significant		
		Sodium	7	7	0	100.00%	76600	313000	181200	147000	82330	45.43%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	14000	56000	30000	30000	15520	51.75%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	340000	1400000	778600	700000	349200	44.85%	Normal	Not Significant		
MW-207B	5	1,1-Dichloroethane	6	6	0	100.00%	1.5	2.3	1.85	1.8	0.3271	17.68%	Normal	Not Significant		
		1,1-Dichloroethene	6	6	0	100.00%	0.53	6.4	3.405	3.8	2.198	64.57%	Normal	Not Significant		
		1,1,1-Trichloroethane	6	6	0	100.00%	0.27	1.3	0.8667	1.005	0.4402	50.79%	Normal	Not Significant		
		1,2-Dichloroethane	6	6	0	100.00%	2.2	3.3	2.867	2.9	0.3724	12.99%	Normal	Not Significant		
		1,2-Dichloroethene	6	6	0	100.00%	0.29	0.62	0.495	0.505	0.115	23.24%	Normal	Not Significant		
		cis-1,2-Dichloroethene	6	6	0	100.00%	0.29	0.62	0.495	0.505	0.115	23.24%	Normal	Not Significant		
		Cyanide	6	6	0	100.00%	28	134	88.33	103.5	44.29	50.14%	Normal	Not Significant	GW-3	GW-3
		Tetrachloroethene	6	6	0	100.00%	2.4	17	11.3	13.5	5.649	49.99%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Trichloroethene	6	6	0	100.00%	1.4	9.6	6.417	8.1	3.385	52.75%	Normal	Not Significant	GPS-CCC, MCL, GW-1	
MW-210B	2	1,1-Dichloroethane	7	5	2	71.43%	0.22	1.2	0.5986	0.41	0.3606	60.25%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	2.11	4.5	3.14	2.59	1.114	35.49%	Normal	Not Significant		
		Cadmium	5	5	0	100.00%	0.16	0.59	0.282	0.21	0.1785	63.31%	Lognormal	Not Significant		
		Manganese	5	5	0	100.00%	53.65	761.5	299.2	190.7	275.5	92.07%	Normal	Not Significant	GPS-NCCC	

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
MW-210S	2	Alkalinity, Total as CaCO3	7	7	0	100.00%	39400	108000	57900	54900	23170	40.02%	Lognormal	Not Significant		
		Arsenic	7	7	0	100.00%	41.81	104.8	66.24	64.95	20.59	31.09%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	6	6	0	100.00%	32.76	51.79	38.41	36.28	7.105	18.50%	Normal	Not Significant		
		Calcium	7	7	0	100.00%	22900	27000	24330	24200	1420	5.84%	Normal	Not Significant		
		Chemical oxygen demand	7	6	1	85.71%	6400	28000	17060	19000	7134	41.82%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	78000	240000	185400	210000	57150	30.82%	Normal	Not Significant		
		Iron	7	7	0	100.00%	9130	29600	14680	12600	7030	47.88%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	854.6	2357	1515	1458	488.8	32.26%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	7	7	0	100.00%	54000	133000	103800	107000	25110	24.20%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	6200	29000	14600	12000	7706	52.78%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	320000	490000	404300	410000	69010	17.07%	Normal	Not Significant		
MW-211D	2	1,4-Dioxane	5	5	0	100.00%	0.152	0.245	0.2026	0.204	0.034	16.78%	Normal	Not Significant		
		Alkalinity, Total as CaCO3	7	7	0	100.00%	61300	306000	146100	129000	85730	58.68%	Normal	Decreasing		
		Arsenic	7	7	0	100.00%	110.1	279.2	186.4	179.7	64.35	34.52%	Normal	Decreasing	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	28.07	46.88	37.8	35.34	7.751	20.51%	Normal	Not Significant		
		Calcium	7	6	1	85.71%	41300	81700	58610	59800	18420	31.43%	Normal	Not Significant		
		Chemical oxygen demand	7	7	0	100.00%	19000	86000	35140	28000	23220	66.07%	Lognormal	Not Significant		
		Chloride	7	7	0	100.00%	71000	220000	141900	110000	61290	43.21%	Normal	Increasing		
		Iron	7	7	0	100.00%	15600	47600	29770	32600	11200	37.62%	Normal	Decreasing		
		Manganese	7	7	0	100.00%	2317	4265	3468	3570	636.4	18.35%	Normal	Decreasing	GPS-NCCC	GPS-NCCC
		Nitrate as N	7	5	2	71.43%	29	201	106.6	50	78.13	73.32%	Lognormal	Not Significant		
		Sodium	7	6	1	85.71%	37500	90800	56240	44200	23910	42.51%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	8100	50000	23160	17000	14660	63.32%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	380000	600000	467100	440000	84010	17.98%	Normal	Not Significant		
MW-211S	2	Alkalinity, Total as CaCO3	7	7	0	100.00%	34300	206000	111700	89000	61960	55.48%	Normal	Decreasing		
		Arsenic	7	7	0	100.00%	41.86	208.9	96.42	81.25	53.14	55.11%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	36.52	137	71.25	66.18	39.17	54.98%	Normal	Not Significant		
		Calcium	7	6	1	85.71%	21200	74500	39850	33800	19640	49.29%	Normal	Decreasing		
		Chemical oxygen demand	7	7	0	100.00%	8700	24000	18100	17000	5298	29.27%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	8800	260000	96110	98000	89150	92.75%	Normal	Not Significant		
		Iron	7	7	0	100.00%	11200	68000	28560	20800	19280	67.51%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	946.4	2664	1431	1203	572.3	40.00%	Lognormal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	7	6	1	85.71%	12000	156000	63280	46000	56200	88.81%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	14000	80000	55000	56000	23810	43.29%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	230000	480000	381400	380000	91550	24.00%	Normal	Not Significant		
MW-212D	2	Alkalinity, Total as CaCO3	7	7	0	100.00%	29600	95300	56940	56800	22620	39.72%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	43.8	66.47	51.7	49.4	8.739	16.90%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	46.8	77.12	65.49	65.7	12.23	18.67%	Normal	Not Significant		
		Calcium	7	6	1	85.71%	11500	30300	20830	22000	7865	37.76%	Normal	Not Significant		
		Chemical oxygen demand	7	6	1	85.71%	11000	44000	24430	24000	13650	55.87%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	190000	260000	225700	220000	26990	11.96%	Normal	Increasing		
		Iron	7	7	0	100.00%	6570	13100	10900	11300	2309	21.19%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	560.1	1136	766.5	724.9	193.3	25.21%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	7	7	0	100.00%	118000	195000	145900	133000	27830	19.08%	Normal	Not Significant		
		Sulfate	7	6	1	85.71%	1700	20000	10930	11000	6244	57.13%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	440000	520000	477100	470000	33020	6.92%	Normal	Not Significant		
MW-212S	2	Alkalinity, Total as CaCO3	7	7	0	100.00%	37900	70500	48430	41000	13650	28.19%	NDD	Not Significant		
		Arsenic	7	7	0	100.00%	13.65	280.4	94.37	37.41	104.4	110.62%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	52.8	118	81.37	73.45	26.42	32.47%	Normal	Not Significant		
		Calcium	7	7	0	100.00%	16200	38600	22510	19200	8020	35.62%	Normal	Not Significant		
		Chemical oxygen demand	7	6	1	85.71%	24000	200000	54430	33000	65410	120.18%	Lognormal	Not Significant		
		Chloride	7	7	0	100.00%	140000	250000	207100	220000	37290	18.00%	Normal	Not Significant		
		Iron	7	7	0	100.00%	4560	28100	12440	10300	8256	66.38%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	436.8	3783	1131	604.2	1193	105.55%	NDD	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	7	7	0	100.00%	106000	169000	130700	127000	24680	18.88%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	8400	80000	24630	12000	26050	105.76%	Lognormal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	360000	600000	480000	490000	71180	14.83%	Normal	Not Significant		
MW-213B	1	1,1-Dichloroethane	7	6	1	85.71%	0.53	0.8	0.605	0.59	0.1456	24.07%	Normal	Not Significant		
		1,1-Dichloroethene	7	7	0	100.00%	0.36	1	0.6971	0.75	0.2182	31.30%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	1.1	4.2	2.429	2.5	1.151	47.41%	Normal	Not Significant		
		1,2-Dichloroethene	7	7	0	100.00%	0.41	0.85	0.6714	0.73	0.1724	25.67%	Normal	Not Significant		
		1,4-Dioxane	5	5	0	100.00%	1.06	1.23	1.15	1.16	0.07	6.09%	Normal	Not Significant	GW-1	GW-1
		Alkalinity, Total as CaCO3	5	5	0	100.00%	126000	165000	145400	141000	15010	10.32%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	2.14	4.4	3.247	3.41	0.8921	27.47%	Normal	Decreasing		
		Barium	5	5	0	100.00%	5.41	11.56	8.866	8.78	2.584	29.15%	Normal	Not Significant		
		Cadmium	7	6	1	85.71%	0.08	0.25	0.1586	0.13	0.07515	47.39%	Normal	Not Significant		
		Chloride	5	5	0	100.00%	89000	110000	98400	94000	10780	10.96%	Normal	Not Significant		
		cis-1,2-Dichloroethene	7	7	0	100.00%	0.41	0.85	0.6714	0.73	0.1724	25.67%	Normal	Not Significant		
		Lead	7	6	1	85.71%	0.89	3	1.44	1.11	0.8834	61.34%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	249.8	375.3	313.8	339.1	57.37	18.28%	Normal	Decreasing	GPS-NCCC	
		Methyl tert-butyl ether	7	6	1	85.71%	0.97	4.8	2.281	1.9	1.588	69.60%	Normal	Not Significant		
		Sodium	5	5	0	100.00%	49300	64500	55100	52200	6665	12.10%	Normal	Not Significant		
		Total dissolved solids	5	5	0	100.00%	300000	380000	350000	350000	30820	8.81%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	3.1	6.3	4.714	4.8	1.321	28.02%	Normal	Not Significant	GPS-CCC, MCL, GW-1	GPS-CCC, MCL, GW-1

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
		1,1-Dichloroethane	6	5	1	83.33%	0.32	0.66	0.4425	0.3775	0.1487	33.61%	Normal	Not Significant		
		1,2-Dichloroethane	6	6	0	100.00%	0.33	1.3	0.6567	0.46	0.3975	60.54%	Normal	Not Significant		
		1,4-Dioxane	6	6	0	100.00%	0.8	1.42	1.058	0.94	0.2629	24.85%	Normal	Not Significant	GW-1	GW-1
		Alkalinity, Total as CaCO3	6	6	0	100.00%	88500	128000	116600	123500	15150	12.99%	NDD	Not Significant		
		Anthracene	5	5	0	100.00%	0.00378	0.00676	0.005748	0.00627	0.001176	20.46%	Normal	Not Significant		
		Arsenic	6	6	0	100.00%	0.18	0.58	0.3817	0.36	0.1448	37.95%	Normal	Not Significant		
		Barium	5	5	0	100.00%	67.6	87.31	76.18	75.13	7.306	9.59%	Normal	Not Significant		
MW-213D	1	Calcium	6	6	0	100.00%	52000	70000	63400	64700	6488	10.23%	Normal	Increasing		
		Chloride	6	6	0	100.00%	140000	180000	163300	165000	13660	8.36%	Normal	Not Significant		
		Iron	6	6	0	100.00%	137	342	241.2	227.5	76.02	31.52%	Normal	Not Significant		
		Manganese	6	6	0	100.00%	432.7	959.9	756	789.5	205.7	27.20%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	6	6	0	100.00%	2.3	14	6.9	5.05	4.977	72.13%	Normal	Not Significant		
		Sodium	6	6	0	100.00%	67200	75900	73070	74150	3286	4.50%	Normal	Not Significant		
		Sulfate	6	6	0	100.00%	10000	16000	12500	11500	2429	19.43%	Normal	Not Significant		
		Total dissolved solids	6	6	0	100.00%	390000	520000	453300	450000	47190	10.41%	Normal	Increasing		
		Trichloroethene	6	5	1	83.33%	0.2	0.62	0.395	0.425	0.1516	38.39%	Normal	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	0.611	1.18	0.8666	0.815	0.1904	21.97%	Normal	Not Significant	GW-1	GW-1
		2-Methylnaphthalene	6	6	0	100.00%	0.402	1.61	0.907	0.846	0.4575	50.44%	Normal	Not Significant		
		Acenaphthene	6	6	0	100.00%	0.249	0.743	0.5258	0.577	0.2208	41.99%	Normal	Not Significant		
		Acenaphthylene	6	5	1	83.33%	0.00981	0.0517	0.02136	0.0157	0.01721	80.59%	Normal	Not Significant		
		Acetone	7	5	2	71.43%	2.2	16	6.514	6.4	4.996	76.69%	Normal	Not Significant		
		Alkalinity, Total as CaCO3	7	7	0	100.00%	354000	862000	599600	623000	199700	33.30%	Normal	Not Significant		
		Anthracene	6	6	0	100.00%	0.15	0.449	0.2747	0.2565	0.09781	35.61%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	0.82	2.56	1.593	1.48	0.6319	39.67%	Normal	Not Significant		
		Barium	6	6	0	100.00%	901.1	2559	1724	1848.5	696.6	40.39%	Normal	Not Significant	MCL, GW-1	
		Benzo(a)anthracene	6	6	0	100.00%	0.00705	0.0435	0.01559	0.009995	0.01397	89.57%	Lognormal	Not Significant		
		Bis(2-ethylhexyl)phthalate	6	5	1	83.33%	0.48	0.943	0.6194	0.6735	0.2346	37.87%	Normal	Not Significant		
		Calcium	7	7	0	100.00%	29700	63600	44000	40600	11610	26.40%	Normal	Decreasing		
		Chemical oxygen demand	7	7	0	100.00%	120000	260000	190000	200000	52600	27.68%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	85000	150000	120400	130000	26920	22.35%	Normal	Increasing		
MW-213S	1	Chromium	6	5	1	83.33%	3.41	7.57	5.043	4.565	1.784	35.37%	Normal	Not Significant		
		Chrysene	6	6	0	100.00%	0.00934	0.0386	0.01685	0.01195	0.01126	66.84%	Lognormal	Not Significant		
		Fluoranthene	6	6	0	100.00%	0.0742	0.875	0.2333	0.0956	0.3161	135.49%	NDD	Not Significant		
		Fluorene	6	6	0	100.00%	0.188	0.62	0.4773	0.5385	0.1708	35.78%	Normal	Not Significant		
		Iron	7	7	0	100.00%	11900	32300	22430	20600	8450	37.67%	Normal	Not Significant		
		Lead	7	7	0	100.00%	3.94	10.96	7.021	7.09	2.419	34.45%	Normal	Not Significant	GW-3	
		Manganese	7	7	0	100.00%	782.1	5937	2991	2296	2182	72.97%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		n-Nitrosodiphenylamine	6	5	1	83.33%	0.246	0.765	0.5443	0.403	0.3666	67.35%	Normal	Not Significant		
		Naphthalene	7	5	2	71.43%	0.3	3.7	1.436	1.25	1.165	81.13%	Normal	Not Significant		
		Naphthalene (SIM)	6	5	1	83.33%	0.163	1.12	0.5373	0.4375	0.4237	78.86%	Normal	Not Significant		
		Phenanthrene	6	6	0	100.00%	0.252	0.522	0.4262	0.4485	0.1012	23.74%	Normal	Not Significant		
		Pyrene	6	6	0	100.00%	0.0331	0.671	0.1652	0.0687	0.2494	150.91%	Lognormal	Not Significant		
		Sodium	7	7	0	100.00%	182000	363000	247100	251000	66590	26.94%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	670000	1200000	932900	1000000	198700	21.30%	Normal	Not Significant		
		Zinc	6	5	1	83.33%	19.62	211.4	93.36	84.58	75.03	80.36%	Normal	Not Significant		
		Acenaphthene	6	6	0	100.00%	0.299	0.815	0.5693	0.5975	0.1818	31.93%	Normal	Not Significant		
		Alkalinity, Total as CaCO3	6	6	0	100.00%	27200	120000	66580	67350	36590	54.96%	Normal	Decreasing		
		Anthracene	6	6	0	100.00%	0.113	0.817	0.3082	0.248	0.26	84.37%	Lognormal	Not Significant		
		Arsenic	6	6	0	100.00%	29.41	186.4	100.9	103.57	54.71	54.24%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Benzo(a)anthracene	6	6	0	100.00%	0.0102	0.567	0.1176	0.033	0.2206	187.55%	Lognormal	Not Significant		
		Calcium	5	5	0	100.00%	7720	9810	8590	8240	846.7	9.86%	Normal	Not Significant		
		Chemical oxygen demand	6	6	0	100.00%	20000	29000	24670	25000	3670	14.88%	Normal	Not Significant		
		Chloride	6	6	0	100.00%	25000	33000	28830	28000	3061	10.61%	Normal	Not Significant		
MW-214S	1	Chrysene	6	6	0	100.00%	0.00651	0.495	0.1015	0.0267	0.1932	190.38%	Lognormal	Not Significant		
		Fluoranthene	6	6	0	100.00%	0.459	4.11	1.132	0.525	1.462	129.10%	NDD	Not Significant		
		Fluorene	6	6	0	100.00%	0.404	1.34	0.7575	0.702	0.3119	41.18%	Normal	Not Significant		
		Iron	5	5	0	100.00%	28100	68700	47700	51200	16600	34.81%	Normal	Not Significant		
		Lead	6	6	0	100.00%	0.4	20.29	4.902	1.48	7.746	158.04%	Lognormal	Not Significant	GPS-NCCC, MCL, GW-1, GW-3	GPS-NCCC, MCL, GW-1, GW-3
		Manganese	6	6	0	100.00%	1659	5909	3553	3782.5	1624	45.71%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Phenanthrene	6	6	0	100.00%	0.495	2.92	1.212	0.939	0.8866	73.16%	Lognormal	Not Significant		
		Pyrene	6	6	0	100.00%	0.238	3.23	0.776	0.2935	1.203	154.99%	NDD	Not Significant		
		Sodium	5	5	0	100.00%	9760	14000	11090	10500	1716	15.47%	Normal	Not Significant		
		Total dissolved solids	6	6	0	100.00%	120000	160000	135000	135000	15170	11.23%	Normal	Increasing		
		Alkalinity, Total as CaCO3	5	5	0	100.00%	22000	26600	23860	23700	1849	7.75%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	0.23	0.51	0.366	0.31	0.1301	35.55%	Normal	Not Significant		
		Barium	5	5	0	100.00%	22.78	34.39	29.62	31.11	5.037	17.01%	Normal	Not Significant		
		Cadmium	5	5	0	100.00%	0.06	0.12	0.08	0.07	0.02345	29.32%	Normal	Not Significant		
MW-215D	1	Calcium	5	5	0	100.00%	20800	32000	26080	27500	4803	18.42%	Normal	Not Significant		
		Chloride	5	5	0	100.00%	84000	120000	102200	100000	17330	16.95%	Normal	Not Significant		
		Nitrate as N	5	5	0	100.00%	439	2680	1395	1490	961.2	68.93%	Normal	Not Significant		
		Sodium	5	5	0	100.00%	40500	54400	47320	47600	6614	13.98%	Normal	Not Significant		
		Sulfate	5	5	0	100.00%	9200	15000	11840	11000	2220	18.75%	Normal	Not Significant		
		Total dissolved solids	5	5	0	100.00%	180000	330000	258000	280000	61400	23.80%	Normal	Not Significant		
		Alkalinity, Total as CaCO3	5	5	0	100.00%	17000	48200	30120	26700	12890	42.81%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	0.41	3.2	1.67	1.41	1.176	70.39%	Normal	Not Significant		
		Barium	5	5	0	100.00%	40.53	48.71	45.34	46.84	3.23	7.12%	Normal	Not Significant		
		Calcium	5	5	0	100.00%	10400	22400	15220	14500	5136	33.75%	Normal	Not Significant		
MW-215S	1	Chloride	5	5	0	100.00%	65000	89000	78400	78000	9072	11.57%	Normal	Not Significant		
		Iron	5	5	0	100.00%	97.1	5100	1207	291	2179	180.48%	Lognormal	Not Significant		
		Manganese	5	5	0	100.00%	714.9	1259	1020	1019	225.7	22.14%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	5	5	0	100.00%	38900	47800	44020	45000	3519	7.99%	Normal	Not Significant		
		Sulfate	5	5	0	100.00%	6100	12000	9340	9400	2123	22.73%	Normal	Not Significant		
		Total dissolved solids	5	5	0	100.00%	110000	250000	196000	220000	56390	28.77%	Normal	Not Significant		

