

**AREA 3 PRELIMINARY SITE CHARACTERIZATION
SUMMARY
PER- AND POLYFLUOROALKYL SUBSTANCES
(PFAS) REMEDIAL INVESTIGATION**

FORMER FORT DEVENS ARMY INSTALLATION, DEVENS, MA



FEBRUARY 2021

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**Area 3 Preliminary Site Characterization Summary
Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation
Former Fort Devens Army Installation
Devens, Massachusetts**

February 2021

CERTIFICATION:

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-18-C-0011. This document was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Scope of Work and is hereby submitted for Government approval.

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02/05/2021

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TABLE OF CONTENTS

Section	Page
1.0	INTRODUCTION1-1
1.1	INVESTIGATION APPROACH1-3
1.2	REPORT ORGANIZATION1-4
2.0	FORMER FORT DEVENS SITE LOCATION AND DESCRIPTION2-1
2.1	PHYSICAL CHARACTERISTICS.....2-1
2.2	GEOLOGY2-1
2.3	REGIONAL HYDROGEOLOGY2-2
3.0	AOCS 20 AND 21 PRELIMINARY SITE CHARACTERIZATION SUMMARY3-1
3.1	SITE DESCRIPTION.....3-1
3.2	FACILITY HISTORY AND UTILITIES.....3-1
3.3	PFAS RI FIELD INVESTIGATION.....3-2
3.3.1	Existing Wells3-2
3.3.2	DPT Vertical Profiles3-2
3.3.3	DPT Soil Borings3-2
3.3.4	Surface Water and Sediment3-2
3.3.5	Synoptic Water Level Survey3-3
3.4	PFAS NATURE AND EXTENT3-3
3.4.1	Groundwater3-3
3.4.2	Soil3-5
3.4.3	Surface Water and Sediment3-1
4.0	AOC 30 PRELIMINARY SITE CHARACTERIZATION SUMMARY4-1
4.1	SITE DESCRIPTION.....4-1
4.2	FACILITY HISTORY AND UTILITIES.....4-1
4.3	REMEDIAL STATUS.....4-1
4.4	PFAS RI FIELD INVESTIGATION.....4-2
4.4.1	DPT Vertical Profiles4-2
4.4.2	Soil Borings4-2
4.4.3	Piezometers.....4-2
4.4.4	Synoptic Water Level Event4-2
4.5	PFAS NATURE AND EXTENT4-2
4.5.1	Groundwater4-2
4.5.2	Soil4-4
5.0	AOC 31 FIRE TRAINING AREA PRELIMINARY SITE CHARACTERIZATION SUMMARY5-1
5.1	SITE DESCRIPTION.....5-1
5.2	SITE HISTORY AND UTILITIES.....5-1
5.3	REMEDIAL STATUS.....5-1
5.4	AOC 31 RI FIELD INVESTIGATION.....5-1
5.4.1	DPT Vertical Profiles5-2
5.4.2	Soil Borings5-2
5.4.3	Piezometers.....5-2
5.4.4	Synoptic Water Level Event5-2
5.5	PFAS NATURE AND EXTENT5-2

5.5.1	Groundwater	5-3
5.5.2	Soil	5-4
6.0	AOC 50 FORMER MOORE ARMY AIRFIELD PRELIMINARY SITE	
	CHARACTERIZATION SUMMARY.....	6-1
6.1	SITE DESCRIPTION.....	6-1
6.2	SITE HISTORY AND UTILITIES.....	6-1
6.3	REMEDIAL STATUS.....	6-2
6.4	AOC 50 PFAS RI FIELD INVESTIGATION.....	6-3
6.4.1	Existing Monitoring Wells.....	6-3
6.4.2	DPT Vertical Profiles	6-3
6.4.3	Soil Borings.....	6-3
6.4.4	Piezometers.....	6-3
6.4.5	Staff Gauge.....	6-3
6.4.6	Synoptic Water Level Event	6-4
6.4.7	Surface Water/Sediment Sampling.....	6-4
6.5	PFAS NATURE AND EXTENT	6-4
6.5.1	Groundwater	6-4
6.5.2	Soil	6-7
6.5.3	Surface Water and Sediment	6-8
7.0	BACKGROUND SURFACE WATER/SEDIMENT	7-1
7.1.1	Results7-1	
8.0	REFERENCES.....	8-1