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
MW-301S	4	Arsenic	9	9	0	100.00%	8.9	26.48	17.37	15.56	6.437	37.05%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Manganese	9	9	0	100.00%	251.9	1298	575.7	471.4	330.6	57.42%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
MW-303S	4	Arsenic	7	7	0	100.00%	1.7	19.36	9.376	7.62	6.848	73.04%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Lead	7	7	0	100.00%	16.63	41.47	23.04	22.09	8.578	37.23%	Lognormal	Not Significant	GPS-NCCC, MCL, GW-1, GW-3	GPS-NCCC, MCL, GW-1, GW-3
		Manganese	7	7	0	100.00%	76.25	307.2	178.9	143	94	52.55%	Normal	Not Significant	GPS-NCCC	
MW-305D	6	1,1-Dichloroethane	7	6	1	85.71%	0.3	1.3	0.7064	0.64	0.3376	47.79%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	0.67	4.4	2.096	1.8	1.273	60.75%	Normal	Not Significant		
		1,2-Dichloroethene	7	5	2	71.43%	0.21	0.52	0.3229	0.25	0.1296	40.13%	NDD	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	0.161	1.02	0.5743	0.556	0.2784	48.48%	Normal	Not Significant	GW-1	GW-1
		Arsenic	7	7	0	100.00%	4.84	14.51	9.17	9.55	3.569	38.92%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	11.88	21.32	16.3	17.03	4.204	25.79%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.06	4.7	0.8614	0.16	1.701	197.42%	Lognormal	Not Significant	GW-3	
		cis-1,2-Dichloroethene	7	5	2	71.43%	0.21	0.5	0.3	0.25	0.09967	33.22%	Lognormal	Not Significant		
		Copper	5	5	0	100.00%	0.38	1.24	0.6	0.48	0.3608	60.13%	NDD	Not Significant		
		Manganese	7	7	0	100.00%	1120	2066	1548	1618	333.5	21.55%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
MW-305S	6	Alkalinity, Total as CaCO3	5	5	0	100.00%	86600	177000	115500	100000	37580	32.53%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	3.81	11.32	8.751	9.14	2.705	30.91%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Barium	5	5	0	100.00%	26.86	111.5	60.73	52.07	33.05	54.42%	Normal	Not Significant		
		Calcium	5	5	0	100.00%	31500	53100	41560	45000	9258	22.28%	Normal	Not Significant		
		Chloride	5	5	0	100.00%	140000	280000	212000	200000	61400	28.96%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	2559	10900	4757	3498	2898	60.91%	Lognormal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	5	5	0	100.00%	96400	172000	138100	138000	31900	23.10%	Normal	Not Significant		
		Sulfate	5	5	0	100.00%	6300	17000	12060	11000	4429	36.73%	Normal	Not Significant		
		Total dissolved solids	5	5	0	100.00%	380000	630000	512000	500000	92570	18.08%	Normal	Not Significant		
MW-306S	6	Arsenic	7	7	0	100.00%	6.41	13.66	9.094	7.82	2.835	31.17%	Normal	Decreasing	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Barium	5	5	0	100.00%	18	20.42	18.91	18.85	0.9255	4.89%	Normal	Not Significant		
		Copper	5	5	0	100.00%	0.63	2.88	1.816	1.84	0.8024	44.18%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	130.8	192.9	152.8	149.1	19.62	12.84%	Normal	Not Significant		
MW-307B	6	1,1-Dichloroethane	7	7	0	100.00%	1.1	1.7	1.386	1.4	0.2035	14.69%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	38	45	42.43	43	2.637	6.21%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		1,4-Dioxane	7	7	0	100.00%	1.27	1.5	1.399	1.41	0.07581	5.42%	Normal	Not Significant	GW-1	GW-1
		Arsenic	7	6	1	85.71%	1.74	3.63	2.276	2.16	0.8294	36.43%	Normal	Decreasing		
		Dichloroethyl ether	6	5	1	83.33%	0.638	1.23	0.8771	0.992	0.3741	42.65%	Normal	Not Significant	GPS-CCC, GPS-NCCC	GPS-CCC, GPS-NCCC
MW-307D	6	1,1-Dichloroethane	7	7	0	100.00%	1.2	1.9	1.586	1.7	0.261	16.46%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	5.1	9	6.586	6.5	1.397	21.21%	Normal	Decreasing	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		1,2-Dichloroethene	7	6	1	85.71%	0.33	0.47	0.3843	0.4	0.07413	19.29%	Normal	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	1.51	2.78	2.004	1.84	0.5376	26.82%	Normal	Decreasing	GW-1	GW-1
		Anthracene	6	5	1	83.33%	0.002	0.00706	0.004673	0.004535	0.00188	40.22%	Normal	Not Significant		
		Arsenic	7	6	1	85.71%	2.12	4.78	2.851	2.69	1.091	38.28%	Normal	Not Significant		
		Barium	6	5	1	83.33%	28.74	34.82	28.47	29.795	6.41	22.51%	Normal	Not Significant		
		Cadmium	7	6	1	85.71%	0.06	0.47	0.1457	0.1	0.1483	101.78%	Lognormal	Not Significant		
		cis-1,2-Dichloroethene	7	6	1	85.71%	0.33	0.47	0.3843	0.4	0.07413	19.29%	Normal	Not Significant		
		Copper	6	5	1	83.33%	3.94	57.26	19.51	6.815	23.32	119.50%	Lognormal	Not Significant		
		Manganese	7	6	1	85.71%	84.93	114.2	92.39	94.69	21.25	23.00%	Normal	Not Significant		
MW-307S	6	1,2-Dichlorobenzene	8	7	1	87.50%	0.163	24	4.045	1.175	8.138	201.17%	Lognormal	Not Significant		
		1,2,4-Trimethylbenzene	7	5	2	71.43%	0.25	3.2	2.107	2.4	1.196	56.77%	Normal	Not Significant		
		1,4-Dichlorobenzene	8	6	2	75.00%	0.36	3.5	1.118	0.9	1.043	93.36%	Lognormal	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	2.95	18.1	10.05	8.16	5.794	57.67%	Normal	Not Significant	GW-1	GW-1
		Acenaphthene	6	5	1	83.33%	0.0224	0.0549	0.03288	0.03465	0.01851	56.31%	Normal	Not Significant		
		Acetone	7	5	2	71.43%	6.7	66	27.81	24	25.46	91.54%	Normal	Not Significant		
		Anthracene	6	5	1	83.33%	0.00387	0.00597	0.004761	0.0046925	0.0007108	14.93%	Normal	Not Significant		
		Arsenic	7	6	1	85.71%	1	1.99	1.349	1.54	0.6087	45.14%	Normal	Not Significant		
		Barium	6	5	1	83.33%	96.48	149.5	102.3	117.3	53.19	52.02%	Normal	Not Significant		
		Benzene	7	7	0	100.00%	7.2	39	16.74	13	10.81	64.59%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Chlorobenzene	7	7	0	100.00%	39	200	89.71	65	61.31	68.34%	Normal	Not Significant	MCL, GW-1	MCL, GW-1
		Chloroethane	7	7	0	100.00%	0.34	5.8	2.62	2.8	2.104	80.31%	Normal	Not Significant		
		Fluorene	6	5	1	83.33%	0.0208	0.0426	0.02783	0.0285	0.01423	51.12%	Normal	Not Significant		
		Isopropylbenzene (Cumene)	7	7	0	100.00%	0.42	3.4	2.274	2.8	1.094	48.10%	Normal	Not Significant		
		Manganese	7	6	1	85.71%	177.4	404.6	255.8	281.9	137.5	53.75%	Normal	Not Significant	GPS-NCCC	
		n-Propylbenzene	7	6	1	85.71%	0.21	1	0.5229	0.33	0.3499	66.93%	Lognormal	Decreasing		
		Tetrahydrofuran	7	7	0	100.00%	3.6	19	7.543	5.6	5.455	72.32%	Lognormal	Increasing		
		Xylenes, m/p	7	6	1	85.71%	0.78	42	10.33	4.1	14.91	144.38%	Lognormal	Decreasing		
		Xylenes, Total	7	6	1	85.71%	0.78	42	10.33	4.1	14.91	144.38%	Lognormal	Decreasing		
MW-308B	6	1,1-Dichloroethane	7	7	0	100.00%	1	1.3	1.186	1.2	0.1215	10.25%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	4	5.6	4.9	4.9	0.6	12.24%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		1,2-Dichloroethene	7	7	0	100.00%	5.5	24	12.29	9.5	7.903	64.33%	Lognormal	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	0.964	2	1.489	1.5	0.3673	24.67%	Normal	Decreasing	GW-1	GW-1
		Arsenic	7	6	1	85.71%	1.11	8.89	3.197	2.42	2.724	85.21%	Lognormal	Decreasing		
		Barium	6	5	1	83.33%	10.76	83.21	35.01	29.56	28.51	81.45%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.08	1.77	0.6886	0.51	0.6266	91.00%	Normal	Not Significant		
		Chromium	6	5	1	83.33%	0.29	12.38	3.687	2.885	4.446	120.59%	Lognormal	Decreasing		
		cis-1,2-Dichloroethene	7	7	0	100.00%	4.5	20	10.24	7.6	6.545	63.90%	Lognormal	Not Significant		
		Copper	6	5	1	83.33%	0.63	39.52	12.88	8.72	14.71	114.22%	Normal	Not Significant		
		Dichloroethyl ether	6	5	1	83.33%	0.342	0.467	0.4428	0.435	0.09793	22.11%	Normal	Not Significant	GPS-CCC, GPS-NCCC	
		Lead	7	6	1	85.71%	0.37	21.9	7.536	4.9	7.718	102.42%	Normal	Decreasing	GPS-NCCC, MCL, GW-1, GW-3	
		trans-1,2-Dichloroethene	7	7	0	100.00%	0.82	3.8	1.997	1.7	1.259	63.05%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	30	81	54.29	44	22.68	41.77%	Normal	Not Significant	GPS-CCC, MCL, GW-1	GPS-CCC, MCL, GW-1
		Vinyl chloride	7	7	0	100.00%	0.14	1.2	0.6243	0.56	0.3584	57.40%	Normal	Not Significant		

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
OW-07	6	Arsenic	7	6	1	85.71%	1.61	16.5	5.124	3.52	5.279	103.03%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Barium	6	5	1	83.33%	26.43	80.48	48.07	47.42	22.71	47.25%	Normal	Not Significant		
		Manganese	7	6	1	85.71%	243.2	927.5	621.3	737.9	306.7	49.36%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Trichloroethene	7	6	1	85.71%	0.36	3.6	1.464	0.54	1.393	95.14%	Normal	Not Significant		
OW-08	6	1,4-Dichlorobenzene	8	7	1	87.50%	0.237	0.89	0.5784	0.515	0.3438	59.45%	Normal	Not Significant		
		1,4-Dioxane	7	5	2	71.43%	0.15	0.371	0.2003	0.172	0.1239	61.86%	Normal	Not Significant	GW-1	GW-1
		Acenaphthene	6	5	1	83.33%	0.00241	0.0128	0.006213	0.00541	0.003751	60.37%	Normal	Not Significant		
		Arsenic	7	6	1	85.71%	16.42	61.05	26.5	20.08	16	60.38%	NDD	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	6	5	1	83.33%	24.01	32.94	23.73	24.525	7.09	29.87%	Normal	Not Significant		
		Benzene	7	6	1	85.71%	0.88	11	3.404	1.3	3.908	114.79%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Fluorene	6	5	1	83.33%	0.00208	0.0237	0.0111	0.01005	0.009259	83.39%	Normal	Not Significant		
		Manganese	7	6	1	85.71%	431.5	631.1	477.4	497.1	114.3	23.95%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
OW-25	5	1,1-Dichloroethane	7	6	1	85.71%	0.28	0.98	0.685	0.77	0.2935	42.85%	Normal	Not Significant		
		1,4-Dioxane	5	5	0	100.00%	0.138	0.279	0.2216	0.232	0.0574	25.90%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	10.61	30.02	19.68	19.31	7.002	35.58%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Cyanide	7	7	0	100.00%	23	50	30.86	28	9.477	30.71%	Normal	Not Significant	GW-3	
		Manganese	7	7	0	100.00%	214	443.3	348.2	360.6	78.84	22.64%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Tetrachloroethene	7	7	0	100.00%	0.32	1.9	1.21	1.6	0.6851	56.62%	Normal	Not Significant		
		Trichloroethene	7	5	2	71.43%	0.32	1	0.59	0.6	0.3196	54.17%	Normal	Not Significant		
OW-26	5	Arsenic	9	9	0	100.00%	28.7	53.93	44.74	44.36	8.312	18.58%	Normal	Increasing	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	5	5	0	100.00%	3.48	10.07	5.59	5.08	2.702	48.34%	Normal	Not Significant		
		Calcium	5	5	0	100.00%	40200	56600	46160	45000	6531	14.15%	Normal	Not Significant		
		Manganese	9	9	0	100.00%	20.45	45.38	29.98	30.05	7.92	26.42%	Normal	Not Significant		
		Sodium	5	5	0	100.00%	107000	144000	132200	138000	15070	11.40%	Normal	Not Significant		
OW-28	6	1,1-Dichloroethane	7	6	1	85.71%	0.33	0.7	0.4879	0.51	0.1401	28.72%	Normal	Not Significant		
		1,1-Dichloroethene	7	7	0	100.00%	0.52	1.4	0.8629	0.83	0.2831	32.81%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	5.1	10	8.5	9	1.722	20.26%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		1,4-Dioxane	7	7	0	100.00%	0.374	0.707	0.5626	0.555	0.1152	20.47%	Normal	Not Significant	GW-1	GW-1
		Arsenic	7	7	0	100.00%	1.18	1.8	1.521	1.59	0.2386	15.69%	Normal	Not Significant		
		Barium	5	5	0	100.00%	46.78	142.2	83.58	63.9	43.4	51.93%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	5.7	71.01	48.09	50.27	21.43	44.56%	Normal	Not Significant		
		Tetrachloroethene	7	7	0	100.00%	0.35	0.8	0.5129	0.51	0.1607	31.33%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	0.32	0.81	0.5086	0.44	0.1644	32.32%	Normal	Not Significant		
OW-29	6	1,2-Dichloroethane	5	5	0	100.00%	1.8	3.9	2.64	2	1.021	38.68%	Normal	Not Significant		
		1,4-Dioxane	5	5	0	100.00%	1.24	1.71	1.448	1.35	0.225	15.54%	Normal	Not Significant	GW-1	GW-1
		Arsenic	5	5	0	100.00%	3.85	14.11	6.628	5.13	4.258	64.24%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Manganese	5	5	0	100.00%	729.8	1936	1226	1253	494.5	40.34%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
OW-34	5	Arsenic	7	7	0	100.00%	4	4.75	4.31	4.22	0.251	5.82%	Normal	Not Significant		
		Lead	7	6	1	85.71%	1.55	3.4	2.064	2.04	1.023	49.56%	Normal	Not Significant		
		Manganese	7	5	2	71.43%	0.89	8.89	3.052	1.54	2.841	93.07%	Lognormal	Not Significant		
OW-35	5	Arsenic	7	7	0	100.00%	9.78	30.32	20.18	19.74	8.817	43.69%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Lead	7	5	2	71.43%	0.45	11.83	3.274	2.34	4.011	122.51%	Lognormal	Not Significant	GW-3	
		Manganese	7	7	0	100.00%	142.5	1040	413.4	325	293	70.87%	Lognormal	Not Significant	GPS-NCCC	GPS-NCCC
OW-36	5	Arsenic	9	8	1	88.89%	0.4	1.15	0.7061	0.65	0.2549	36.11%	Normal	Not Significant		
		Lead	9	7	2	77.78%	0.43	1.62	0.7644	0.5	0.4139	54.15%	Lognormal	Not Significant		
		Manganese	9	8	1	88.89%	2.31	943.3	158.4	6.3	325.8	205.74%	NDD	Not Significant	GPS-NCCC	GPS-NCCC
OW-37	5	1,1-Dichloroethane	5	5	0	100.00%	8.1	17	12.76	14	3.729	29.22%	Normal	Not Significant		
		1,1-Dichloroethene	5	5	0	100.00%	3.8	13	8.9	10	3.996	44.90%	Normal	Not Significant	MCL, GW-1	MCL, GW-1
		1,1,1-Trichloroethane	5	5	0	100.00%	0.72	2.1	1.27	1	0.5676	44.70%	Normal	Not Significant		
		1,2-Dichloroethene	5	5	0	100.00%	2.5	7.5	5.44	6	2.008	36.92%	Normal	Not Significant		
		1,4-Dichlorobenzene	5	5	0	100.00%	0.26	0.63	0.492	0.6	0.174	35.36%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	3.24	12.4	7.15	5.07	3.875	54.19%	Normal	Decreasing	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Chlorobenzene	5	5	0	100.00%	4.7	14	10.48	13	4.439	42.36%	Normal	Not Significant		
		cis-1,2-Dichloroethene	5	5	0	100.00%	2.5	7.3	5.4	6	1.958	36.27%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	659.2	1346	1064	1247	322.9	30.36%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Tetrachloroethene	5	5	0	100.00%	24	59	45.2	56	16.78	37.13%	Normal	Increasing	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Trichloroethene	5	5	0	100.00%	3.9	7.3	5.7	6	1.275	22.36%	Normal	Not Significant	GPS-CCC, MCL, GW-1	GPS-CCC, MCL, GW-1
		Vinyl chloride	5	5	0	100.00%	0.16	0.43	0.284	0.31	0.117	41.18%	Normal	Not Significant		
OW-38	5	1,1-Dichloroethane	5	5	0	100.00%	0.81	13	6.122	5.9	4.973	81.23%	Normal	Not Significant		
		1,2-Dichloroethene	5	5	0	100.00%	0.76	13	6.492	6.5	5.557	85.60%	Normal	Not Significant		
		Cadmium	5	5	0	100.00%	0.06	2.11	0.774	0.44	0.8036	103.82%	Normal	Not Significant		
		cis-1,2-Dichloroethene	5	5	0	100.00%	0.76	13	6.452	6.3	5.558	86.14%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	57.04	1181	719.6	808.1	435.2	60.48%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Tetrachloroethene	5	5	0	100.00%	0.21	20	6.622	5.3	8.076	121.96%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
OW-40	3	1,2-Dichloroethane	6	6	0	100.00%	1.5	2.4	1.967	2.05	0.3882	19.74%	Normal	Not Significant		
		Alkalinity, Total as CaCO3	6	6	0	100.00%	88800	124000	104500	104000	13540	12.96%	Normal	Not Significant		
		Anthracene	6	5	1	83.33%	0.00228	0.0126	0.005048	0.00383	0.003826	75.79%	Lognormal	Increasing		
		Arsenic	6	6	0	100.00%	3.66	5.14	4.48	4.62	0.6689	14.93%	Normal	Not Significant		
		Barium	5	5	0	100.00%	148.3	200.6	181.7	186.8	19.91	10.96%	Normal	Not Significant		
		Calcium	6	6	0	100.00%	28000	41900	36330	38200	5398	14.86%	Normal	Not Significant		
		Chloride	6	6	0	100.00%	5200	20000	11800	9400	6558	55.58%	Normal	Not Significant		
		Iron	6	6	0	100.00%	5310	11700	9252	9680	2276	24.60%	Normal	Increasing		
		Manganese	6	6	0	100.00%	212.6	498	393.6	408.3	115.9	29.46%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Sodium	6	6	0	100.00%	7760	15900	11430	11250	3208	28.07%	Normal	Not Significant		
		Sulfate	6	6	0	100.00%	1400	15000	7833	7500	5527	70.56%	Normal	Not Significant		
		Total dissolved solids	6	6	0	100.00%	140000	180000	161700	160000	17220	10.65%	Normal	Not Significant		
OW-49	1	1,1-Dichloroethane	7	7	0	100.00%	0.63	1.3	0.8914	0.86	0.2188	24.55%	Normal	Not Significant		
		1,1-Dichloroethene	7	7	0	100.00%	0.49	0.99	0.6571	0.62	0.1847	28.11%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	3.9	5.5	4.571	4.3	0.6422	14.05%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		1,2-Dichloroethene	7	7	0	100.00%	1.3	3.1	1.929	1.9	0.6184	32.06%	Normal	Not Significant		
		1,4-Dioxane	7	7	0	100.00%	1.38	2	1.614	1.52	0.25	15.49%	Lognormal	Decreasing	GW-1	GW-1
		Alkalinity, Total as CaCO3	7	7	0	100.00%	99400	125000	107900	105000	8850	8.20%	Normal	Not Significant		
		Arsenic	7	6	1	85.71%	0.36	2.89	0.9614	0.66	0.9157	95.24%	Lognormal	Not Significant		
		Barium	6	6	0	100.00%	23.92	33.72	27.48	26.85	3.66	13.32%	Normal	Not Significant		
		Cadmium	7	5	2	71.43%	0.09	0.61	0.2714	0.21	0.2008	73.97%	Normal	Not Significant		
		Calcium	7	6	1	85.71%	50700	66500	52520	54200	12030	22.91%	Normal	Not Significant		
		Chemical oxygen demand	7	6	1	85.71%	6400	26000	12360	10000	6804	55.06%	Normal	Not Significant		
		Chloride	7	7	0	100.00%	88000	150000	112700	110000	20790	18.45%	Normal	Increasing		
		cis-1,2-Dichloroethene	7	7	0	100.00%	1.3	3.1	1.929	1.9	0.6184	32.06%	Normal	Not Significant		
		Iron	7	6	1	85.71%	232	685	398.7	414	180.8	45.34%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	430.8	843.2	546.8	508.6	137.6	25.16%	Lognormal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	7	7	0	100.00%	2.5	9	6.143	6.4	2.392	38.93%	Normal	Not Significant		
		Sodium	7	6	1	85.71%	40200	52300	40620	41300	9236	22.74%	Normal	Not Significant		
		Sulfate	7	7	0	100.00%	17000	21000	18430	18000	1397	7.58%	Normal	Not Significant		
		Total dissolved solids	7	7	0	100.00%	290000	410000	360000	360000	45830	12.73%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	5.3	9	6.814	6.4	1.303	19.12%	Normal	Not Significant	GPS-CCC, MCL, GW-1	GPS-CCC, MCL, GW-1
OW-50	1	1,1-Dichloroethane	5	5	0	100.00%	0.54	0.85	0.7	0.76	0.1451	20.73%	Normal	Not Significant		
		1,2-Dichloroethane	5	5	0	100.00%	0.7	1.1	0.894	0.94	0.1734	19.40%	Normal	Not Significant		
		1,4-Dioxane	5	5	0	100.00%	0.641	0.857	0.7646	0.773	0.08154	10.66%	Normal	Not Significant	GW-1	GW-1
		Alkalinity, Total as CaCO3	5	5	0	100.00%	61400	71500	67320	67800	3990	5.93%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	3.56	21.15	11.65	9.43	8.657	74.29%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	
		Cadmium	5	5	0	100.00%	0.11	0.34	0.2	0.19	0.08485	42.43%	Normal	Not Significant		
		Chloride	5	5	0	100.00%	160000	210000	182000	180000	19240	10.57%	Normal	Increasing		
		Iron	5	5	0	100.00%	676	4790	2309	1980	1692	73.28%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	1326	2449	1739	1683	429.9	24.72%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	5	5	0	100.00%	23	25	24.4	25	0.8944	3.67%	NDD	Not Significant		
		Sulfate	5	5	0	100.00%	12000	22000	15800	16000	4147	26.25%	Normal	Not Significant		
		Total dissolved solids	5	5	0	100.00%	430000	630000	484000	440000	83850	17.32%	NDD	Not Significant		
		Trichloroethene	5	5	0	100.00%	0.2	0.63	0.352	0.27	0.1738	49.39%	Normal	Not Significant		
OW-51	1	Alkalinity, Total as CaCO3	5	5	0	100.00%	34800	72300	52100	52800	15940	30.60%	Normal	Not Significant		
		Arsenic	5	5	0	100.00%	14.78	28.57	22.98	24.29	5.614	24.43%	Normal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Chemical oxygen demand	5	5	0	100.00%	12000	39000	25600	26000	10310	40.27%	Normal	Not Significant		
		Chloride	5	5	0	100.00%	59000	81000	68600	66000	9555	13.93%	Normal	Not Significant		
		Iron	5	5	0	100.00%	3920	10200	6630	5220	2815	42.45%	Normal	Not Significant		
		Manganese	5	5	0	100.00%	566.6	1564	1002	860.8	435.9	43.50%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Total dissolved solids	5	5	0	100.00%	150000	240000	186000	180000	33620	18.07%	Normal	Not Significant		
SEN-1B	DG	Arsenic	7	7	0	100.00%	0.83	6.89	2.141	1.3	2.161	100.91%	Lognormal	Decreasing		
		Barium	6	6	0	100.00%	35.1	61.49	44.85	42.68	9.914	22.10%	Normal	Not Significant		
		Cadmium	7	6	1	85.71%	0.23	0.34	0.2414	0.25	0.07358	30.48%	Normal	Not Significant		
		Copper	6	5	1	83.33%	0.99	2.21	1.256	1.2	0.5684	45.26%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	28.1	195.6	142.7	151.5	55.6	38.95%	Normal	Not Significant		
		Pyrene	7	6	1	85.71%	0.00169	0.00987	0.004784	0.00321	0.003254	68.01%	Normal	Decreasing		
		Trichloroethene	7	7	0	100.00%	0.35	0.98	0.6243	0.54	0.2588	41.45%	Normal	Decreasing		
SEN-1D	DG	Arsenic	7	7	0	100.00%	2.08	6.17	3.627	3.39	1.379	38.03%	Normal	Not Significant		
		Barium	6	6	0	100.00%	50.79	86.28	68.97	72.065	14.27	20.69%	Normal	Not Significant		
		Bis(2-ethylhexyl)phthalate	7	6	1	85.71%	0.082	2.32	0.6379	0.386	0.8143	127.67%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	6.57	74.88	46.06	51.35	21.82	47.37%	Normal	Not Significant		
		Trichloroethene	7	6	1	85.71%	0.22	0.91	0.4629	0.3	0.2766	59.75%	Normal	Not Significant		
SEN-1S	DG	Arsenic	7	7	0	100.00%	0.16	0.87	0.5829	0.78	0.3087	52.96%	Normal	Not Significant		
		Barium	6	6	0	100.00%	86.95	124.1	106.2	103.9	12.99	12.23%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.14	0.24	0.1886	0.19	0.04059	21.53%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	39.58	158.9	85.67	56.69	48.84	57.00%	Normal	Not Significant		

Summary of Groundwater Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	AOC	Compound	N	Number of Detects	Number of Non-Detects	Percent Detects	Minimum Detection	Maximum Detection	Mean	Median	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
		Arsenic	7	7	0	100.00%	0.93	4.93	1.657	1.16	1.45	87.50%	NDD	Not Significant		
		Barium	6	6	0	100.00%	7.15	10.25	8.745	8.46	1.175	13.44%	Normal	Decreasing		
		Copper	6	5	1	83.33%	0.75	1.45	1.005	1.04	0.3422	34.05%	Normal	Not Significant		
SEN-2B	DG	Fluoranthene	7	5	2	71.43%	0.00201	0.0148	0.004916	0.0026	0.004553	92.63%	Lognormal	Decreasing		
		Manganese	7	7	0	100.00%	997.5	1895	1593	1710	291.5	18.30%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	7	7	0	100.00%	0.21	0.49	0.4071	0.42	0.09827	24.14%	Normal	Not Significant		
		Pyrene	7	6	1	85.71%	0.00172	0.0141	0.005407	0.00326	0.004371	80.84%	Lognormal	Not Significant		
		Arsenic	7	7	0	100.00%	0.33	0.65	0.46	0.4	0.1337	29.06%	Normal	Not Significant		
		Barium	6	6	0	100.00%	22.54	35.75	27.32	24.735	5.747	21.04%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.26	0.4	0.3414	0.34	0.0467	13.68%	Normal	Not Significant		
SEN-2D	DG	Manganese	7	7	0	100.00%	1538	2859	2303	2415	492.2	21.37%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	7	6	1	85.71%	0.24	0.45	0.38	0.37	0.08622	22.69%	Normal	Not Significant		
		Pyrene	7	6	1	85.71%	0.00258	0.00542	0.004089	0.00424	0.001006	24.60%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	0.22	1.46	0.5071	0.24	0.4701	92.70%	NDD	Not Significant		
		Barium	6	6	0	100.00%	40.13	83.12	54.52	49.345	16.05	29.44%	Normal	Not Significant		
SEN-2S	DG	Cadmium	7	7	0	100.00%	0.16	0.35	0.2214	0.2	0.06309	28.49%	Normal	Not Significant		
		Copper	6	5	1	83.33%	0.8	2.39	1.287	1.145	0.6813	52.95%	Normal	Not Significant		
		Manganese	7	7	0	100.00%	358.6	1323	813.4	879.3	356	43.77%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		1,1-Dichloroethane	7	7	0	100.00%	0.59	0.75	0.6914	0.71	0.05429	7.85%	Normal	Not Significant		
		1,2-Dichloroethane	7	7	0	100.00%	1	1.3	1.129	1.2	0.1254	11.11%	NDD	Not Significant		
		Arsenic	7	7	0	100.00%	5.41	13.93	11.47	12.66	2.892	25.20%	NDD	Increasing	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
SEN-3B	DG	Barium	6	6	0	100.00%	23.84	30.77	27.34	27.255	2.65	9.69%	Normal	Not Significant		
		Chrysene	7	5	2	71.43%	0.000982	0.00896	0.003797	0.00378	0.002823	74.35%	Normal	Increasing		
		Fluoranthene	7	6	1	85.71%	0.00328	0.0181	0.006781	0.00433	0.005372	79.21%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	419.2	506.5	474.7	483.9	30.76	6.48%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Pyrene	7	5	2	71.43%	0.00371	0.0147	0.007086	0.00495	0.004247	59.93%	Lognormal	Not Significant		
		1,1-Dichloroethane	7	7	0	100.00%	3.7	6.8	5.343	5.2	1.208	22.61%	Normal	Not Significant		
		1,1-Dichloroethene	7	7	0	100.00%	0.66	1.2	1.053	1.2	0.2082	19.78%	NDD	Decreasing		
		1,2-Dichloroethane	7	6	1	85.71%	0.18	0.24	0.2143	0.22	0.02573	12.01%	Normal	Decreasing		
		1,2-Dichloroethene	7	7	0	100.00%	2.7	4.9	3.714	3.3	0.9477	25.51%	Normal	Not Significant		
		Anthracene	7	6	1	85.71%	0.00416	0.00864	0.005289	0.00453	0.001672	31.62%	NDD	Not Significant		
		Arsenic	7	7	0	100.00%	0.61	1.05	0.8214	0.81	0.1697	20.66%	Normal	Not Significant		
		Atrazine	7	5	2	71.43%	0.16	0.358	0.2329	0.236	0.06617	28.42%	Normal	Not Significant		
		Barium	6	6	0	100.00%	65.99	75.33	69.89	68.73	3.449	4.93%	Normal	Not Significant		
		Cadmium	7	7	0	100.00%	0.1	0.18	0.1486	0.15	0.02795	18.81%	Normal	Not Significant		
SEN-3D	DG	Chlorobenzene	7	7	0	100.00%	1	1.4	1.2	1.2	0.1528	12.73%	Normal	Not Significant		
		cis-1,2-Dichloroethene	7	7	0	100.00%	2.4	4.4	3.3	2.9	0.8327	25.23%	Normal	Not Significant		
		Fluoranthene	7	5	2	71.43%	0.00208	0.00821	0.00445	0.00495	0.002037	45.78%	Normal	Decreasing		
		Manganese	7	7	0	100.00%	2500	3545	3155	3188	342.9	10.87%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	7	7	0	100.00%	0.34	0.49	0.4229	0.44	0.05251	12.42%	Normal	Not Significant		
		Pyrene	7	7	0	100.00%	0.0192	0.0306	0.02521	0.024	0.004305	17.07%	Normal	Not Significant		
		Tetrachloroethene	7	7	0	100.00%	1.4	2.5	2.057	2.2	0.4315	20.98%	Normal	Not Significant		
		trans-1,2-Dichloroethene	7	7	0	100.00%	0.19	0.62	0.42	0.44	0.1512	36.00%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	2.4	4.1	3.229	3.2	0.5736	17.77%	Normal	Not Significant		
		Vinyl chloride	7	7	0	100.00%	0.12	0.3	0.2143	0.19	0.06997	32.65%	Normal	Decreasing		
		1,1-Dichloroethane	7	7	0	100.00%	0.43	1	0.7429	0.76	0.2121	28.55%	Normal	Not Significant		
		1,2-Dichloroethene	7	7	0	100.00%	0.34	0.71	0.5014	0.47	0.1384	27.60%	Normal	Not Significant		
		Anthracene	7	7	0	100.00%	0.00605	0.0361	0.01569	0.0129	0.01034	65.94%	Normal	Not Significant		
		Arsenic	7	7	0	100.00%	21.32	105.5	46.88	41.26	27.13	57.87%	Lognormal	Not Significant	GPS-CCC, GPS-NCCC, MCL, GW-1	GPS-CCC, GPS-NCCC, MCL, GW-1
		Barium	6	6	0	100.00%	38.42	65.41	49.07	46.115	10.27	20.94%	Normal	Not Significant		
SEN-3S	DG	cis-1,2-Dichloroethene	7	7	0	100.00%	0.34	0.71	0.5014	0.47	0.1384	27.60%	Normal	Not Significant		
		Fluorene	7	5	2	71.43%	0.00212	0.0127	0.005154	0.0049	0.003528	68.45%	Lognormal	Not Significant		
		Manganese	7	7	0	100.00%	1610	3198	2575	2769	609.6	23.67%	Normal	Not Significant	GPS-NCCC	GPS-NCCC
		Methyl tert-butyl ether	7	7	0	100.00%	0.34	1.2	0.59	0.4	0.3185	53.99%	Normal	Not Significant		
		Pyrene	7	7	0	100.00%	0.0199	0.0339	0.02537	0.0252	0.00506	19.94%	Normal	Not Significant		
		Tetrachloroethene	7	6	1	85.71%	0.29	0.61	0.4443	0.5	0.1497	33.68%	Normal	Not Significant		
		Trichloroethene	7	7	0	100.00%	0.33	0.69	0.4414	0.43	0.1231	27.88%	Normal	Not Significant		

Notes
Data file input: Action Level Exceedance II with Parameters GW.xlsx
Data date range: 2016-01-21 to 2022-10-28
Non-detects were substituted with a value of half the reporting limit for calculations
N: number of data points
Num ND: number of non-detected data points
Min RL: The minimum reporting limit value
Max RL: The maximum reporting limit value
SD: Standard Deviation
CV: Coefficient of Variation (standard deviation divided by the mean)
Normal: the data fit a normal distribution
Lognormal: the data fit a lognormal distribution
NDD: No discernible distribution
GammaHW or GammaWH: the data fit one of the particular gamma distributions
All exceedances list the action levels exceeded by any sample
Recent exceedances list the aciton levels exceed by the most recent sample

Table 23
Summary of Surface Water Mann-Kendall Trend Data

Iron Horse Park
Billerica, Massachusetts

Sample ID	Compound	Units	N	Number of Detects	Number of NDs	Percent Detects	Minimum RL	Maximum RL	Minimum Detection	Median	Mean	Maximum Detection	Standard Deviation	Coefficient of Variation	Distribution	Trend	All Exceedances	Recent Exceedances
SW-A1	Alkalinity, Total as CaCO3	ug/L	6	6	0	100.00%			30200	43150	42880	51000	7646	17.83%	Normal	Not Significant		
	Arsenic	ug/L	5	5	0	100.00%			1.59	2.06	2.27	3.03	0.5601	24.68%	Normal	Not Significant		
	Calcium	ug/L	6	5	1	83.33%	22100	22100	15800	19350	18280	22100	4232	23.16%	Normal	Not Significant		
	Chemical oxygen demand	ug/L	6	5	1	83.33%	20000	20000	20000	20500	20000	26000	5404	27.02%	Normal	Not Significant		
	Chloride	ug/L	6	6	0	100.00%			71000	83500	81330	88000	7257	8.92%	Normal	Not Significant		
	Hardness as CaCO3	ug/L	5	5	0	100.00%			49730	62880	62000	70470	7607	12.27%	Normal	Not Significant		
	Iron	ug/L	6	6	0	100.00%			1340	2105	2343	4430	1097	46.82%	Normal	Not Significant	FCALC	FCALC
	Lead	ug/L	5	5	0	100.00%			0.53	1.1	1.572	3.5	1.164	74.07%	Normal	Not Significant		
	Manganese	ug/L	6	6	0	100.00%			335.2	498.9	647.5	1116	322.6	49.82%	Normal	Not Significant	HHCCO	HHCCO
	Nitrate as N	ug/L	6	6	0	100.00%			24	71	106.2	226	81.59	76.85%	Normal	Not Significant	FAALC	FAALC
	Sodium	ug/L	6	5	1	83.33%	45500	45500	39800	49850	46240	62900	13670	29.55%	Normal	Not Significant		
	Sulfate	ug/L	6	6	0	100.00%			6900	10600	12330	22000	5510	44.67%	Normal	Not Significant		
	Total dissolved solids	ug/L	6	6	0	100.00%			200000	230000	230000	260000	22800	9.91%	Normal	Not Significant	HHCCWO	
SW-A2	Alkalinity, Total as CaCO3	ug/L	7	7	0	100.00%			25600	37100	37040	49500	7828	21.13%	Normal	Not Significant		
	Arsenic	ug/L	6	6	0	100.00%			0.87	1.25	4.315	19.79	7.59	175.89%	NDD	Not Significant		
	Calcium	ug/L	7	6	1	85.71%	23400	23400	20000	22600	22290	28600	5640	25.31%	Normal	Not Significant		
	Chemical oxygen demand	ug/L	7	7	0	100.00%			11000	22000	24290	39000	10400	42.84%	Normal	Not Significant		
	Chloride	ug/L	7	7	0	100.00%			200000	250000	254300	330000	41980	16.51%	Normal	Decreasing		
	Copper	ug/L	5	5	0	100.00%			1.34	2.1	3.754	11.41	4.302	114.59%	Lognormal	Not Significant		
	Hardness as CaCO3	ug/L	5	5	0	100.00%			65550	80680	78580	90360	10880	13.84%	Normal	Not Significant		
	Iron	ug/L	7	7	0	100.00%			719	1700	2581	9230	2998	116.12%	Lognormal	Not Significant	FCALC	FCALC
	Lead	ug/L	6	6	0	100.00%			0.67	1.74	5.902	27.86	10.79	182.84%	Lognormal	Not Significant		
	Manganese	ug/L	7	7	0	100.00%			191.7	849.4	792.1	1296	370.6	46.79%	Normal	Not Significant	HHCCO	HHCCO
	Nitrate as N	ug/L	7	7	0	100.00%			56	477	471.4	755	224.2	47.55%	Normal	Not Significant	FAALC	FAALC
	Sodium	ug/L	7	7	0	100.00%			120000	150000	154700	184000	22430	14.49%	Normal	Not Significant		
	Sulfate	ug/L	7	7	0	100.00%			7200	18000	15890	19000	4230	26.63%	NDD	Not Significant		
	Total dissolved solids	ug/L	7	7	0	100.00%			420000	510000	498600	570000	52100	10.45%	Normal	Not Significant	HHCCWO	HHCCWO
SW-A3	Alkalinity, Total as CaCO3	ug/L	8	8	0	100.00%			21500	28100	34940	92000	23210	66.44%	NDD	Not Significant		
	Arsenic	ug/L	7	7	0	100.00%			0.38	0.91	0.8614	1.4	0.3935	45.68%	Normal	Not Significant		
	Cadmium	ug/L	7	6	1	85.71%	0.2	0.2	0.09	0.1	0.1229	0.21	0.04152	33.79%	Lognormal	Not Significant		
	Calcium	ug/L	8	7	1	87.50%	26400	26400	24000	26400	31460	71600	17360	55.16%	Lognormal	Decreasing		
	Chemical oxygen demand	ug/L	8	7	1	87.50%	20000	20000	20000	28000	28500	46000	11660	40.92%	Normal	Not Significant		
	Chloride	ug/L	8	8	0	100.00%			270000	305000	297500	320000	18320	6.16%	Normal	Not Significant		
	Copper	ug/L	6	5	1	83.33%	2.24	2.24	1.6	1.88	4.193	14.37	5.109	121.83%	Lognormal	Not Significant		
	Hardness as CaCO3	ug/L	6	6	0	100.00%			80120	87355	91700	116500	13210	14.40%	Normal	Decreasing		
	Iron	ug/L	8	8	0	100.00%			398	1027.5	1245	3220	939.4	75.44%	Normal	Not Significant	FCALC	FCALC
	Lead	ug/L	7	7	0	100.00%			1.31	1.77	3.009	6.88	2.248	74.72%	Lognormal	Not Significant		
	Manganese	ug/L	8	8	0	100.00%			240.8	431.95	439.5	667.4	168.7	38.39%	Normal	Not Significant	HHCCO	HHCCO
	Nitrate as N	ug/L	8	8	0	100.00%			476	1110	1120	1930	460.2	41.07%	Normal	Not Significant	FAALC	FAALC
	Sodium	ug/L	8	8	0	100.00%			156000	181000	180500	208000	15840	8.77%	Normal	Not Significant		
	Sulfate	ug/L	8	8	0	100.00%			11000	19500	21500	40000	8332	38.76%	Lognormal	Not Significant		
	Total dissolved solids	ug/L	8	8	0	100.00%			540000	580000	588800	670000	45810	7.78%	Normal	Not Significant	HHCCWO	HHCCWO
	Zinc	ug/L	6	5	1	83.33%	25.7	25.7	12.01	15.37	19.65	31.92	9.017	45.90%	Lognormal	Not Significant		
SW-A4	Copper	ug/L	5	5	0	100.00%			0.83	1.87	3.3	8.78	3.184	96.48%	Normal	Not Significant		
	Lead	ug/L	5	5	0	100.00%			0.64	2.46	6.05	22.66	9.32	154.05%	Lognormal	Not Significant		
SW-A5	Copper	ug/L	5	5	0	100.00%			1.11	2.02	1.86	2.44	0.5087	27.35%	Normal	Not Significant		
	Lead	ug/L	5	5	0	100.00%			1.12	2.59	2.3	2.98	0.7619	33.13%	Normal	Not Significant		