TABLES

Table 1-1 Select PFAS criteria

Table 2-1 Bedrock Elevations

Table 2-2 Synoptic Water Level Event Airfield, August 14, 2019

Table 2-3 Synoptic Water Level Event Airfield, October 7, 2019

Table 2-4 Synoptic Water Level Event Area 3, April 27, 2020

Table 2-5 Vertical Groundwater Gradients, Water Level Gauging Events – 8/4/2019; 10/7/2019; and 4/27/2020

Table 3-1 AOCs 20 and 21 Field Activities

Table 3-2 AOC 20 Summary of PFAS Exceedances from Vertical Profile Samples

Table 3-3 AOC 20 Summary of PFAS Exceedances from Monitoring Wells

Table 3-4 AOC 21 Summary of PFAS Exceedances from Vertical Profile Samples

Table 3-5 AOC 20 Summary of PFAS Exceedances from Soil Borings

Table 3-6 AOC 21 Summary of PFAS Exceedances from Soil Borings

Table 4-1 AOC 30 Field Activities

Table 4-2 AOC 30 Summary of PFAS Exceedances from Vertical Profile Samples

Table 4-3 AOC 30 Summary of PFAS Exceedances from Soil Borings

Table 5-1 AOC 31 Field Activities

Table 5-2 AOC 31 Summary of PFAS Exceedances from Vertical Profile Samples

Table 5-3 AOC 31 Summary of PFAS Exceedances from Soil Borings

Table 6-1 AOC 50 Field Activities

Table 6-2 AOC 50 Summary of PFAS Exceedances from Vertical Profile Samples

Table 6-3 AOC 50 Summary of PFAS Exceedances from Monitoring Wells

Table 6-4 AOC 31 Summary of PFAS Exceedances from Soil Borings

Table 7-1 Background Surface Water and Sediment Field Activities

FIGURES

Figure 1-1 Devens PFAS Remedial Investigation Areas

Figure 1-2 Area 3 Field Activities

Figure 2-1 Nashua River Basin

Figure 2-2 Surface Water Bodies

Figure 2-3 USGS Overburden Geology

Figure 2-4 Bedrock Geology

Figure 2-5 Bedrock Contours

Figure 2-6 Devens Groundwater

Figure 2-7 Groundwater Elevation Contours Airfield Overburden, August 14, 2019

Figure 2-8 Groundwater Elevation Contours Airfield Overburden, October 7, 2019

Figure 2-9 Groundwater Elevation Contours Area 3, April 27, 2020

Figure 3-1 AOCs 20 and 21 1992 Aerial Imagery
Figure 3-2 AOCs 20 and 21 Historic Subsurface Features
Figure 3-3 AOCs 20 and 21 Current Subsurface Features
Figure 3-4 AOCs 20 and 21 Field Activities
Figure 3-5 AOCs 20 and 21 Groundwater Results
Figure 3-6 AOCs 20 and 21 Cross Section Locations
Figure 3-7 AOCs 20 and 21 Cross Section A-A'
Figure 3-8 AOCs 20 and 21 Cross Section B-B'
Figure 3-9 AOCs 20 and 21 Soil Sampling Results
Figure 3-10 Area 3 Surface Water and Sediment Sample Results

Figure 4-1 Airfield 1992 Aerial Imagery
Figure 4-2 Airfield Historic Subsurface Features
Figure 4-3 Airfield Current Subsurface Features
Figure 4-4 AOC 30 Field Activities
Figure 4-5 AOC 30 Groundwater Results
Figure 4-6 AOC 30 Cross Section Locations
Figure 4-7 AOC 30 Cross Section A-A'
Figure 4-8 AOC 30 Cross Section B-B'
Figure 4-9 AOC 30 Soil Sampling Results

Figure 5-1 AOC 31 Field Activities
Figure 5-2 AOC 31 Groundwater Results
Figure 5-3 AOC 31 Cross Section Location Map
Figure 5-4 AOC 31 Cross Section A-A'
Figure 5-5 AOC 31 Cross Section B-B'
Figure 5-6 AOC 31 Cross Section C-C'
Figure 5-7 AOC 31 Soil Sampling Results

Figure 6-1 AOC 50 Field Activities
Figure 6-2 AOC 50 Groundwater Results
Figure 6-3 AOC 50 Cross Section Locations
Figure 6-4 AOC 50 Cross Section A-A'
Figure 6-5 AOC 50 Cross Section B-B'
Figure 6-6 AOC 50 Cross Section C-C'
Figure 6-7 AOC 50 Soil Sampling Results