Notes
Data file input: Action Level Exceedance II with Parameters.xls›
Data date range: 2016-01-20 to 2022-10-26
Non-detects were substituted with a value of half the reporting limit for calculations
N: number of data points
Num ND: number of non-detected data points
Min RL: The minimum reporting limit value
Max RL: The maximum reporting limit value
SD: Standard Deviation
CV: Coefficient of Variation (standard deviation divided by the mean
Normal: the data fit a normal distribution
Lognormal: the data fit a lognormal distribution
NDD: No discernible distribution
GammaHW or GammaWH: the data fit one of the particular gamma distributions
All exceedances list the action levels exceeded by any sample
Recent exceedances list the aciton levels exceed by the most recent sample

Table 24
Summary of Sediment Exceedances - September 2022

Iron Horse Park
Billerica, Massachusetts

Monitoring Well ID	Compound	Standard(s) Exceeded
SVOCs		
UB-SED-02		
UB-SED-03		
UB-SED-05A	Total PAH	ROD CUL
UB-SED-07		
UB-SED-10		
Metals		
UB-SED-01		
UB-SED-02		
UB-SED-05A	Chromium	ROD CUL
UB-SED-09		
UB-SED-10		
UB-SED-05A		
UB-SED-06		
UB-SED-09	Copper	ER-M and ROD CUL
UB-SED-10		
UB-SED-11		
UB-SED-14		
UB-SED-01		
UB-SED-05A		
UB-SED-07		
UB-SED-10	Lead	ER-M and ROD CUL
UB-SED-11		
UB-SED-14		
UB-SED-15A		
UB-SED-05A	Vanadium	ROD CUL
UB-SED-10		
UB-SED-01		
UB-SED-03		
UB-SED-05A		
UB-SED-09	Zinc	ROD CUL
UB-SED-10		
UB-SED-11		
UB-SED-14		

Notes:

ER-M is Effects Range - Medium

ER-M values taken from NOAA Screening Quick Reference Table (SQuiRTs)

ROD is Record of Decision

CUL is clean up level

ROD CULs taken from 2011 Operable Unit 4 ROD

Table 25
Summary of Sediment Data - Geochemical Parameters, Grain Size and Total Organic Carbon

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	Location ID Sample Date Sample Type ROD Clean Up Level	MC-SED-01 07-Sep-22 N	UB-SED-01 07-Sep-22 N	UB-SED-02 07-Sep-22 N	UB-SED-03 09-Sep-22 N	UB-SED-04 09-Sep-22 N	UB-SED-05A 09-Sep-22 N	UB-SED-06 08-Sep-22 N	UB-SED-07 08-Sep-22 N	UB-SED-08 08-Sep-22 N	UB-SED-09 08-Sep-22 N	UB-SED-09 08-Sep-22 FD	UB-SED-10 08-Sep-22 N	UB-SED-11 08-Sep-22 N	UB-SED-12 07-Sep-22 N	UB-SED-13 07-Sep-22 N	UB-SED-14 07-Sep-22 N	UB-SED-15A 09-Sep-22 N
Field Parameters																			
Oxidation-Reduction Potential	mV	NS	58.5	103.0	50.4	191.3	139.1	-68.6	29.3	77.1	59.6	7.8	48.2	48.2	54.8	-12.9	46.1	9.4	68.0
pH	pH units	NS	6.14	6.39	6.34	5.17	6.45	6.39	6.13	6.02	5.91	6.39	6.50	6.50	6.53	6.48	6.36	6.36	5.76
Method 2540G, Total																			
Solids, Total	%	NS	45.6	54.8	44.7	34.9	92.7	29.8	18.7	82.2	48.4	34.1	28.8	13.5	42.9	56.1	54.8	55.4	18.1
Method D6913/D7928, Total																			
Clay, Fine	%	NS	1.80	0.300	3.20	3.30	1.30	2.10	2.50	0.300	0.400	0.700	0.600	0.900	0.600	0.500	0.400	0.600	8.00
Cobbles	%	NS	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*	*< 0.100*
Fines	%	NS	27.1	7.90	90.8	28.0	12.0	31.5	18.2	4.40	9.70	8.10	7.00	12.6	6.60	7.40	5.50	10.0	66.2
Gravel	%	NS	0.700	36.6	0.200	5.80	*< 0.100*	3.80	5.40	1.10	4.50	11.4	19.5	26.1	6.80	31.6	24.8	7.40	1.10
Gravel, Coarse	%	NS	0.400	19.3	0.100	2.90	*< 0.100*	1.90	2.70	0.500	0.700	5.70	10.1	11.9	3.40	17.5	11.6	1.30	0.600
Gravel, Fine	%	NS	0.300	17.3	0.100	2.90	*< 0.100*	1.90	2.70	0.600	3.80	5.70	9.40	14.2	3.40	14.1	13.2	6.10	0.500
Sand	%	NS	72.2	55.5	9.00	66.2	88.0	64.7	76.4	94.5	85.8	80.5	73.5	61.3	86.6	61.0	69.7	82.6	32.7
Sand, Coarse	%	NS	3.00	8.50	0.800	9.80	1.90	10.7	10.2	1.60	7.00	3.90	5.80	10.7	8.90	6.90	10.4	6.80	3.60
Sand, Fine	%	NS	52.7	19.4	3.50	24.9	46.6	24.9	23.7	59.5	32.2	43.1	38.6	23.5	41.9	22.5	24.7	41.8	20.5
Sand, Medium	%	NS	16.5	27.6	4.70	31.5	39.5	29.1	42.5	33.4	46.6	33.5	29.1	27.1	35.8	31.6	34.6	34.0	8.60
Silt, Fine	%	NS	25.3	7.60	87.6	24.7	10.7	29.4	15.7	4.10	9.30	7.40	6.40	11.7	6.00	6.90	5.10	9.40	58.2
Method SW9060A, Total																			
Organic Carbon	%	NS	3.11	2.11	11.3	30.2	14.9	0.632	4.36	2.04	7.82	8.46	11.8	23.5	13.4	6.29	13.6	5.22	10.7
Organic Carbon (a), Total	%	NS	3.18	1.96	11.9	28.7	14.7	0.703	4.42	2.03	8.63	8.06	10.8	21.4	12.9	6.89	15.0	5.41	11.4
Organic Carbon (b), Total	%	NS	3.04	2.27	10.7	31.6	15.0	0.562	4.31	2.05	7.01	8.86	12.8	25.5	13.9	5.69	12.1	5.04	10.1

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
N = Normal Environmental Sample
FD = Field Duplicate Sample
NS = No Standard
ROD = Record of Decision
% = percent
mV = millivolts
All analyses performed by Alpha Analytical Westborough.
All samples were collected between 0 and 0.5 feet below ground surface.

Table 26
Summary of Sediment Analytical Data - PAHs, Metals, PCBs and Pesticides

Iron Horse Park
Billerica, Massachusetts

Analyte	Unit	Location ID Sample Date Sample Type ROD Cleanup Level	MC-SED-01 07-Sep-22 N	UB-SED-01 07-Sep-22 N	UB-SED-02 07-Sep-22 N	UB-SED-03 09-Sep-22 N	UB-SED-04 09-Sep-22 N	UB-SED-05A 09-Sep-22 N	UB-SED-06 08-Sep-22 N	UB-SED-07 08-Sep-22 N	UB-SED-08 08-Sep-22 N	UB-SED-09 08-Sep-22 N	UB-SED-09 08-Sep-22 FD	UB-SED-10 08-Sep-22 N	UB-SED-11 08-Sep-22 N	UB-SED-12 07-Sep-22 N	UB-SED-13 07-Sep-22 N	UB-SED-14 07-Sep-22 N	UB-SED-15A 09-Sep-22 N
Method 8081B																			
4,4'-DDD	µg/kg	16	9.24	3.50	3.31 J	0.914 J	*< 0.070*	4.40 J	10.4	0.280	2.78	2.50 J	4.13	5.68 J	3.22 J	4.60	2.39 J	0.453	4.52 J
Method 8082A																			
Aroclor 1016	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1221	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1232	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1242	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1248	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1254	µg/kg	NS	25.6 J	43.6	46.8	*< 7.06*	*< 2.66*	27.4	73.3	11.6	23.7	37.7	42.6	69.1	16.3	16.8	12.3	*< 4.46*	67.0 J
Aroclor 1260	µg/kg	NS	9.12	59.8	33.2	8.15	2.37 J	14.4	105 J	6.14	14.9	29.1	31.4 J	57.8 J	14.6	21.2	6.60	5.62 J	34.5 J
Aroclor 1262	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
Aroclor 1268	µg/kg	NS	*< 5.32*	*< 4.55*	*< 5.47*	*< 7.06*	*< 2.66*	*< 8.18*	*< 13.1*	*< 2.97*	*< 5.08*	*< 7.18*	*< 8.61*	*< 18.3*	*< 5.77*	*< 4.38*	*< 4.45*	*< 4.46*	*< 13.6*
PCBs, Total	µg/kg	1,000	34.7	103	80.0	8.15	2.37 J	41.8	178	17.7	38.6	66.8	74.0	127	30.9	38.0	18.9	5.62	102
Method 8270D-SIM																			
2-Methylnaphthalene	µg/kg	NS	*< 42.6*	*< 68.1*	*< 445*	211	21.7	740	*< 136*	*< 23.1*	*< 42.2*	*< 57.5*	*< 114*	990	208	*< 55.3*	*< 34.3*	*< 53.8*	25.7
Acenaphthene	µg/kg	NS	*< 42.6*	27.6 J	*< 445*	113	10.3	72.5	118	*< 23.1*	19.0 J	25.4 J	54.2 J	876	89.3	22.9 J	*< 34.3*	17.2 J	15.0 J
Acenaphthylene	µg/kg	NS	34.7 J	57.1 J	*< 445*	279	108	54.6	103	*< 23.1*	32.0 J	36.1 J	91.1	180	*< 42.8*	31.4 J	14.5 J	22.9 J	32.3
Anthracene	µg/kg	NS	31.8 J	65.1 J	*< 445*	298	79.7	157	266	*< 23.1*	*< 55.8*	101	209	358	92.3	79.7	23.5 J	55.7	41.8
Benzo(a)anthracene	µg/kg	NS	127	293	1,530	1,060	376	587	934	35.8	202	353	649	1,140	303	261	94.6	117	248
Benzo(a)pyrene	µg/kg	NS	153	366	1,850	864	295	604	891	40.4	205	338	592	1,020	225	262	100	98.0	332
Benzo(b)fluoranthene	µg/kg	NS	232	494	2,630	1,580	586	980	1,060	67.9	282	480	784	1,550	445	362	156	159	568
Benzo(g,h,i)perylene	µg/kg	NS	135	382	1,540	540	210	597	629	35.6	157	244	418	744	155	184	85.1	92.4	310
Benzo(k)fluoranthene	µg/kg	NS	128	421	1,350	835	365	456	1,000	33.2	174	267	581	1,030	194	210	93.5	88.7	217
Chrysene	µg/kg	NS	184	405	2,010	1,220	450	710	1,030	52.2	240	382	813	1,310	422	304	125	151	332
Dibenzo(a,h)anthracene	µg/kg	NS	26.6 J	81.2	346 J	166	62.9	143	153	*< 23.1*	35.1 J	57.6	109	203	51.0	47.3	*< 34.3*	22.2 J	63.3
Fluoranthene	µg/kg	NS	411	632	3,240	2,540	1,040	1,490	2,510	*< 88.4*	539	956	2,540	3,350	765	657	232	328	769
Fluorene	µg/kg	NS	*< 42.6*	*< 68.1*	*< 445*	134	11.4	103	396	*< 23.1*	41.0	104	240	854	62.9	39.0	*< 34.3*	60.4	41.7
Indeno(1,2,3-cd)pyrene	µg/kg	NS	132	376	1,500	645	255	574	641	33.0	162	234	431	788	168	196	86.4	84.0	321
Naphthalene	µg/kg	NS	*< 42.6*	*< 68.1*	*< 445*	*< 310*	*< 27.2*	556	*< 102*	*< 23.1*	*< 40.2*	*< 57.5*	*< 84.6*	627	*< 128*	*< 41.3*	*< 34.3*	*< 38.3*	*< 45.1*
Phenanthrene	µg/kg	NS	127	224	1,000	613	244	1,020	769	35.4	209	277	712	2,020	324	278	88.9	107	321
Pyrene	µg/kg	NS	305	510	2,820	1,780	740	1,070	2,010	72.4	423	741	1,710	2,500	723	511	189	326	564
Total PAHs	µg/kg	**4,834**	1,663	3,239	**19,816**	**12,878**	**4,855**	**9,914**	**12,510**	321	2,074	4,214	**8,629**	**19,540**	3,806	2,821	1,057	1,730	3,538
Method AVS, Total																			
Acid Volatile Sulfides	µmol/g	NS	0.258 J	*< 0.188 J*	*< 0.230 J*	*< 0.260 J*	*< 0.102 J*	5.47 J	0.752 J	0.655 J	0.651 J	13.6 J	30.9 J	107 J	9.56 J	0.553 J	1.51 J	0.377 J	*< 0.517 J*
Method SW6020B, Total																			
Chromium	mg/kg	**22**	10.1	**27.6**	**27.6**	7.65	9.07	**50.3**	21.7	4.54	18.2	**24.0**	**31.4**	**55.5**	14.2	10.4	11.6	12.9	10.9
Copper	mg/kg	**63**	32.9	59.6	32.8	44.3	18.0	**1,020**	**137**	7.82	47.0	**66.2**	**89.6**	**750**	**126**	39.6	51.6	**146**	28.1
Lead	mg/kg	**115**	72.1	**121**	51.9	45.3	18.8	**1,040**	**148**	18.8	54.4	101	**149**	**3,270**	**204**	72.4	101	**292**	2,000
Vanadium	mg/kg	**23**	14.4	21.4	20.8	8.24	6.64	**26.1**	16.8	4.08	15.6	23.0	**30.0**	**33.5**	12.6	11.9	11.9	12.4	15.5
Zinc	mg/kg	**128**	83.4	**170**	93.1	**174**	55.9	**370**	69.8	18.3	58.2	**198**	**256**	**356**	**182**	68.6	89.4	**164**	53.0 J
Method SW6020B - AVS/SEM																			
Cadmium	µmol/g	NS	0.006199 J	*< 0.002680 J*	0.004735 J	*< 0.003711 J*	*< 0.001451 J*	0.009082 J	0.026485 J	0.002351 J	0.001422 J	0.010291 J	0.013849 J	0.020731 J	*< 0.003258 J*	0.003801 J	0.004597 J	0.007116 J	0.015032 J
Copper	µmol/g	NS	0.147774 J	0.553897 J	1.03483 J	0.120674 J	0.073103 J	1.66449 J	1.50547 J	0.154801 J	0.089669 J	0.221492 J	0.136618 J	0.106662 J	0.144290 J	0.221904 J	0.258807 J	1.18080 J	*< 0.065210 J*
Lead	µmol/g	NS	0.305367 J	0.502124 J	0.560285 J	0.032946 J	0.038989 J	1.50026 J	1.01993 J	0.152560 J	0.062173 J	0.199770 J	0.289326 J	6.34392 J	0.307804 J	0.241297 J	0.260694 J	1.28523 J	0.149748 J
Nickel	µmol/g	NS	*< 0.053112 J*	*< 0.051316 J*	0.141342 J	0.081505 J	0.041335 J	0.160342 J	0.260235 J	*< 0.033261 J*	0.015482 J	0.130901 J	0.127435 J	0.568734 J	*< 0.062389 J*	0.060920 J	0.071902 J	0.092391 J	0.215547 J
Zinc	µmol/g	NS	1.23231 J	0.951892 J	3.23909 J	0.718385 J	0.302007 J	2.65581 J	1.03630 J	0.272593 J	0.138207 J	1.46696 J	2.24880 J	5.67064 J	1.08859 J	0.640863 J	0.702438 J	2.35399 J	0.378908 J
SEM/AVS Ratio (sum SEM divided by AV	none	NS	6.55680 J	0 J	0 J	0 J	0 J	1.09506 J	5.11759 J	0.889014 J	0.471510 J	0.149221 J	0.091134 J	0.118791 J	0.161160 J	2.11354 J	0.859893 J	13.0491 J	1.46854 J

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
J = Result is considered estimated.
NS = No Standard
N = Normal Environmental Sample
FD = Field Duplicate Sample
µg/kg = micrograms per kilogram
µmol/g = micromoles per gram
mg/kg = milligrams per kilogram
ROD = Record of Decision
ft = feet
All analyses performed by Alpha Analytical Westborough.
All samples were collected between 0 and 0.5 feet below ground surface.

Table 27
Summary of AVS/SEM Analytical Data and Bioavailability Ratios

Iron Horse Park
Billerica, Massachusetts

Sediment Sample Location ID	Laboratory Results							Calculations			
	SEM (µmoles/g)					AVS (µmoles/g)	TOC (ppm)	Σ SEM (µmoles/g)	Σ SEM - AVS[1] (µmoles/g)	f_{OC} (g/g)	Σ SEM - AVS / f_{OC}[2] (µmoles/g_{oc})
	Cadmium	Copper	Lead	Nickel	Zinc						
MC-SED-01	0.006199 J	0.147774 J	0.305367 J	*< 0.053112 J*	1.23231 J	0.258 J	31,100	1.69	1.43	0.0311	46.10
UB-SED-01	*< 0.002680 J*	0.553897 J	0.502124 J	*< 0.051316 J*	0.951892 J	*< 0.188 J*	21,150	2.01	1.82	0.0212	86.05
UB-SED-02	0.004735 J	1.03483 J	0.560285 J	0.141342 J	3.23909 J	*< 0.230 J*	113,000	4.98	4.75	0.1130	42.04
UB-SED-03	*< 0.003711 J*	0.120674 J	0.032946 J	0.081505 J	0.718385 J	*< 0.260 J*	301,500	0.95	0.69	0.3015	2.30
UB-SED-04	*< 0.001451 J*	0.073103 J	0.038989 J	0.041335 J	0.302007 J	*< 0.102 J*	148,500	0.46	0.35	0.1485	2.38
UB-SED-05A	0.009082 J	1.66449 J	1.50026 J	0.160342 J	2.65581 J	5.47 J	6,325	5.99	0.52	0.0063	82.21
UB-SED-06	0.026485 J	1.50547 J	1.01993 J	0.260235 J	1.03630 J	0.752 J	43,650	3.85	3.10	0.0437	70.94
UB-SED-07	0.002351 J	0.154801 J	0.152560 J	*< 0.033261 J*	0.272593 J	0.655 J	20,400	0.58	-0.07	0.0204	-3.56
UB-SED-08	0.001422 J	0.089669 J	0.062173 J	0.015482 J	0.138207 J	0.651 J	78,200	0.31	-0.34	0.0782	-4.40
UB-SED-09	0.010291 J	0.221492 J	0.199770 J	0.130901 J	1.46696 J	13.6 J	84,600	2.03	-11.57	0.0846	-136.77
UB-SED-10	0.020731 J	0.106662 J	6.34392 J	0.568734 J	5.67064 J	107 J	234,500	12.71	-94.29	0.2345	-402.09
UB-SED-11	*<0.003258 J*	0.14429 J	0.307804 J	*<0.062389 J*	1.08859 J	9.56 J	134,000	1.54	-8.02	0.1340	-59.85
UB-SED-12	0.003801 J	0.221904 J	0.241297 J	0.06092 J	0.640863 J	0.553 J	62,900	1.17	0.62	0.0629	9.79
UB-SED-13	0.004597 J	0.258807 J	0.260694 J	0.071902 J	0.702438 J	1.51 J	135,500	1.30	-0.21	0.1355	-1.56
UB-SED-14	0.007116 J	1.1808 J	1.28523 J	0.092391 J	2.35399 J	0.377 J	52,250	4.92	4.54	0.0523	86.94
UB-SED-15A	0.015032 J	*<0.06521 J*	0.149748 J	0.215547 J	0.378908 J	*< 0.517 J*	107,500	0.76	0.24	0.1075	2.25

Notes:

< = Compound not detected at concentrations above the laboratory reporting detection limit.
µmoles/g = micromoles per gram
µmoles/g_{oc} = micromoles per gram organic carbon
ppm = parts per million
g/g = grams per gram
f_{OC} = Fraction of organic carbon
J = Estimated value
AVS = Acid-volatile sulfides
SEM = Simultaneously Extracted Metals
TOC = Total organic carbon
Σ SEM = Summation of the concentrations of SEM

TOC in ppm calculated as: Average TOC % * 10,000
f_{oc} calculated as: TOC (ppm) / 1,000,000

Instances where AVS was non-detect, the reporting limit was used for ∑ SEM - AVS calculations.
Individual SEM metals which were non-detect were not included in ∑ SEM calculations.

1 = When the Σ SEM - AVS result is greater than 1.0, the Σ SEM exceeds acid soluble sulfide concentrations and therefore may be bioavailable. As a result, the f_{oc} of the sample is evaluated to determine if the sediment fraction of TOC is enough to act as another binder for metals which are not bound by AVS.

Samples where the Σ SEM - AVS result is greater than 1.0 are highlighted in red.

2 = For the Σ SEM - AVS/f_{oc} calculation, toxicity to benthic invertebrates is likely when the result is greater than 3,000 µmol/g_{oc}, uncertain between 130 and 3,000 µmol/g_{oc}, and not likely when less than 130 µmol/g_{oc} (2005 USEPA ESBs for the Protection of Benthic Organisms: Metals Mixtures).

Results where the Σ SEM - AVS/f_{oc} calculation indicates that toxicity is likely are highlighted red, uncertain is highlighted yellow and not likely is highlighted green.

Table 28
Summary of Unnamed Stream Sediment Profiles

Iron Horse Park
Billerica, Massachusetts

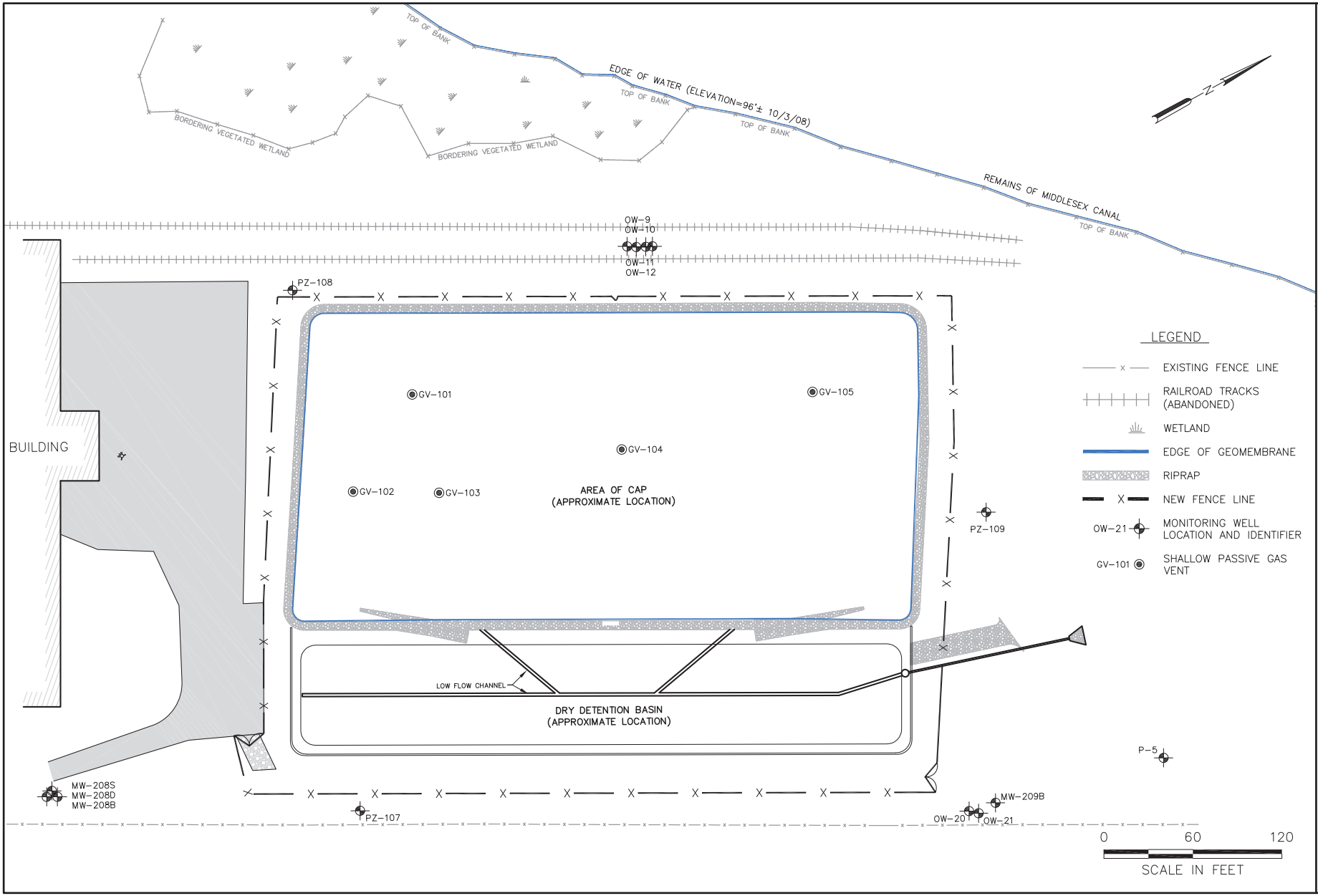
	2017 Sediment Thickness Monitoring:				2021 Sediment Thickness Monitoring:				2022 Sediment Thickness Monitoring:			
Location ID	**Distance from Bank (feet)**	**Water Column Depth (feet)**	**Sediment Thickness (feet)**	**Total Stream Width (feet)**	**Distance from Bank (feet)**	**Water Column Depth (feet)**	**Sediment Thickness (feet)**	**Total Stream Width (feet)**	**Distance from Bank (feet)**	**Water Column Depth (feet)**	**Sediment Thickness (feet)**	**Total Stream Width (feet)**
MC-SED-01					2.0	1.83	0.68	39.8	2.0	0.19	1.00	42
									4.0	0.50	1.04	42
									8.0	2.08	0.27	42
UB-SED-01					1.0	0.43	0.83	5.6	1.0	0.42	5.50	5.6
	3.0	0.20	3.00	7.75	3.0	0.83	0.66	5.6	3.0	0.88	0.92	5.6
	4.3	0.55	1.70	7.75								
	6.8	0.45	1.30	7.75								
UB-SED-02									2.0	0.88	2.00	8.2
	2.7	0.30	2.50	7.08	2.7	0.83	2.08	7.0	3.0	0.92	1.00	8.2
	3.8	0.50	2.00	7.08	3.8	0.62	1.54	7.0				
	5.1	0.30	2.60	7.08	5.0	0.68	1.06	7.0	5.2	0.58	3.25	8.2
UB-SED-03	0.8	0.30	0.70	3.10	0.8	0.33	0.58	6.0	1.0	0.17	0.54	5.0
	2.0	0.10	0.35	3.10	2.0	0.58	0.50	6.0	2.0	0.17	0.79	5.0
UB-SED-04	1.0	*DRY*	0.80	5.80	1.0	0.25	0.12	2.0	1.0	*DRY*	*NM*	5.0
	2.6	*DRY*	0.80	5.80								
	4.7	*DRY*	0.60	5.80								
UB-SED-05	4.0	0.60	1.20	12.50	*NM*	*DRY*	*NM*	0.0				
	6.0	0.90	0.70	12.50								
	8.0	0.80	0.50	12.50								
	10.5	0.05	1.15	12.50								
UB-SED-05A									1.0	1.00	0.79	14.3
									2.0	1.33	0.96	14.3
									3.0	1.25	1.67	14.3
									4.0	1.50	1.29	14.3
UB-SED-06	1.3	0.40	1.10	*NM*	1.3	0.66	0.91	15.9	1.0	0.58	1.25	*NM*
	2.6	0.70	1.20	*NM*	2.6	0.75	1.29	15.9	2.0	0.67	1.42	*NM*
	4.5	1.10	2.40	*NM*	4.5	1.12	3.53	15.9	5.0	0.92	2.83	*NM*
									8.0	0.83	5.50	*NM*
UB-SED-07	1.6	0.60	2.30	*NM*	1.6	1.16	1.99	9.7	1.0	0.81	1.40	18.0
	2.8	1.20	2.30	*NM*	2.8	1.74	3.57	9.7	3.0	0.63	2.90	18.0
									5.0	0.65	2.27	18.0
									13.0	1.33	1.40	18.0
UB-SED-08					0.2	1.16	1.33	15.8				
	1.3	0.70	1.60	*NM*	1.3	0.91	0.33	15.8	1.0	0.35	1.83	23.0
	3.0	1.30	1.90	*NM*					3.0	1.13	3.00	23.0
									5.0	0.67	4.58	23.0
UB-SED-09									1.0	0.50	0.63	*NM*
	2.9	0.90	1.90	*NM*	2.9	1.08	0.12	27.9	3.0	0.88	1.65	*NM*
	4.4	1.20	1.50	*NM*	4.4	1.08	0.66	27.9				
	5.5	1.20	2.30	*NM*	5.5	1.95	0.44	27.9	5.0	1.25	1.96	*NM*
UB-SED-10	2.4	0.90	1.40	*NM*	2.4	1.25	0.25	13.3	2.0	0.92	0.54	15.5
	3.4	1.00	2.10	*NM*	3.4	1.04	2.57	13.3	3.0	1.54	2.29	15.5
									5.0	1.42	3.88	15.5
UB-SED-11					1.0	1.04	0.71	21.9	1.0	0.33	0.77	22.0
	2.3	0.40	2.90	*NM*	2.0	2.49	1.04	21.9	2.0	0.94	0.77	22.0
					3.0	3.15	0.62	21.9	3.0	0.98	1.65	22.0
	4.1	0.90	2.00	*NM*	4.0	3.82	5.40	21.9	4.0	1.50	1.71	22.0
	4.9	1.10	1.40	*NM*					5.0	1.50	1.23	22.0
UB-SED-12									1.0	0.58	0.17	12.2
	2.1	1.50	0.80	10.00	2.1	1.41	0.17	9.8	2.0	1.00	0.33	12.2
	3.9	1.60	0.45	10.00	3.9	1.91	0.04	9.8				
	8.0	1.40	0.60	10.00	8.0	1.83	1.10	9.8	8.0	1.33	1.33	12.2
	1.2	0.70	1.80	*NM*	1.2	0.62	0.54	5.4	1.0	1.08	0.83	10.3
UB-SED-13									2.0	1.83	1.17	10.3
	2.9	2.10	0.40	*NM*	2.9	0.77	0.35	5.4	3.0	1.50	0.58	10.3
	3.9	1.30	1.30	*NM*	3.9	0.87	0.29	5.4				
									8.3	0.96	0.79	10.3
UB-SED-14	3.0	0.80	1.90	12.60	3.0	1.83	1.43	12.9	3.0	0.83	1.02	12.0
	5.8	1.20	1.70	12.60	5.8	1.66	1.20	12.9	5.0	0.79	2.40	12.0
									9.0	0.33	1.96	12.0
	10.3	0.80	1.70	12.60	10.6	1.49	1.31	12.9				
UB-SED-15	1.3	0.40	1.90	8.30								
	2.6	0.60	2.10	8.30								
	6.0	0.60	2.10	8.30								
	8.3	0.40	2.80	8.30								
UB-SED-15A					1.3	0.75	0.17	24.9	1.0	0.50	2.00	20.8
									2.0	0.75	2.04	20.8
					2.6	0.66	2.32	24.9	3.0	0.50	2.25	20.8
									5.0	0.83	1.67	20.8
					6.0	1.08	0.66	24.9				
					8.3	0.75	0.79	24.9				
UB-SED-16	1.8	0.30	2.60	10.00								
	4.9	0.40	2.65	10.00								
	8.0	0.10	1.20	10.00								
UB-SED-16A					1.5	0.50	0.42	4.0				
					3.0	0.42	0.50	4.0				

Notes:

NM = Not Measured

DRY = Stream was dry at time of measurement

D.3 – Monitoring Results – AOC7



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COMMITMENT & INTEGRITY DRIVE RESULTS
WOODARD & CURRAN

PASSIVE GAS VENT AND MONITORING WELL LOCATIONS

DESIGNED BY: ALW
DRAWN BY: EVR
CHECKED BY:
Figure 3-1.dwg

IRON HORSE PARK SUPERFUND SITE
OPERABLE UNIT 3, AREA OF CONCERN 7
BILLERICA, MASSACHUSETTS

OPERATION AND MAINTENANCE

JOB NO: 221780
DATE: DECEMBER 2012
SCALE: AS NOTED

FIGURE 3-1

Table 4-3
Groundwater Field Chemistry Data
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, Massachusetts

Woodard & Curran

Pre- vs Post-Construction	Date	Time	DTW *(ft. bpvc)*	Temp *(˚C)*	Spec. Cond. *(mS/cm)*	DO *(mg/L)*	pH	ORP *(mV)*	Turbidity *(NTU)*
BEDROCK WELLS									
OW-9									
Pre-Construction Baseline	04/23/09	1155	4.02	12.79	4.660	0.20	5.00	-125	1.65
	07/27/09	1205	4.1	15.13	5.643	0.08	5.09	-5.6	0.52
	10/28/09	852	4.08	12.32	6.025	0.06	4.96	120.1	3.15
	01/20/10	1500	4.89	10.81	5.799	0.24	5.03	14.6	0.34
Post-Construction O&M	05/01/12	1425	4.41	11.90	6.030	0.04	5.22	99.5	0.31
	10/01/12	1255	5.90	13.25	6.396	0.12	5.36	-34.5	2.96
	04/30/13	1155	8.98	14.57	6.618	0.64[i]	5.22	45.1	8.05
	10/07/13	1045	5.04	14.70	6.573	0.17	5.32	-32.1	2.12
	04/21/14	1325	4.30	13.00	6.436	0.14	5.08	106.1	10.05
	10/06/14	1240	5.20	15.93	6.968	0.15	5.16	-43.6	4.66
	10/19/15	1445	5.52	11.59	6.470	0.28	4.94	32.7	3.61
	10/26/16	1115	4.87	14.02	6.615	0.09	5.23	78.1	3.36
	10/09/17	1420	5.55	17.63	6.091	0.19	5.17	41.6	36.8
	10/09/18	1200	5.05	15.60	6.352	0.24	4.67	70.9	7.43
	10/08/20	1230	5.76	13.94	6.794	0.11	4.99	202.5	3.62
	10/29/21	1250	4.33	12.80	9.997	0.53	4.54	194.7	1.34
	10/25/22	1215	5.05	14.20	6.972	0.15	5.13	179.6	7.03
MW-208B									
Pre-Construction Baseline	04/23/09	1240	4.95	11.32	0.392	0.35	7.79	8	0.00
	07/27/09	1635	4.97	15.73	0.391	0.14	6.52	-68.4	0.40
	10/29/09	1220	4.91	12.29	0.389	0.31	6.88	-58.2	0.00
	01/22/10	927	5.97	10.50	0.388	0.13	7.01	101.5	0.32
Post-Construction O&M	05/02/12	1245	5.51	11.90	0.412	0.11	7.02	-21.8	0.58
	10/03/12	1120	6.75	13.39	0.404	0.09	6.73	-118.6	0.30
	05/02/13	945	5.92	12.28	0.426	0.48	6.85	-11.6	0.75
	10/07/13	1345	5.79	17.54	0.391	0.11	6.70	-35.2	2.06
	04/23/14	1010	5.04	11.00	0.410	0.00	6.99	-35.4	1.39
	10/07/14	1515	5.78	14.61	0.411	3.06	6.93	13.7	0.48
	10/19/15	1320	6.14	12.45	0.416	0.47	6.88	-295.0[i]	1.48
	10/27/16	1223	4.85	13.43	0.435	0.15	7.27	-17.3	2.12
	10/10/17	1425	6.10	16.49	0.415	0.14	7.03	-27.6	1.89
	10/09/18	1335	5.22	17.00	0.418	0.27	6.80	-78.0	3.12
	10/08/20	1025	6.46	13.78	0.433	0.12	6.77	26.8	0.77
	10/29/21	1310	4.90	13.70	0.324	0.15	6.57	-68.9	1.49
	10/24/22	1235	5.16	13.90	0.399	0.15	6.86	-13.0	0.02
MW-209B									
Pre-Construction Baseline	04/20/09	1155	6.75	10.14	0.779	0.37	5.75	12	2.57
	07/28/09	1045	5.86	12.42	0.646	0.18	6.68	-41	1.38
	10/29/09	1220	5.41	11.89	0.716	0.10	6.45	-12.7	0.84
	01/21/10	1004	6.26	9.00	0.707	0.16	6.74	0.0	0.20
Post-Construction O&M	05/03/12	1235	6.22	11.10	0.710	0.00	6.74	-47.3	2.93
	10/02/12	1235	7.41	12.88	0.636	0.10	6.26	-66.4	0.53
	05/01/13	925	10.40	10.75	0.734	0.37	6.65	-70.2	2.63
	10/08/13	1250	6.26	15.08	0.610	0.10	6.31	-21.0	0.46
	04/22/14	950	5.54	10.60	0.676	0.03	6.83	-73.4	1.74
	10/07/14	955	5.95	14.70	1.318	0.25	6.80	-82.6	2.13
	10/20/15	1205	6.38	12.24	0.708	0.31	6.87	-28.6	1.45
	10/27/16	950	5.34	12.51	0.810	0.61	7.09	-0.4	3.51
	10/10/17	1010	6.75	14.85	0.774	0.11	6.83	-36.2	1.12
	10/10/18	956	5.90	16.30	0.660	0.18	6.74	-213.6	0.84
	10/09/20	950	7.02	12.58	0.813	0.09	6.57	36.1	1.12
	10/28/21	1525	5.50	13.30	1.428	0.51	6.41	27.7	2.25
	10/24/22	1235	5.58	13.20	0.893	0.40	6.83	85.4	0.02

Table 4-3
Groundwater Field Chemistry Data
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, Massachusetts

Pre- vs Post-Construction	Date	Time	DTW *(ft. bpvc)*	Temp *(˚C)*	Spec. Cond. *(mS/cm)*	DO *(mg/L)*	pH	ORP *(mV)*	Turbidity *(NTU)*
DEEP OVERBURDEN WELLS									
OW-10									
Pre-Construction Baseline	04/22/09	1345	3.65	12.00	0.622	0.26	6.04	152	0.00
	07/27/09	1540	3.71	15.18	0.606	0.09	5.23	-13.6	0.22
	10/28/09	1338	3.64	12.52	0.721	0.12	5.15	122.1	3.72
	01/20/10	1500	4.50	10.43	0.421	0.14	5.32	37.9	0.22
Post-Construction O&M	05/01/12	1155	4.01	11.70	0.643	0.10	5.44	220.9	1.03
	10/01/12	1540	5.41	13.41	1.083	0.09	5.42	-112.5	0.16
	04/30/13	1425	4.71	13.19	0.518	1.30[i]	5.24	117.8	10.09
	10/07/13	1045	4.72	14.32	0.261	0.18	5.42	158.3	0.38
	04/21/14	1150	3.89	12.60	0.675	0.17	5.34	248.5	6.30
	10/06/14	1050	4.82	14.90	0.272	0.20	5.49	103.3	0.77
	10/19/15	1610	5.15	11.53	0.832	0.30	4.90	80.1	0.52
	10/26/16	1250	4.50	12.93	0.920	0.07	5.23	84.4	1.70
	10/09/17	1305	5.12	14.67	0.956	0.08	5.09	97.8	1.95
	10/09/18	1030	4.64	14.70	0.952	0.25	5.36	63.5	1.85
	10/08/20	1110	5.45	13.39	1.172	0.15	4.92	249.6	2.75
	10/29/21	1130	3.96	12.70	1.081	0.43	4.96	137.1	0.42
	10/25/22	955	4.69	13.40	0.825	0.18	5.15	179.6	0.02
OW-20									
Pre-Construction Baseline	04/20/09	1520	5.07	9.89	0.714	0.33	6.00	44	0.83
	07/28/09	1435	4.80	12.81	0.541	0.08	6.07	24.2	0.00
	10/29/09	1105	4.47	11.36	0.523	0.18	5.82	47.3	0.13
	01/21/10	1025	5.40	9.05	0.541	0.20	6.03	44.7	0.28
Post-Construction O&M	05/03/12	955	4.87	10.90	0.658	0.40	5.91	5.6	1.07
	10/03/12	925	6.59	13.28	0.627	0.33	6.37	-13.7	2.75
	05/01/13	1030	5.58	11.74	0.554	0.44[i]	6.03	45	2.16
	10/07/13	1220	6.19	15.58	0.528	0.06	6.67	-45.2	3.89
	04/22/14	950	4.87	10.30	0.478	0.21	6.07	20.2	1.39
	10/07/14	1000	4.78	14.21	0.477	0.04	6.07	83.3	0.47
	10/20/15	1410	5.88	13.22	0.575	0.18	5.87	-221.3[i]	3.06
	10/27/16	935	5.20	11.94	0.907	0.12	5.75	132.3	3.31
	10/10/17	1015	5.97	17.83	0.673	0.21	5.84	35.4	3.04
	10/10/18	1040	5.50	16.70	0.833	0.27	5.67	26.1	1.89
	10/09/20	1050	6.35	12.78	0.955	0.08	5.84	66.2	10.15
	10/28/21	1355	4.60	13.30	1.827	0.98	5.68	131.2	2.6
	10/24/22	1050	5.49	13.20	1.118	0.20	6.13	95.2	0.02
MW-208D									
Pre-Construction Baseline	04/23/09	910	3.84	11.11	0.195	0.44	6.57	217	0.00
	07/27/09	1515	4.09	14.16	0.212	0.11	5.30	-67.6	0.61
	10/28/09	1500	4.37	12.19	0.220	0.04	5.60	133.7	2.67
	01/22/10	950	4.97	9.89	0.194	0.13	5.78	193.2	0.33
Post-Construction O&M	05/02/12	1405	4.27	12.30	0.360	0.06	5.90	197.3	0.59
	10/03/12	1125	6.11	14.32	0.391	0.23	6.26	-49.6	4.25
	05/02/13	958	5.11	12.63	0.373	1.42[i]	5.81	58.4	0.23
	10/08/13	1000	5.20	15.88	0.327	0.11	5.49	-13	0.11
	04/23/14	1125	4.38	11.30	0.377	0.25	5.87	205.2	0.71
	10/07/14	1445	5.43	16.60	0.651	0.14	5.91	155.2	0.34
	10/19/15	1155	5.33	12.95	0.509	0.35	5.84	-299.3[i]	1.07
	10/27/16	1345	4.59	14.20	0.803	0.30	6.00	91.2	0.69
	10/09/17	1120	5.41	16.08	0.662	0.09	5.85	60.4	1.93
	10/09/18	1505	4.62	17.60	0.671	0.21	5.64	50.5	3.02
	10/08/20	1115	5.72	14.71	0.566	0.10	5.75	125.9	0.62
	10/29/21	1210	4.04	13.60	0.420	0.18	5.80	22.5	1.49
	10/24/22	1135	4.87	14.20	0.503	0.04	5.91	105.5	0.02