Figure 7-1 Background Surface Water and Sediment Sample Results

Plate 1 Area 3 Sample Locations
Plate 2 Area 3 Groundwater Results

APPENDICES

Appendix A Monitoring Well Field Sheets
Appendix B Synoptic Water Level Event Field Sheets
Appendix C Vertical Profiling Field Sheets

- Appendix D Soil Boring Logs
- Appendix E Surface Water and Sediment Field Sheets
- Appendix F Piezometer Construction Logs
- Appendix G Grain Size Results
- Appendix H Analytical Results
 - H-1 PFAS in Groundwater at Existing Monitoring Wells
 - PFAS in Groundwater at Existing Monitoring Wells at AOC 20
 - PFAS in Groundwater at Existing Monitoring Wells at AOC 50
 - H-2 PFAS in Groundwater at Vertical Profile Locations
 - PFAS in Groundwater at Vertical Profile Locations at AOCs 20 and 21
 - PFAS in Groundwater at Vertical Profile Locations at AOC 30
 - PFAS in Groundwater at Vertical Profile Locations at AOC 31
 - PFAS in Groundwater at Vertical Profile Locations at AOC 50
 - H-3 PFAS in Soil
 - PFAS Results in Soil Samples at AOCs 20 and 21
 - PFAS Results in Soil Samples at AOC 30
 - PFAS Results in Soil Samples/Concrete at AOC 31
 - PFAS Results in Soil Samples at AOC 50
 - H-4 PFAS in Surface Water and Sediment and TOC in Sediment
 - AOC 20 Unnamed Pond Surface Water and Sediment Results
 - AOC 21 Unnamed Stream Sediment Results
 - Airfield Wetland Surface Water and Sediment Results
 - Nashua River Surface Water and Sediment Results
 - Background Surface Water and Sediment Results

ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services Inc.
AFFF	aqueous film forming foam
ANL	Argonne National Laboratory
AOC	area of contamination
Army	U.S. Army
AST	above ground storage tank
BERS-Weston	BERS-Weston Services JVA, LLC
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeters
DPT	direct push technology
DRFTA	Devens Reserve Forces Training Area
DQO	data quality objectives
DRMO	Defense Reuse and Marketing Office
E&E	Ecology and Environment, Inc.
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
FSP	field sampling plan
ft	feet
MMCL/GW-1	Massachusetts Contingency Plan Method 1 Groundwater
HLA	Harding Lawson Associates
J	estimated result
KGS	KOMAN Government Solutions, LLC
k-spar	potassium-spar
LHA	lifetime health advisory
LTM	long-term monitoring
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MCP	Massachusetts Contingency Plan
MMCL	Massachusetts Maximum Contaminant Level
MNA	monitored natural attenuation
NAVD88	North America Vertical Datum 1988
NIA	North Impact Area
ng/L	nanograms per liter
PA	preliminary assessment
PFDA	perfluorodecanoic acid
PFAS	per- and polyfluoroalkyl substances
PFHpA	perfluoroheptanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluoronanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
POL	petroleum, oil lubricants
PSCS	preliminary site characterization summary
RI	Remedial Investigation
RIBs	Rapid Infiltration Beds
ROD	Record of Decision

SA	study area
SHL	Shepley's Hill Landfill
SSSL	site-specific screening level
S&W	Stone and Webster Environmental Technology and Services
S-1	MCP Method 1 S-1 Soil Category
µg/kg	micrograms per kilogram
UST	underground storage tank

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS), on behalf of the U.S. Army Corps of Engineers (USACE) New England District, has prepared this Preliminary Site Characterization Summary (PSCS) for the Per- and Polyfluoroalkyl Substances (together, “PFAS”) Remedial Investigation (RI) at the former Fort Devens Army Installation (Devens) located in Devens, Massachusetts.

The PSCS summarizes data that have been collected at numerous Areas of Contamination (AOC) identified in the *Draft Final Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2020a) and as shown on Figure 1-1 and Figure 1-2.

The AOCs were grouped into three areas to expedite the field investigations and prioritize the investigations in areas where water supply wells were impacted. PSCSs for work performed at AOCs within Area 1 and Area 2 were previously submitted (KGS, 2020b and 2020c, respectively). This PSCS addresses Area 3, which includes the following sites:

- AOCs 20 and 21 Devens Wastewater Treatment Plant (WWTP)/Former Sludge Drying Beds, respectively;
- AOC 30 Former Drum Storage Areas;
- AOC 31 Former Fire Training Area (FTA);
- AOC 50 PCE Plume Area, Former Moore Army Airfield (MAAF), Former Devens Fire Station and Hangar Buildings; and
- Background Surface Water and Sediment.