Table 4-3
Groundwater Field Chemistry Data
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, Massachusetts

Pre- vs Post-Construction	Date	Time	DTW *(ft. bpvc)*	Temp *(˚C)*	Spec. Cond. *(mS/cm)*	DO *(mg/L)*	pH	ORP *(mV)*	Turbidity *(NTU)*
SHALLOW OVERBURDEN WELLS									
OW-11									
Pre-Construction Baseline	04/22/09	1140	3.79	12.00	0.258	0.31	6.68	24	1.04
	07/27/09	1655	3.91	14.53	0.327	0.06	6.03	-8.7	0.52
	10/28/09	1011	3.80	12.52	0.299	0.05	5.90	6.3	3.38
	01/20/10	1135	4.61	10.43	0.224	0.14	6.10	-45.5	0.61
Post-Construction O&M	05/01/12	1200	4.25	11.60	0.188	0.09	6.06	-19.6	2.68
	10/01/12	1315	6.13	13.55	0.204	0.32	5.14	40.7	1.72
	04/30/13	1405	4.88	13.23	0.235	0.38	5.91	-11.8	3.66
	10/08/13	1120	4.87	14.35	0.238	0.19	6.02	37.1	2.21
	04/21/14	1300	4.06	12.60	0.307	0.00	5.96	27.4	2.83
	10/06/14	1220	4.98	14.81	0.332	0.38	5.44	10.8	1.21
	10/19/15	1105	5.32	12.28	0.316	0.36	5.96	12.9	20.4
	10/26/16	1125	4.65	13.86	0.434	0.09	6.02	1129 [i]	2.82
	10/09/17	1425	5.24	14.60	0.379	0.08	6.05	-44.7	3.97
	10/09/18	1126	4.77	14.60	0.384	0.57	6.26	-260.2	5.02
	10/08/20	1350	5.61	13.61	0.550	0.09	5.88	34.3	4.51
	10/29/21	950	4.10	12.60	0.685	0.36	5.75	95.2	2.42
	10/25/22	1125	4.80	13.70	0.583	0.12	6.08	160.8	0.02
OW-12									
Pre-Construction Baseline	04/22/09	1040	5.05	10.68	0.373	0.30	7.32	-188	4.04
	07/28/09	845	6.10	13.97	0.379	0.04	7.19	-177.2	1.11
	10/28/09	1136	5.54	12.91	0.413	0.03	7.00	-136.4	3.91
	01/20/10	1130	5.70	8.71	0.370	0.08	7.14	-264.9	2.84
Post-Construction O&M	05/02/12	1055	6.44	10.59	0.642	0.37	7.08	-162.5	1.67
	10/02/12	935	8.00	14.22	0.542	0.18	6.29	-129.2	0.90
	04/30/13	1155	6.48	11.34	0.538	0.23	7.07	-113.8	8.54
	10/07/13	1215	6.19	15.58	0.528	0.06	6.67	-45.2	3.89
	04/21/14	1115	4.90	10.40	0.483	0.00	7.29	-131.9	4.35
	10/06/14	1045	4.90	17.50	0.444	0.28	6.83	-131.3	2.14
	10/19/15	1255	6.01	13.56	0.556	0.28	6.92	-97	3.02
	10/26/16	1425	4.18	13.57	0.598	0.22	6.97	-95.6	6.06
	10/09/17	13.1	5.90	17.97	0.603	0.16	6.93	-148.2	4.75
	10/09/18	1331	5.82	16.00	0.516	0.32	7.11	-341.7	4.62
	10/08/20	1000	6.64	13.82	0.420	0.13	6.73	-93.8	2.01
	10/24/22	1410	3.94	14.10	0.458	0.17	7.01	-98.5	2.65
OW-21									
Pre-Construction Baseline	04/20/09	1145	4.71	6.42	0.052	0.79	5.70	7	4.09
	07/28/09	1200	4.39	14.21	0.079	0.13	5.94	-86.3	1.97
	10/29/09	930	4.11	13.23	0.125	0.11	5.46	42.8	1.79
	01/21/10	1145	5.00	7.48	0.080	0.12	5.70	-36.7	0.77
Post-Construction O&M	05/03/12	1030	4.47	9.30	0.154	0.03	6.13	182	1.09
	10/02/12	1335	6.42	16.89	0.138	0.35	4.53	53.3	0.91
	05/01/13	935	5.25	8.93	NM	4.47 [i]	4.96	25.6	2.42
	10/08/13	1130	5.29	17.41	0.086	0.10	4.93	-9.7	0.76
	04/22/14	1125	4.55	9.10	0.065	6.47	6.07	244.8	8.02
	10/07/14	1105	5.51	15.82	0.136	0.02	5.66	82.2	0.61
	10/20/15	1210	5.56	15.22	0.154	0.24	5.93	-277.3 [i]	1.68
	10/27/16	1110	4.84	14.82	0.186	0.10	5.99	196.4	3.88
	10/10/17	1130	5.65	18.12	0.158	0.09	6.17	29.5	3.68
	10/10/18	1215	5.15	19.60	0.090	0.13	5.51	55.9	4.87

Table 4-3
Groundwater Field Chemistry Data
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, Massachusetts

Pre- vs Post-Construction	Date	Time	DTW *(ft. bpvc)*	Temp *(˚C)*	Spec. Cond. *(mS/cm)*	DO *(mg/L)*	pH	ORP *(mV)*	Turbidity *(NTU)*
MW-208S									
Pre-Construction Baseline	04/23/09	1040	4.10	10.25	0.149	0.28	6.86	9	0.00
	07/27/09	1233	4.34	15.53	0.177	0.08	5.41	-99	1.91
	10/29/09	955	4.50	13.08	0.188	0.27	5.90	-48.2	0.26
	01/22/10	1105	5.20	10.45	0.152	0.14	5.93	36.4	4.00
Post-Construction O&M	05/02/12	1410	4.63	11.48	0.276	0.33	5.86	-13.0	15.20
	10/03/12	1230	6.36	15.77	0.269	0.13	6.53	-86.5	0.39
	05/02/13	1100	5.37	12.57	0.482	0.57	5.73	6.2	2.46
	10/08/13	1000	5.56	15.47	0.283	0.16	5.96	28.2	3.90
	04/23/14	1015	4.68	10.20	0.245	0.13	6.00	3.6	12.60
	10/07/14	1305	5.71	16.40	0.658	0.17	6.04	0.9	0.47
	10/19/15	1045	5.58	13.81	0.422	0.50	5.91	-298.3[i]	2.43
	10/27/16	1345	4.83	15.53	0.362	0.08	5.89	81.2	4.10
	10/09/17	1125	5.65	17.30	0.366	0.09	5.91	-58.2	2.72
	10/09/18	1502	4.85	17.20	0.282	0.52	5.99	-303.2[i]	4.26
	10/08/20	1215	5.99	16.07	0.565	0.12	5.73	3.9	0.20
	10/29/21	1100	4.29	14.30	0.304	0.21	5.84	-74.9	2.00
	10/24/22	1030	5.13	15.00	0.355	0.16	5.93	-43.8	3.05
P-5									
Pre-Construction Baseline	04/20/09	1450	3.88	6.23	0.118	0.42	5.10	10	1.12
	07/28/09	1421	3.29	15.18	0.110	0.25	6.21	-118.1	4.20
	10/30/09	1332	3.17	11.24	0.105	0.07	5.70	51.3	4.56
	01/21/10	1144	3.85	4.86	0.115	0.10	6.11	-58.4	2.59
Post-Construction O&M	05/02/12	1050	3.22	8.80	0.105	0.11	6.22	8.1	5.73
	10/02/12	1115	5.00	14.68	0.221	0.44	5.97	-8.7	33.1
	05/01/13	1100	4.07	8.47	0.157	0.30	5.86	3.3	10.8
	10/08/13	1345	4.13	14.59	0.189	0.21	6.15	-11.2	2.96
	04/22/14	1125	3.39	7.50	0.145	0.06	6.26	2	4.61
	10/07/14	1250	4.21	13.76	0.226	0.47	5.79	22.2	5.27
	10/20/15	1040	4.39	11.60	0.216	0.72	6.37	-26.3	1.61
	10/27/16	1220	3.43	12.49	0.239	0.10	6.11	48.1	13.40
	10/10/17	1105	4.60	15.84	0.215	0.64	6.19	-33.1	10.70
	10/10/18	1336	3.84	16.20	0.123	0.24	6.18	-257[i]	5.95
	10/09/20	1035	5.14	13.19	0.212	0.46	6.12	-22.6	8.99
	10/24/22	1315	3.62	13.00	0.208	0.14	6.38	-9.4	1.6
PZ-107									
Pre-Construction Baseline	04/23/09	1340	3.10	7.97	0.459	0.27	7.05	-119	1.10
	07/28/09	909	3.61	15.84	0.590	0.17	6.77	-138.1	1.73
	10/29/09	1425	3.71	13.33	0.655	0.16	7.17	-106.5	1.24
	01/21/10	1420	4.41	6.41	0.535	0.30	7.21	-122.6	1.91
Post-Construction O&M	05/03/12	1200	3.86	9.39	0.828	0.02	7.05	-95.2	3.76
	10/03/12	925	5.32	16.49	0.668	0.09	7.14	-191.2	1.20
	05/01/13	1445	4.66	9.09	0.598	0.27	7.05	-113.2	2.81
	10/07/13	1400	4.70	17.70	0.521	0.19	7.19	-123.4	0.86
	04/22/14	1435	3.69	8.10	0.535	0.15	7.27	-127.7	6.75
	10/06/14	1445	4.75	16.44	0.579	0.10	7.18	-224.2	3.15
	10/20/15	1030	5.13	15.18	0.578	0.36	6.98	-290.6	2.02
	10/26/16	1505	3.88	14.73	0.646	0.07	7.02	-52.2	4.33
	10/10/17	1305	4.95	17.74	0.516	0.05	7.06	-154.5	1.48
	10/10/18	915	4.20	17.80	0.420	0.25	7.27	-150.3	1.08

Table 4-3
Groundwater Field Chemistry Data
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, Massachusetts

Pre- vs Post-Construction	Date	Time	DTW *(ft. bpvc)*	Temp *(˚C)*	Spec. Cond. *(mS/cm)*	DO *(mg/L)*	pH	ORP *(mV)*	Turbidity *(NTU)*
PZ-108									
Pre-Construction Baseline	04/23/09	900	2.67	7.99	0.592	0.33	6.92	-78	1.61
	07/28/09	1032	3.57	17.49	0.707	0.12	6.70	-133.8	1.36
	10/30/09	928	3.77	13.54	0.641	0.18	6.85	-102.5	5.29
	01/22/10	1052	4.31	5.96	0.641	0.12	7.07	-106.1	0.34
Post-Construction O&M	05/02/12	1225	3.70	11.39	0.548	0.31	7.13	-120.1	0.80
	10/02/12	900	5.86	18.49	0.808	0.11	7.27	-187.9	0.00
	05/01/13	1300	4.87	11.05	0.969	0.44	7.07	-116.8	3.86
	10/07/13	1225	5.07	18.89	0.371	0.59	7.23	-114.0	1.79
	04/22/14	1335	3.77	9.60	0.431	0.00	7.31	-98.6	6.22
	10/06/14	1450	5.30	17.60	0.448	0.76	6.68	-105.1	0.76
	10/19/15	1505	5.55	16.04	0.475	0.27	7.13	-275.4	1.34
	10/26/16	1355	4.36	16.22	0.487	0.08	7.11	-75.6	3.54
	10/10/17	1415	5.65	18.46	0.367	0.15	7.12	-147.0	1.07
PZ-109									
Pre-Construction Baseline	04/22/09	1345	6.26	8.88	0.976	0.41	6.79	-103	5.27
	07/28/09	1146	6.57	15.76	0.701	0.09	6.55	-144.4	--
	10/29/09	1510	5.9	13.67	0.693	0.07	6.83	-69.3	3.6
	01/21/10	1435	6.95	8.63	0.642	0.09	6.85	-155.9	2.54
Post-Construction O&M	05/02/12	915	6.33	9.70	1.270	0.06	6.85	-118.5	2.11
	10/02/12	1040	7.82	15.32	0.528	0.09	6.93	-145.3	0.81
	05/01/13	1230	7.16	10.53	0.926	0.56[i]	6.89	-55.1	9.24
	10/09/13	940	7.13	15.28	0.479	0.15	7.13	-106.6	2.66
	04/22/14	1305	6.45	10.50	0.831	0.18	6.91	-72.2	9.75
	10/07/14	1115	7.22	15.30	0.864	0.27	7.24	-116.2	1.37
	10/20/15	1350	7.51	13.60	0.674	0.30	7.29	-109.7	2.48
	10/27/16	1043	6.82	13.66	0.768	0.25	7.00	-73.9	3.39
	10/10/17	1255	7.50	15.97	0.601	0.07	7.19	-113.5	2.95
	10/10/18	1154	7.10	17.40	0.630	0.56	6.95	-290.4	4.58
	10/09/20	920	7.97	14.05	0.659	0.07	7.16	-146.5	13.8
	10/24/22	1435	7.17	14.9	0.684	0.11	6.88	-24.9	0.02

Notes:

i. Anomalous measurement is attributed to meter malfunction and is not considered representative of actual conditions.

1. Units as noted above: feet below top of pvc (ft bpvc); degrees Celcius (°C); millisiemens per centimeter (mS/cm); milligrams per liter (mg/L); millivolts (mV); nephelometric turbidity units (NTU).

2. Measurements recorded after low-flow stabilization, immediately prior to sample collection.

Table 4-4
Volatile Organic Compounds Analytical Data Summary Detections Only
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, MA

Woodard & Curran

		1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,4-Dioxane	Benzene, Propyl-	Chlorobenzene	cis-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Tetrachloroethene	Trichloroethene
	PAL	600	40	5	200	70	7	5	6.1	0.5	100	70	700	0.5	10000	5	5
	MDL	0.06	0.06	0.11	0.05	0.09	0.1	0.09	0.033	0.04	0.05	0.05	0.05	0.25	0.07	0.14	0.12
	QL	1	1	1	1	1	1	1	0.2	0.5	1	1	1	0.5	2	1	1
BEDROCK WELLS																	
OW-9	10/26/16	<1	<1	<1	<1	**4.1**	**1.7**	**2.0**	**2.5**	<0.5	**1.1**	<1	<1	<0.5	<2	**6.3**	**3.9**
	10/09/17	<1	<1	<1	<1	**5.5**	**2.1**	**1.4**	**3.6**	<0.5	**2.0**	<1	<1	<0.5	<2	**9.7**	**4.8**
	10/09/18	<1	<1	<1	<1	**7.0**	**3.7**	**1.0**	<2	<0.5	**3.1**	**1.3**	<1	<0.5	<2	**17**	**6.5**
	10/08/20	<1	<1	<1	<1	**7.6**	**5.3**	<1	**2.1 J-**	<1	**3.1**	**1.7**	<1	<1	<2	**25**	**9.1**
	10/29/21	**0.57**	<1	<1	<1	**6.9**	**4.6**	<1	**1.9**	<1	**2.7**	**2.0**	<1	<1	<2	**21**	**8.1**
	10/25/22	<1	<1	<1	<1	**7.6**	**4.5**	**1.3**	**2.2**	<1	**3.0**	**3.0**	<1	<1	<2	**22**	**8.8**
MW-208B	10/27/16	<1	<1	<1	<1	<1	<1	**1.2**	<2	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/10/17	<1	<1	<1	<1	<1	<1	<1	<2	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/09/18	<1	<1	<1	<1	<1	<1	<1	<2	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/08/20	<1	<1	<1	<1	<1	<1	<1	**0.52 J-**	<1	<1	<1	<1	<1	<2	<1	<1
	10/29/21	<1	<1	<1	<1	<1	<1	<1	**0.58**	<1	<1	<1	<1	<1	<2	<1	<1
	10/24/22	<1	<1	<1	<1	<1	<1	<1	**0.62**	<1	<1	<1	<1	<1	<2	<1	<1
MW-209B	10/27/16	<1	<1	<1	<1	**1.0**	<1	**13**	**2.3**	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/10/17	<1	<1	<1	<1	**1.1**	<1	**11**	<2	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/10/18	<1	<1	<1	<1	<1	<1	**12**	<2	<0.5	<1	<1	<1	<0.5	<2	<1 UJ	<1
	10/09/20	<1	<1	<1	<1	**1.8**	<1	**10**	**4 J-**	<1	<1	<1	<1	<1	<2	<1	<1
	10/28/21	<1	<1	<1	<1	**1.4**	<2	**9.7**	**3.7**	<1	<1	<1	<1	<1	<2	<1	<1
	10/24/22	<1	<1	<1	<1	**2.0**	<1	**10**	**4.5**	<1	<1	<1	<1	<1	<2	<1	<1
DEEP OVERBURDEN WELLS																	
MW-208D	10/27/16	<1	<1	<1	<1	**16**	**3.7**	<1	<2	<0.5	**4.0**	**2.9**	<1	<0.5	<2	**26**	**6.3**
	10/09/17	<1	<1	<1	<1	**11**	**2.3**	<1	<2	<0.5	**3.8**	**2.3**	<1	<0.5	<2	**20**	**5.4**
	10/09/18	<1	<1	<1	<1	**3.6**	<1	<1	<2	<0.5	**1.8**	**1.0**	<1	<0.5	<2	**6.6**	**2.0**
	10/08/20	<1	<1	<1	<1	<1	<1	<1	<0.2 R	<1	<1	<1	<1	<1	<2	**1.1**	<1
	10/29/21	<1	<1	<1	<1	<1	<1	<1	**0.28**	<1	<1	<1	<1	<1	<2	<1	<1
	10/24/22	<1	<1	<1	<1	**22**	**2.1**	<1	**1.5**	<1	**2**	**14**	<1	<1	<2	**7.8**	**3.9**
OW-10	10/26/16	<1	<1	<1	**8.7**	**15**	**4.5**	<1	<2	<0.5	**7.1**	**2.0**	<1	<0.5	<2	**30**	**5.4**
	10/09/17	<1	<1	<1	**6.0**	**19**	**4.8**	<1	<2	<0.5	**7.8**	**2.0**	<1	<0.5	<2	**41**	**7.2**
	10/09/18	<1	**1.6**	<1	**2.8**	**12**	**4.1**	<1	<2	<0.5	**4.3**	**1.9**	<1	<0.5	<2	**30**	**5.5**
	10/08/20	<1	<1	<1	<1	**2.9**	<1	<1	**0.45 J-**	<1	<1	<1	<1	<1	<2	**4.9**	**1.2**
	10/29/21	<1	<1	<1	<1	**2.9**	<1	<1	**0.21**	<1	<1	<1	<1	<1	<2	**3.5**	<1
	10/25/22	<1	<1	<1	<1	**4.2**	<1	<1	**0.43**	<1	<1	**1.2**	<1	<1	<2	**5.1**	**1.5**

Table 4-4
Volatile Organic Compounds Analytical Data Summary Detections Only
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, MA

		1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,4-Dioxane	Benzene, Propyl-	Chlorobenzene	cis-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Tetrachloroethene	Trichloroethene
	PAL	600	40	5	200	70	7	5	6.1	0.5	100	70	700	0.5	10000	5	5
	MDL	0.06	0.06	0.11	0.05	0.09	0.1	0.09	0.033	0.04	0.05	0.05	0.05	0.25	0.07	0.14	0.12
	QL	1	1	1	1	1	1	1	0.2	0.5	1	1	1	0.5	2	1	1
OW-20	10/07/14	<1	<1	<1	<1	**4.5**	**1.1**	<1	<2	<0.5	**5.2**	<1	<1	<0.5	<2	**11**	**1.5**
	10/19/15	<1	<1	<1	**5.6**	**16**	**6.1**	<1	<2	<0.5	**9.6**	**3.1**	<1	<0.5	<2	**36**	**5.2**
	10/27/16	<1	<1	<1	**1.6**	**13**	**3.7**	<1	<2	<0.5	**5.6**	**4.4**	<1	<0.5	<2	**21**	**5.4**
	10/10/17	<1	<1	<1	<1	**9.7**	**2.6**	<1	<2	<0.5	**3.0**	**4.5**	<1	<0.5	<2	**12**	**4.0**
	10/10/18	<1	<1	<1	<1	**13**	**3.3**	<1	<2	<0.5	**3.0**	**7.2**	<1	<0.5	<2	**16 J**	**6.0**
	10/09/20	<1	<1	<1	<1	**4.4**	**1.3**	<1	**0.51 J-**	<1	**1.2**	**2.1**	<1	<1	<2	**6.5**	**2.1**
	10/28/21	<1	<1	<1	<1	**2.6**	<1	<1	**0.29**	<1	<1	**1.1**	<1	<1	<2	**3.5**	**1.2**
	10/24/22	<1	<1	<1	<1	**3.7**	<1	<1	**0.55**	<1	<1	**1.9**	<1	<1	<2	**4.0**	**2.0**
SHALLOW OVERBURDEN WELLS																	
OW-11	10/26/16	<1	<1	<1	<1	**22**	**4.1**	<1	<2	<0.5	**11**	**2.4**	<1	<0.5	<2	**29**	**7.2**
	10/09/17	<1	<1	<1	<1	**17**	**3.3**	<1	<2	<0.5	**8.0**	**2.6**	<1	<0.5	<2	**24**	**8.5**
	10/09/18	<1	**1.0**	<1	<1	**3.3**	**1.1**	<1	<2	<0.5	**1.3**	**2.2**	<1	<0.5	<2	**5.3**	**4.2**
	10/08/20	<1	<1	<1	<1	<1	<1	<1	<0.22 R	<1	<1	<1	<1	<1	<2	<1	<1
	10/29/21	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<1	<2	<1	<1
	10/25/22	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<1	<2	<1	<1
MW-208S	10/27/16	<1	<1	<1	<1	**9.1**	**2.4**	<1	<2	**1.6**	**4.0**	**1.4**	**2.2**	**1.0**	**2.9**	**12**	**4.4**
	10/09/17	<1	<1	<1	<1	<1	<1	<1	<2	<0.5	<1	<1	<1	<0.5	<2	<1	**1.2**
	10/09/18	<1	<1	<1	<1	<1	<1	<1	<2	<0.5	<1	<1	<1	<0.5	<2	<1	<1
	10/08/20	<1	<1	<1	<1	<1	<1	<1	<0.22 R	<1	<1	<1	<1	<1	<2	<1	<1
	10/29/21	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<1	<2	<1	<1
	10/24/22	<1	<1	<1	<1	**6.4**	<1	<1	**0.33**	<1	<1	**8.6**	<1	<1	<2	<1	**1.5**

Notes:
1. PAL = Project Action Limit; MDL = Method Detection Limit; QL = Quantitation Limit
2. PAL, MDL, and QL values are from Quality Assurance Project Plan (QAPP) Table 6-5, as revised on 4/12/12
3. All results are presented in units of micrograms per liter (ug/L)
4. J-, J = Result is qualified as estimated based on data validation, biased low (J-) or bias unknown (J)
5. U, UJ = Result is qualified as not detected based on data validation; bias unknown (UJ)
6. R = Result is qualified as rejected based on data validation
7. Detected values in **bold** indicate a detection above the laboratory Quantitation Limit
8. Yellow highlighted cells indicate an exceedance of the Project Action Limit

Table 4-5
Metals Analytical Data Summary
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, MA

		Aluminum	Arsenic	Beryllium	Cadmium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Zinc
	PAL	200	10	4	5	50	300	15	5000	840	100	500
	MDL	26	0.34	0.03	0.026	0.053	26	0.12	37	0.3	0.12	5.1
	QL	50	0.4	0.4	0.5	1	50	1	150	1	5	10
BEDROCK WELLS												
OW-9	10/26/16	**1,100**	**0.75**	**3.9**	**2.4**	**400**	**450**	<1	**66,000**	**26,000**	**260**	**340**
	10/09/17	**2,100**	**1.0 J**	**2.8**	**12**	**450**	**1000**	**3.6**	**65,000**	**19,000**	**320**	**440**
	10/09/18	**1,300**	<0.4	**3.6**	**2.6 J**	**470**	**410**	<1	**67,000**	**25,000**	**290**	**300**
	10/08/20	**1,500**	<1.6	**10 J**	**6.6**	**440**	**470**	<2.5	**78,000**	**21,000**	**320**	**440**
	10/25/22	**1,900**	**2.7**	**4.2**	**23**	**300**	**810**	**6.6 J**	**65,000**	**15,000**	**200**	**370**
MW-209B	10/27/16	**100**	**4.0**	<0.4	<0.5	**1.7**	**1900**	<1	**26,000**	**1,400**	<5	<10
	10/10/17	<50	**3.1**	<2	<0.5	**1.7**	**1900**	<1	**26,000**	**1,400**	<5	<10
	10/10/18	<50	**3.5**	<0.4	<0.5	**1.9**	**2000**	<1	**27,000**	**1,400**	<5	<10
	10/09/20	<50	**3.1**	<0.4	<0.2	**1.8**	**1600**	<0.5	**31,000**	**1,600**	<5	<10
	10/24/22	<50	**3.0**	<0.4	<0.2	**1.9**	**2300**	<0.5	**29,000**	**1,500**	<5	<10
DEEP OVERBURDEN WELLS												
OW-10	10/26/16	**950**	<0.4	**0.86**	**0.6**	**23**	**160**	<1	**12,000**	**4,400**	**18**	**49**
	10/09/17	**1,000**	<0.4	**0.81**	**0.58**	**28**	**260**	<1	**13,000**	**4,500**	**22**	**42**
	10/09/18	**660**	<0.4	**0.42**	<0.5	**12**	**250**	<1	**13,000**	**4,600**	**12**	**26**
	10/08/20	**1,100**	<0.8	**0.83**	**0.61**	**19**	**220**	<0.5	**15,000**	**4,600**	**18**	**46**
	10/25/22	**310**	<0.8	<0.4	0.25	**4.5**	**130**	<0.5 UJ	**8,800**	**2,700**	<5	**13**
OW-20	10/27/16	**55**	**8.6**	<0.4	<0.5	**27**	**7800**	<1	**7,700**	**3,500**	**16**	<10
	10/10/17	<50	**6.8**	<0.4	<0.5	**25**	**4800**	<1	**6,400**	**2,500**	**14**	<10
	10/10/18	<50	**5.9**	<0.4	<0.5	**29**	**5000**	<1	**7,500**	**2,900**	**18**	<10
	10/09/20	<50	**9.3**	<0.4	<0.2	**34**	**5000**	<0.5	**10,000**	**3,500**	**21**	<10
	10/24/22	<50	**4.6**	<0.4	<0.2	**27**	**1700**	<0.5	**9,000**	**2,700**	**17**	<10
MW-208D	10/27/16	<50	**0.58**	<0.4	**0.8**	<1	<50	<1	**7,800**	**4,400**	<5	<10
	10/09/17	<50	<0.4	<0.4	<0.5	**2.0**	**62**	<1	**8,100**	**4,100**	<5	<10
	10/09/18	**73**	<0.4	<0.4	<0.5	**1.3**	**54**	**2.4**	**7,500**	**3,800**	<5	<10
	10/08/20	<50	<0.8	<0.4	**0.86**	<1	<50	<0.5	**2,400**	**1,200**	<5	<10
	10/24/22	<50	<0.8	<0.4	<0.2	<1	<50	<0.5	**4,000**	**1,100**	<5	<10

Table 4-5
Metals Analytical Data Summary
Iron Horse Park Superfund Site, AOC 7 / OU3, Billerica, MA

		Aluminum	Arsenic	Beryllium	Cadmium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Zinc
	PAL	200	10	4	5	50	300	15	5000	840	100	500
	MDL	26	0.34	0.03	0.026	0.053	26	0.12	37	0.3	0.12	5.1
	QL	50	0.4	0.4	0.5	1	50	1	150	1	5	10
SHALLOW OVERBURDEN WELLS												
OW-11	10/26/16	**60**	**47**	<0.4	<0.5	**10**	**18000**	<1	**4,500**	**2,400**	<5	<10
	10/09/17	<50	**41**	<0.4	**0.6**	**10**	**15000**	<1	**3,900**	**2,100**	<5	<10
	10/09/18	<50	**49**	<0.4	<0.5	**7.5**	**14000**	<1	**3,300**	**1,700**	<5	<10
	10/08/20	<50	**19**	<0.4	<0.2	**3.8**	**8500**	<0.5	**2,700**	**1,600**	<5	<10
	10/25/22	<50	**15**	<0.4	<0.2	**2.9**	**3700**	<0.5 UJ	**2,100**	**1,200**	<5	<10
OW-12	10/26/16	**460**	**8.5**	<0.4	<0.5	<1	**4500**	<1	**2,000**	**390**	<5	<10
	10/09/17	**600**	**10**	<0.4	<0.5	<1	**2100**	<1	**2,400**	**240**	<5	<10
	10/09/18	**370**	**13**	<0.4	<0.5	<1	**1200**	<1	**2,700**	**210**	<5	<10
	10/08/20	**260**	**10**	<0.4	<0.2	<1	**7000**	<0.5	**2,300**	**370**	<5	<10
	10/24/22	**390**	**16**	<0.4	<0.2	<1	**1400**	<0.5	**3,900**	**200**	<5	<10
MW-208S	10/27/16	**53**	**58**	<0.4	<0.5	**2.5**	**14000**	<1	**1,600**	**870**	<5	<10
	10/09/17	<50	**51**	<0.4	<0.5	**3.1**	**17000**	<1	**2,100**	**1,000**	<5	<10
	10/09/18	**56**	**67**	<0.4	<0.5	**2.4**	**16000**	<1	**1,600**	**910**	<5	<10
	10/08/20	<50	**45**	<0.4	<0.2	**2.8**	**18000**	<0.5	**2,500**	**1,100**	<5	<10
	10/24/22	**130**	**99**	<0.4	<0.2	**1.6**	**16000**	<0.5	**1,400**	**780**	<5	<10
P-5	10/27/16	**600**	**8.7**	<0.4	<0.5	**11**	**14000**	<1	**1,900**	**5,900**	<5	<10
	10/10/17	**550**	**11**	<2	<0.5	**5.2**	**16000**	<1	**1,600**	**4,900**	<5	<10
	10/10/18	**220**	**13**	<0.4	<0.5	**8.2**	**14000**	<1	**1,600**	**5,300**	<5	<10
	10/09/20	**1900**	**14**	<0.4	<0.2	**1.7**	**19000**	**2.3**	**1,500**	**2,600**	<5	**21**
	10/24/22	**69**	**13**	<0.4	<0.2	**5.7**	**18000**	<0.5	**2,200**	**4100**	<5	<10
PZ-109	10/27/16	**89**	**32**	<0.4	<0.5	<1	**4800**	<1	**5,300**	**480**	<5	<10
	10/10/17	<50	**59**	<2	<0.5	<1	**3400**	<1	**5,100**	**210**	<5	<10
	10/10/18	<50	**15**	<0.4	<0.5	<1	**3600**	<1	**4,800**	**660**	<5	<10
	10/09/20	<50	**62**	<0.4	<0.2	<1	**5900**	<0.5	**5,100**	**250**	<5	<10
	10/24/22	<50	**4.6**	<0.4	<0.2	<1	**2900**	<0.5	**5,200**	**620**	<5	<10

Notes:
1. PAL = Project Action Limit; MDL = Method Detection Limit; QL = Quantitation Limit
2. PAL, MDL, and QL values are from Quality Assurance Project Plan (QAPP) Table 6-5, as revised on 4/12/12
3. All results are presented in units of micrograms per liter (ug/L)
4. J = Result is qualified as estimated based on data validation, bias unknown
5. U, UJ = Result is qualified as not detected based on data validation; bias unknown (UJ)
6. Detected values in **bold** indicate a detection above the laboratory QL
7. Yellow highlighted cells indicate an exceedance of the Project Action Limit

Table 3-1
Passive Gas Vent Monitoring Data
Iron Horse Park Superfund Site AOC 7, OU3, Billerica, Massachusetts

Woodard & Curran

Well ID	Date	Time	Monitoring Parameter				
			VOC ppmv	CH_4 %	O_2 %	CO_2 %	H_2S ppm
GV-101	07/27/11	10:01	0.0	0.0	20.9	0.0	0
	10/27/11	12:05	0.0	0.1	11.0	4.9	0
	10/28/11	16:52	0.0	0.0	20.9	0.0	0
	01/24/12	12:36	0.0	0.0	20.6	0.0	0
	04/18/12	8:01	0.0	0.2	20.6	0.3	1
	07/24/12	9:21	0.0	0.0	15.5	3.1	0
	11/01/12	10:26	0.0	0.0	14.9	2.4	0
	01/31/13	10:15	0.0	0.0	20.7	0.0	0
	04/30/13	9:31	0.0	0.0	19.8	0.0	0
	07/15/13	8:51	0.0	0.2	20.3	0.0	2
	10/08/13	14:32	0.0	0.0	17.5	2.3	0
	01/15/14	12:13	0.0	0.0	20.8	0.0	0
	04/21/14	15:52	0.0	0.1	17.9	0.8	0
	07/14/14	12:05	0.0	0.0	19.8	0.0	0
	10/07/14	16:29	0.0	0.0	19.7	0.0	0
	01/14/15	10:48	0.0	0.0	18.1	1.0	0
	07/09/15	13:52	0.0	0.1	20.1	0.0	0
	07/27/16	16:23	0.0	0.0	20.0	0.0	0
	07/28/17	13:05	0.1	0.0	20.7	0.0	0
	07/19/18	12:45	0.0	0.0	20.3	0.0	0
	07/25/19	12:06	0.0	0.0	19.7	0.0	0
	07/27/20	11:25	0.0	0.0	19.9	0.0	0
	07/23/21	10:40	0.0	0.0	19.9	0.0	0
	07/12/22	14:50	0.0	0.0	15.6	3.3	0
GV-102	07/27/11	10:04	0.0	0.0	17.9	0.0 / 2.9	0
	10/27/11	12:08	0.0	0.0	19.7	2.0	0
	10/28/11	16:40	0.0	0.0	20.7	0.4	0
	01/24/12	12:30	0.0	0.0	18.0	1.2	0
	04/18/12	7:57	0.0	0.0	20.7	0.3	0
	07/24/12	9:13	0.0	0.0	18.3	1.6	0
	11/01/12	10:20	0.0	0.0	18.6	1.5	0
	01/31/13	10:05	0.0	0.0	20.5	0.0	0
	04/30/13	9:39	0.0	0.0	19.1	0.6	0
	07/15/13	8:45	0.0	0.1	20.5	0.0	1
	10/08/13	14:26	0.0	0.0	19.5	0.9	0
	01/15/14	12:09	0.0	0.0	18.5	1.1	0
	04/21/14	15:28	0.0	0.0	18.3	1.1	0
	07/14/14	12:09	0.0	0.0	19.7	0.0	0
	10/07/14	16:20	0.0	0.0	19.0	0.5	0
	01/14/15	10:54	0.0	0.0	19.1	0.7	0
	07/09/15	13:46	0.0	0.1	18.0	1.6	0
	07/27/16	16:17	0.0	0.0	18.6	0.5	0
	07/28/17	13:05	0.0	0.0	20.6	0.0	0
	07/19/18	12:40	0.0	0.0	20.3	0.0	0
	07/25/19	12:00	0.0	0.0	20.0	0.0	0
	07/27/20	11:17	0.0	0.0	20.0	0.0	0
	07/23/21	10:20	0.0	0.0	19.8	0.0	0
	07/12/22	14:35	0.0	0.0	16.8	0.3	0

Table 3-1
Passive Gas Vent Monitoring Data
Iron Horse Park Superfund Site AOC 7, OU3, Billerica, Massachusetts

Woodard & Curran

Well ID	Date	Time	Monitoring Parameter				
			VOC ppmv	CH_4 %	O_2 %	CO_2 %	H_2S ppm
GV-103	07/27/11	10:07	0.0	0.0	21.0	0.0	0
	10/27/11	12:11	0.0	0.0	20.0	0.1	0
	10/28/11	16:43	0.0	0.0	20.9	0.0	0
	01/24/12	12:33	0.0	0.0	11.7	0.1	0
	04/18/12	7:59	0.0	0.0	20.6	0.3	0
	07/24/12	9:17	0.0	0.0	20.2	0.0	0
	11/01/12	10:23	0.0	0.0	16.1	2.2	0
	01/31/13	10:10	0.0	0.0	20.6	0.0	0
	04/30/13	9:35	0.0	0.0	18.6	1.4	0
	07/15/13	8:49	0.0	0.2	20.3	0.0	2
	10/08/13	14:30	0.0	0.0	20.4	0.0	0
	01/15/14	12:13	0.0	0.0	17.4	1.6	0
	04/21/14	15:31	0.0	0.0	20.5	0.0	0
	07/14/14	12:15	0.0	0.0	19.7	0.0	0
	10/07/14	16:23	0.0	0.0	18.4	1.1	0
	01/14/15	10:59	0.1	0.0	15.2	4.0	0
	07/09/15	13:49	0.0	0.1	20.2	0.0	0
	07/27/16	16:20	0.0	0.0	20.1	0.0	0
	07/28/17	13:08	0.0	0.0	20.6	0.0	0
	07/19/18	12:43	0.0	0.0	20.4	0.0	0
	07/25/19	12:03	0.0	0.0	19.8	0.0	0
	07/27/20	11:38	0.1	0.0	19.9	0.0	0
	07/23/21	10:25	0.0	0.0	20.0	0.0	0
	07/12/22	14:43	0.0	0.0	4.9/9.8	0.3	0
GV-104	07/27/11	10:09	0.0	0.0	20.9	0.0	0
	10/27/11	12:14	0.0	6.4	4.6	9.7	0
	10/28/11	16:46	0.0	5.6	3.8 / 19.3	8.5	95
	01/24/12	12:41	0.0	0.0	20.3	0.2	0
	04/18/12	8:03	0.0	0.6	10.5	6.7	0
	07/24/12	9:26	0.0	5.5	4.4	8.0	0
	11/01/12	10:28	0.3	1.6	6.7	5.9	0
	01/31/13	10:20	0.0	4.6	12.8	3.2	0
	04/30/13	9:27	0.0	0.0	17.9	1.8	0
	07/15/13	8:55	0.0	0.2	20.2	0.0	1
	10/08/13	14:34	0.0	0.0	20.2	0.2	0
	01/15/14	12:15	0.0	2.5	11.7	3.5	0
	04/21/14	15:37	0.0	1.9	15.5	2.4	0
	07/14/14	12:18	0.0	0.0	19.8	0.0	0
	10/07/14	16:35	0.0	0.0	19.5	0.2	0
	01/14/15	11:03	0.0	0.1	18.2	1.1	0
	07/09/15	13:56	0.0	0.1	20.2	0.0	0
	07/27/16	16:26	0.0	0.0	19.7	0.0	0
	07/28/17	13:00	0.0	0.0	20.8	0.0	0
	07/19/18	12:47	0.0	0.0	20.3	0.0	0
	07/25/19	12:09	0.0	0.0	19.6	0.0	0
	07/27/20	11:50	0.0	0.0	19.9	0.0	0
	07/23/21	10:30	0.0	0.0	20.0	0.0	0
	07/12/22	14:45	0.0	0.0	15.4	2.4	0

Table 3-1
Passive Gas Vent Monitoring Data
Iron Horse Park Superfund Site AOC 7, OU3, Billerica, Massachusetts

Woodard & Curran

Well ID	Date	Time	Monitoring Parameter				
			VOC ppmv	CH_4 %	O_2 %	CO_2 %	H_2S ppm
GV-105	07/27/11	10:11	0.0	0.0	21.2	0.0	0
	10/27/11	12:17	0.0	0.1	16.7	2.5	0
	10/28/11	16:49	0.0	0.0	16.2	2.8	0
	01/24/12	12:45	0.0	0.0	20.6	0.1	0
	04/18/12	8:05	0.0	0.5	17.6	2.0	0
	07/24/12	9:30	0.0	0.0	18.8	1.3	0
	11/01/12	10:30	0.0	0.2	17.0	2.9	0
	01/31/13	10:25	0.0	0.1	19.9	0.5	0
	04/30/13	9:24	0.0	0.0	18.5	1.2	0
	07/15/13	8:57	0.0	0.2	20.1	0.0	1
	10/08/13	14:38	0.0	0.0	20.5	0.6	0
	01/15/14	12:17	0.0	0.0	19.5	0.9	0
	04/21/14	15:41	0.0	0.1	17.9	0.8	0
	07/14/14	12:23	0.0	0.0	19.7	0.0	0
	10/07/14	16:43	0.0	0.0	17.1	2.1	0
	01/14/15	11:08	0.0	0.2	18.3	0.9	0
	07/09/15	13:59	0.0	0.1	20.1	0.0	0
	07/27/16	16:29	0.0	0.0	19.6	0.0	0
	07/28/17	13:12	0.0	0.0	20.8	0.0	0
	07/19/18	12:49	0.0	0.0	20.3	0.0	0
	07/25/19	12:12	0.0	0.0	19.5	0.0	0
	07/27/20	12:02	0.1	0.0	19.8	0.0	0
	07/23/21	10:35	0.0	0.0	19.9	0.0	0
	07/12/22	15:00	0.0	0.0	14.2	2.4	0
Back-ground	07/09/15	13:42	0.0	0.1	20.3	0.0	0
	07/27/16	16:08	0.0	0.0	20.4	0.0	0
	07/28/17	12:55	0.0	0.0	20.6	0.0	0
	07/19/18	12:51	0.0	0.1	20.3	0.0	0
	07/25/19	12:15	0.0	0.0	20.1	0.0	0
	07/27/20	11:07	0.0	0.0	20.0	0.0	0
	07/23/21	10:00	0.0	0.0	20.0	0.0	0
	07/12/22	15:05	0.0	0.0	19.6	0.7	0

Notes:
1. Volatile Organic Compounds (VOCs) were measured with a 10.6-eV MiniRAE 2000 photoionization detector (PID) or equivalent. The range of the MiniRAE 3000 is 0-999.9 ppmv.
2. Methane (CH_4), Oxygen (O_2), Carbon Dioxide (CO_2), and Hydrogen Sulfide (H_2S were measured with a CES-Landtec GEM 2000+ meter. Meter ranges are: H_2S (0-50 ppm ; CH_4 (0-100%); O_2 (0-25%); CO_2 (0-100%).
3. Monitoring was performed on two occasions in October 2011 for quality control purposes.
4. Cells listed with two values (e.g., "3.8 / 19.3") indicate the range reported by the meter.
5. Ambient PID reading on 1/24/12 was 0.4 ppmv.

D.4 – Site Inspection Checklists

- AOC7
- AOC2
- AOC6
- AOC5
- AOC4

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC1	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: Remedy just completed. Records not available yet.			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	X Readily available	☐ Up to date	☐ N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** X Location shown on site map X Gates secured ☐ N/A

Remarks: Fence was in good shape.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks_____
_____

2. **Land use changes on site** X N/A
Remarks_____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** X Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** X Grass ☐ Cover properly established X No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_Early in season; limited new growth observed. Evidence of past vegetation but sparse. Winter rye grass not mown and measured 2' high. Future inspections should be performed later in the calendar year to observe sustained growth after a mowing has occurred. It may be appropriate to consider overseeing to improve ground cover across the site.
   _____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A

   Remarks: The rock-covered slope near the stormwater detention basin shows evidence of settlement and/or separation from the upland cover system such that there is an uncovered earthen area between the coir log and the riprap. The exposed soil over that area is a thin veneer over the geotextile fabric that was installed as a separation layer between the riprap and underlying soil. This area needs to be repaired.
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable X N/A

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks__While there is no evidence of undercutting, the area noted above as the earthen swath immediately upgradient of the riprap slope has the potential to be undercut if repairs are not made. Note this location is not in the vicinity of any engineered channel.
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations X Applicable ☐ N/A

1. **Gas Vents** ☐ Active X Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks: All vents were inspected to make sure the ventilators were in working condition.

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks__The ERM sampling team was onsite at the time of the inspection conducting groundwater monitoring. The inspection did not include visiting these wells as it is assumed that any problems would be reported by ERM as part of their sampling event.

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____ _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed X N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning X N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks: No issues observed

G. Detention/Sedimentation Ponds ☐ Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning X N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A

1. **Siltation** X Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map X N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks See above regarding the earthen area currently exposed between the grass cover and the rip rap side slopes. _____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks _____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed as a landfill cover but there is a problem with the area immediately upgradient of the riprap slope in the vicinity of the pond as described in this report. Photo 1 shows the condition.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover system is overgrown and needs mowing in order to be able to confirm that the appropriate amount of germination has occurred. Due to time of year, it may be sufficient and there were no large areas of barren soil but the overall vegetation density appears a bit sparse and should be inspected again after the growing season. Photo 2 shows the condition.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

See above.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time (too soon).

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC2	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** X Location shown on site map X Gates secured ☐ N/A

Remarks: Fence was in good shape.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks_____
_____

2. **Land use changes on site** X N/A
Remarks_____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** X Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_Early in season; limited new growth observed. Evidence of past vegetation but sparse. Future inspections should be performed later in the calendar year to observe sustained growth. It may be appropriate to consider overseeing to improve ground cover across the site.
   _____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A

   Remarks:
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable X N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations X Applicable ☐ N/A

1. **Gas Vents** ☐ Active X Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed X N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning X N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks: No issues observed

G. Detention/Sedimentation Ponds ☐ Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning X N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A

1. **Siltation** X Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_There are mounds of what appears to be dredge spoil along the waterway embankment. It was suspected that the material was generated during the conduit reconstruction and deposited along the shoreline. The mounds were not stabilized and appear subject to erosion (though appeared stable at time of site walk).

2. **Vegetative Growth** ☐ Location shown on site map X N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks See above regarding the dredge spoil mounds deposited along waterway.

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks The conduit recently constructed beneath the access road appears to be insufficient to direct flow beneath the access road. It was reported to have been reconstructed after there was flooding but does not appear to provide sufficient flow to prevent flooding. Inspection of the pipe at the effluent shows sediment backed up into the conduit. Downstream of the conduit it appears that there is debris and potentially screen structure that may have been part of the fix washed into the waterway.

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed as a landfill cover but the conduit that directs the adjacent waterway beneath the perimeter road has become clogged and appears to be insufficient in capacity to manage the flow based on evidence of wet soils adjacent to the road.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover system is well-maintained; however, the grass cover is sparse. Due to time of year, it may be sufficient and there were no large areas of barren soil but the overall vegetation density appears sparse and should be inspected again after the growing season.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

See above.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time (too soon).

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC3	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	X Readily available	☐ Up to date	☐ N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence was secure and in good shape.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks A shipping pallet was placed in the wetlands as a bridge across a channel. ERM was unsure of its origin._____

2. **Land use changes on site** X N/A
Remarks_____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks The water level in the restored wetland between lobes A and B was unseasonably low. The possibility of an upstream beaver dam or other obstruction should be considered. _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_Early in season; limited new growth observed. Previous inspections showed significant growth on Lobe A (smaller). Lobe B showed growth as well, although the northern/western slope is not as robust._____
   _

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A

   Remarks:
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks The water levels in the restored wetlands areas and unnamed stream were unseasonably low.

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable X N/A
Remarks_____

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
X No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations X Applicable ☐ N/A

1. **Gas Vents** ☐ Active X Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
X Properly secured/locked ☐ Functioning X Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed X N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning X N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks: No issues observed

G. Detention/Sedimentation Ponds ☐ Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning X N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map X Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map X N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks _____
   _____

4. **Discharge Structure** ☐ Functioning X N/A
   Remarks _____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover system is well-maintained. Due to time of year, the overall vegetation density appears sparse and should be inspected again after the growing season.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time (too soon).

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC4	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	X O&M manual	X Readily available	X Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence only around Cooperative Reserve property.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks__ _____
_____

2. **Land use changes on site** ☐ N/A
Remarks___Lumber storage on the asphalt both inside Cooperative Reserve and outside._____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_Multiple cracks inside the Cooperative Reserve property. Repair needed in the near future._____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A

   Remarks: Asphalt in overall decent shape, although 2 areas show damage inside Cooperative Reserve. Edge outside of Cooperative Reserve broken back about a foot. Needs to be watched for future degradation._____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches ☐ Applicable X N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations ☐ Applicable X N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer ☐ Applicable X N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks:

G. Detention/Sedimentation Ponds ☐ Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable X N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The asphalt cover appears to be in decent shape except for two areas inside Cooperative Reserve. There are also some cracks that should be repaired in the near future.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time.

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC5	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence is partial only. Fenceline could not be walked as it would have required crossing rail. As shown in one photo, the fence rails have come apart and appear rusted. Since fenceline is only partial, it does not appear to be critical. Past reports have cited a similar condition.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks_____
_____

2. **Land use changes on site** ☐ N/A
Remarks___There is a significant amount of lumber stored on the asphalt. Access to several areas in this AOC were blocked due to the high inventory. _____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A

   Remarks: Asphalt substantially covered with lumber inventory and difficult to inspect. What area was open appeared in decent shape with some minor damage (surface scrapes) in a couple of areas.
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches ☐ Applicable X N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____
_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations ☐ Applicable X N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** X Functioning ☐ N/A

   Remarks: Multiple drain covers missing or damaged.

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks:

G. Detention/Sedimentation Ponds X Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   X Siltation not evident

   Remarks: The sedimentation pond is overgrown with wetland vegetation. It is unclear if siltation is contributing to the vegetation growth.

2. **Erosion** Areal extent_____ Depth_____
   X Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** X Functioning ☐ N/A
   Remarks__ The sedimentation pond that is aligned along the eastern boundary (called the "wet basin") contained water at the time of the inspection. The inspection was conducted from the east and the conduits discharge into the pond from the west. Extensive vegetation and windblown debris made it difficult to identify the outlets; however, it is believed each outlet was identified. The pond should be maintained (see above) and inspection repeated to confirm the working condition of the outlets.

4. **Dam** ☐ Functioning X N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable X N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_On the northwest side of this AOC is a small drainage ditch which directs surface water from the north side of the rail line offsite. The vegetation was difficult to inspect as the rail line could not be crossed to do a close inspection. A photo was taken which shows there appears to be vegetative growth.

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed; however, the wet basin is in need of maintenance.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The asphalt cover appears to be in decent shape. However, the wet basin is overgrown and while the outlet structures appear to be working, close inspection could not be conducted. The wet basin should be maintained (including trash removal), cut and the outlets should be inspected to confirm working condition.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time.

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC6	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	X N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence was in good shape.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map X N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks__No visual ATV tracks_____
_____

2. **Land use changes on site** ☐ N/A
Remarks___The solar facility appears to impact ATV use in a positive way by restricting previous access across the landfill._____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map X Holes not evident
   Areal extent_____ Depth_____

   Remarks:

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   X Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____There were several areas where trees had grown and appeared to be rooted into the cap. As the boundary of the cap is not clear in the field, it is difficult to tell if the trees were on or just outside the cap. Suggest that the landfill area outside the solar array be surveyed to confirm if trees require removal. The grass outside the solar array is in need of mowing._____

6. **Alternative Cover (armored rock, concrete, etc.)** X N/A

   Remarks:
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable X N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks:

D. Cover Penetrations ☐ Applicable X N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer ☐ Applicable X N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks:

G. Detention/Sedimentation Ponds ☐ Applicable X N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable X N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover system is low maintenance, but may need some tree removal in the near future.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None at this time.

Five-Year Review Site Inspection Checklist

("N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Iron Horse Park OU-3; AOC7	**Date of inspection:** April 12, 2023
Location and Region: N. Billerica, MA; Region I	**EPA ID:** MAD051787323
Agency, office, or company leading the five-year review: USEPA/AECOM	**Weather/temperature:** Clear/70ºF
Remedy Includes: (Check all that apply) X Landfill cover/containment X Access controls □ Institutional controls □ Groundwater pump and treatment □ Surface water collection and treatment □ Other_____ _____ □ Monitored natural attenuation □ Groundwater containment □ Vertical barrier walls	
Attachments: □ Inspection team roster attached □ Site map attached	
II. INTERVIEWS	
Interviews were performed by USEPA and are included separately.	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	X As-built drawings	X Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
2.	**Site-Specific Health and Safety Plan**	X Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☐ N/A
	Remarks:			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	X N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	X N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	X N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	X N/A
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	X Readily available	X Up to date	☐ N/A
	Remarks: Reviewed records prior to site visit			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	X N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	X N/A
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	X N/A
	Remarks:			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

Not Reviewed

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: None noted during review of monthly reports and during_____
_____discussion with EPA Remedial Project Manager_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence was in good shape.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks: Signs are in good shape.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No X N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No X N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No X N/A
Reports are verified by the lead agency ☐ Yes ☐ No X N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No X N/A
Violations have been reported ☐ Yes ☐ No X N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate X N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map X No vandalism evident
Remarks_While no vandalism was observed there appeared to be rutted tire tracks along the access road to the northwest of the landfill. The BNZ representative thought that the ruts were caused by the groundwater samplers. The EPA RPM indicated this condition would be communicated to them._____
_____

2. **Land use changes on site** X N/A
Remarks_____
_____

3. **Land use changes off site** X N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads X Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map X Roads adequate ☐ N/A
Remarks_See above concerning tire ruts along access road on the northwest side of the landfill._____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map X Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent_____ Depth_____

   Remarks: One groundhog burrows was observed along the drainage ditch on the northwest side of the landfill. The on site representative from Woodard and Curran said that they were looking into alternative approaches to mitigate but noted that the burrows have become less of a regular problem in the recent past.

5. **Vegetative Cover** X Grass X Cover properly established X No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks__The grass cover was very dense and well maintained._____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A

   Remarks: Asphalt cover looked good.
   _____

7. **Bulges** ☐ Location shown on site map X Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** X Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map X No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches X Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map X N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map X N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map X N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable X N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
X Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____

Remarks: While currently the dense grass vegetation does not obstruct flow, due to the vegetation regular mowing is needed in order to prevent flow obstruction. The slope on the channels is limited.

D. Cover Penetrations X Applicable ☐ N/A

1. **Gas Vents** ☐ Active X Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled X Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A

Remarks:

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance X N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed X N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable X N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer X Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning X N/A

   Remarks:

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

   Remarks: No issues observed

G. Detention/Sedimentation Ponds X Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   X Siltation not evident

   Remarks:

2. **Erosion** Areal extent_____ Depth_____
   X Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** X Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning X N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable X N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge X Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map X Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map X N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map X Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** X Functioning ☐ N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable X N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable X N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable X N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable X N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

This source control remedy appears to be operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The landfill cover and gas venting systems are well-maintained.
Monitoring continues to be performed and submitted in a timely fashion.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

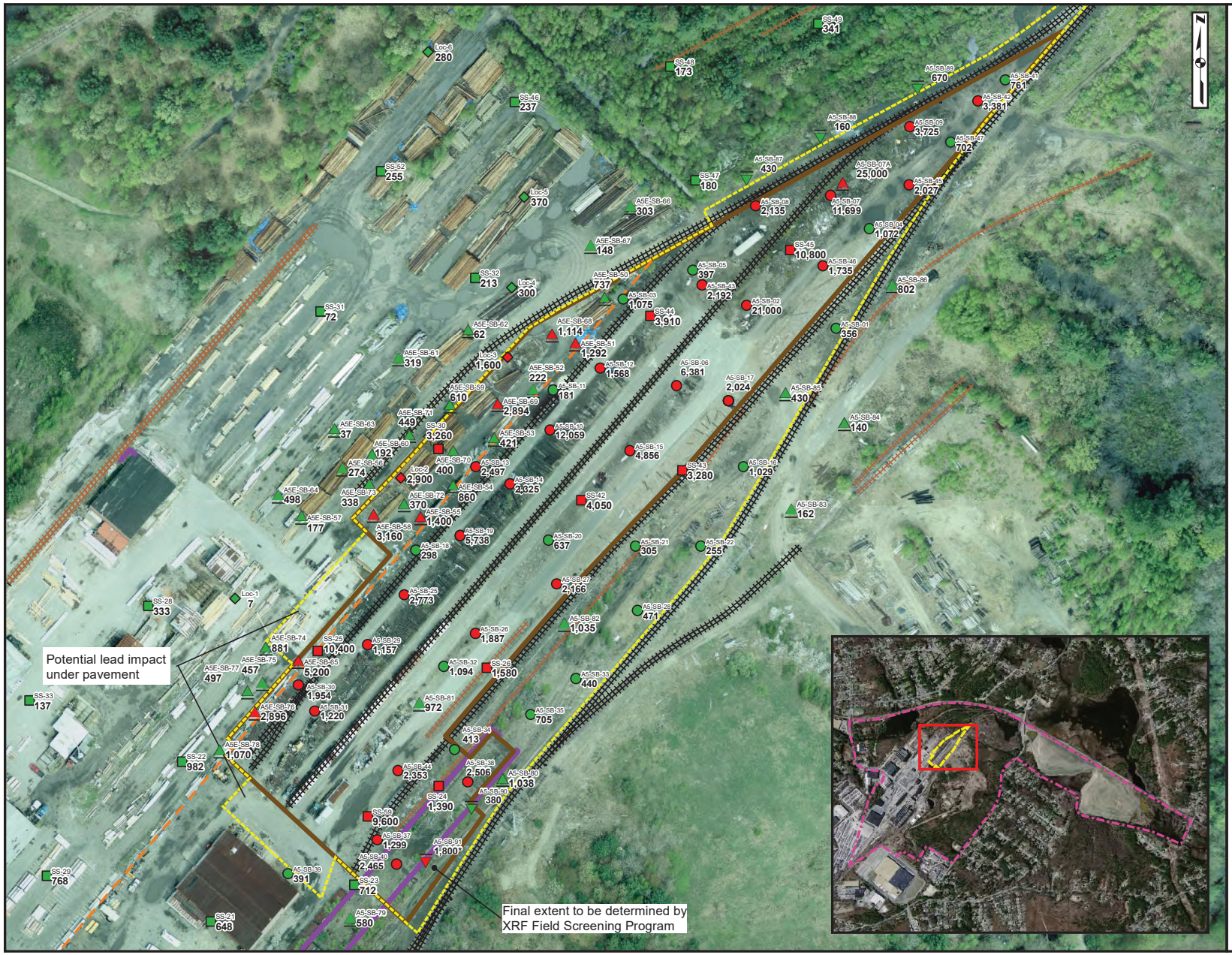
None

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

With some groundwater contaminant concentrations observed to be low, it may be possible to reduce the list of analytes in the future.

D.5 – Pre-Design Lead Results for AOC5



Legend

- Iron Horse Park Site Boundary
- AOC 5 Boundary (RD/RA, 2012)
- Approximate Fence Line
- Estimated Limit of Lead Contamination
- Railroad
- Abandoned Railroad
- Platform Area (ground elevation approximately 3 feet higher than surrounding AOC)

Soil Sampling Results

2012 Lead Concentrations (ERM) (Field/Laboratory Data Maximum Value)[2]
- < Cleanup Level[1]
- > Cleanup Level[1]

2010 Lead Concentrations (ERM) (Field/Lab Data Maximum Value)[2]
- < Cleanup Level[1]
- > Cleanup Level[1]

2009 Lead Concentrations (GZA)[3] (Laboratory Analytical Data)
- < Cleanup Level[1]
- > Cleanup Level[1]

2009 Lead Concentrations (ERM) (Field/Laboratory Data Maximum Value)[2]
- < Cleanup Level[1]
- > Cleanup Level[1]

1993 Lead Concentrations (M&E)[4] (Laboratory Analytical Data)
- < Cleanup Level[1]
- > Cleanup Level[1]

52 Lead Concentration (mg/kg)

SOURCES:
Color Ortho Imagery of site (2009) provided by WSP-Sells. Regional Color Ortho Imagery (April 2008) provided by The Office of Geographic and Environmental Informtion (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.

NOTES:
1 USEPA cleanup level (2009 revision) = 1,107 mg/kg. (Potential risk to human health)
Initial USEPA cleanup level = 1,736 mg/kg.
2 Analytical data shows the maximum value obtained at each location from either laboratory or field analysis (Niton XLt 600 Analyzer).
3 Soil Sampling Program letter to McFarland Cascade Pole & Lumber Company, dated 24 July 2009 summarizing sampling results conducted by GZA Environmental on 8 July 2009.
4 Remedial Investigation Final Report. Iron Horse Park Superfund Site, 3rd Operable Unit, North Billerica, Massachusetts, dated September 1997.

0 25 50 100 150 200 250 Feet

1:1,400

Figure 9 - AOC 5 Pre-Design Investigation Results
Iron Horse Park Superfund Site
Operable Unit 3
Billerica, Massachusetts

ERM

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