The sampling locations were completed in accordance with the *Area 3 Field Sampling Plan (FSP) Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances* (PFAS) (KGS, 2019a). Please note that some locations agreed to in the draft final work plan were not completed prior to the demobilization from the field. These locations are shown on Figure 1-2 and on individual AOC figures, where applicable (refer to Sections 3.0 through 6.0) and the table presented below. The Army plans to incorporate these locations in the next Area 3 RI Work Plan Addendum.

Area 3 Location Not Completed Prior to Demobilization

Proposed Location	Rationale	Sampling intervals
Area of Concern 20		
20PZ-19-02	Determine if PFAS contamination is present in groundwater to the west of AOC 20 and upgradient (northwest) of PZ-5.	Water table to refusal
20VP-19-09/20PZ-19-01	Determine if PFAS contamination is present in groundwater to the west of AOC 20.	Water table to refusal
20VP-19-10	Determine if PFAS contamination is present in groundwater to the east of AOC 20.	Water table to refusal
20VP-19-11	Define extent of PFAS contamination in groundwater to the northeast of AOC 20.	Water table to refusal
Area of Concern 21		
21VP-19-03	Define extent of PFAS in groundwater to the east of AOCs 20 and 21	Water table to refusal
Area of Concern 30		
30PZ-19-06	Provide hydraulic measurement point northeast of eastern former drum storage area.	NA
30VP-19-07/30PZ-19-07	Determine if PFAS contamination is present in groundwater west of the former eastern drum storage area.	Water table to refusal
30PZ-19-08	Provide hydraulic measurement point southeast of eastern former drum storage area.	NA
Area of Concern 31		
31VP-19-02	Define extent of PFAS in groundwater within an area of known PFAS contamination downgradient of former fire training area.	Water table to refusal
31VP-19-03	Define extent of PFAS in groundwater within an area of known PFAS contamination downgradient of former fire training area.	Water table to refusal
31VP-19-09	Determine if PFAS contamination is present in groundwater to the west of former fire training area, on east side of the Nashua River.	Water table to refusal
31SB-19-08	Determine if PFAS contamination is present in soil downgradient of former fire training area.	0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table
Area of Concern 50		
50PZ-19-11	Define extent of PFAS within an area of known PFAS groundwater contamination at former airfield hanger.	Water table to refusal
50VP-19-14	Determine if PFAS are present in groundwater east of AOC 50 source area.	Water table to refusal
50VP-19-15	Determine if PFAS are below existing well G6M-04-14X.	90 ft bgs to refusal
50VP-19-16/50PZ-19-08	Determine if PFAS are present in groundwater and soil southwest of AOC50-17-08	Water table to refusal
50VP-19-17	Determine if PFAS are present in groundwater southwest of the former fire station	Water table to refusal
50VP-19-18/50PZ-19-09	Determine if PFAS are present in groundwater and soil southwest of the former fire station	Water table to refusal
50VP-19-19/50PZ-19-10/ 50SB-19-14	Determine if PFAS are present in groundwater and soil north of the former fire station	Water table to refusal/ 0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table
50VP-19-20	Determine if PFAS are present in groundwater east of Building 3813	Water table to refusal
50VP-19-21/50SB-19-15	Determine if PFAS are present in groundwater and soil east of Building 3818	Water table to refusal/ 0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table
50VP-19-22/50SB-19-16	Determine if PFAS are present in groundwater and soil west of Building 3818	Water table to refusal/ 0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table
50VP-19-23/50SB-19-17	Determine if PFAS are present in groundwater and soil west of Building 3813	Water table to refusal/ 0-0.5, 0.5-3, 3-7, and 7-15 ft bgs
50VP-19-24/50SB-19-18	Determine if PFAS are present in groundwater and soil south of Building 3813	Water table to refusal/ 0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table
50VP-19-25/50PZ-19-12	Determine if PFAS are present in groundwater southwest of the former fire station	Water table to refusal
50SB-19-13	Determine if PFAS are present in soil east of the former fire station.	0-0.5, 0.5-3, 3-7, and 7-15 ft bgs and two feet above the water table

Notes:

AOC = Area of Contamination

ft bgs = feet below ground surface

Area 3 Co-Located Locations Not Completed Prior to Demobilization

Location	Location Identifier	Sample Location **
Nashua River	NR-19-15	Located along depositional area along the west bank adjacent to AOC 20/21
	NR-19-16	Located along depositional area along the east bank adjacent to AOC 50
	NR-19-17	Located along depositional area along the west bank across from AOC 31 and 50
	NR-19-18	Located along depositional area along the east bank adjacent to AOC 31
	NR-19-19	Located along depositional area along the west bank across from AOC 31 and 50
	NR-19-20	Located along depositional area along the east bank north of AOC 31
	NR-19-21	Located along depositional area along the west bank north of AOC 31
	NR-19-22	Located along depositional area along the west bank adjacent north of AOC 30

The PSCS is a summary of site data following completion of the initial field sampling and analysis (EPA, 1988). The PSCS data is being used by the Army to prepare the Area 3 RI Work Plan Addendum.

1.1 Investigation Approach

The initial field activities for the AOCs covered in this PSCS were detailed in the *Draft Final Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2020a) and the *Area 3 Field Sampling Plan (FSP) Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2019a). The initial activities were planned based on results from the *Final Base-Wide Preliminary Assessment for Evaluation of Perfluoroalkyl Substances* (KGS, 2017), the *Site Inspection (SI) Addendum for Additional Per- and Polyfluoroalkyl Substances (PFAS) Sampling at Area of Contamination (AOC) 76-Devens Fire Department and Long Term Monitoring (LTM) Wells at AOCs 57, 43G, 43J, 32, 43A, 50 and Shepley’s Hill Landfill (SHL) Former Fort Devens Army Installation Devens, Massachusetts* (BERS-Weston Services, JVA, LLC [BERS-Weston], 2018a), and the *Final Site Inspection Report for Per- and Polyfluoroalkyl Substances (PFAS) at Former Fort Devens Army Installation, Devens, MA* (BERS-Weston, 2018b). Knowledge of the sites through previous investigations, operation and maintenance activities, and long-term monitoring activities, which included various groundwater models were also used to plan field activities.

The field work was conducted in an iterative manner. The field work commenced with the work detailed in the *Area 3 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2019a). While executing the field work, analytical data from sampling of existing monitoring wells, groundwater vertical profiling, soil sampling, and surface water and sediment sampling was shared with U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) as it was received from the laboratory. The results were discussed with EPA and MassDEP and additional activities, not detailed in the field sampling plan (FSP), needed to achieve the study goals and DQOs were recommended. The recommendations were developed based on review of the analytical data and understanding of groundwater flow direction based on analysis of field data or review of information from previous field investigations or groundwater flow

models. Additional activities included moving vertical profiles, additional soil borings, sampling of additional existing monitoring wells, and synoptic water level surveys. The field work at each AOC is discussed in subsequent sections.

After existing monitoring wells were sampled in Area 3, additional sampling of existing monitoring wells was detailed in the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019b). This supplemental sampling of existing monitoring wells was intended to provide additional data regarding the nature and extent of PFAS at these sites for the RI and will be used to support evaluation of trends in PFAS concentrations in groundwater over time.

There were minor deviations to the FSP related to locations of drilling activities, additions and deletions of locations, or activities at specific locations. As is typical with field investigations, some locations were adjusted based on field conditions (e.g., steep terrain, proximity to wetlands, safety considerations). None of the adjustments to the locations negatively impacted meeting the DQOs. There were no major deviations to the methods detailed in the work plan and the FSP.

1.2 Report Organization

The site characteristics, general geology, and regional hydrogeology at former Fort Devens are described in Section 2.0. The results of synoptic water level events conducted in the areas addressed in this report are reported in Section 2.0 and site-specific groundwater flow conditions are described in the subsequent site-specific sections. Sections 3.0 through 6.0 each address a specific area of investigation listed above. The PFAS results related to each area of investigation are discussed in the applicable section. The PFAS results in various media are described in each applicable section with respect to the media-specific criteria (Table 1-1). Section 7.0 addresses background surface water and sediment samples collected in support of the PFAS RI. The field sheets, soil boring logs, piezometer construction logs, and results are presented in appendices.

2.0 FORMER FORT DEVENS SITE LOCATION AND DESCRIPTION

Devens is located in the towns of Ayer and Shirley in Middlesex County, and the towns of Harvard and Lancaster in Worcester County, Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The installation occupied approximately 9,260 acres. Fort Devens was divided into the North Post, Main Post, and South Post. Route 2 divides the South Post from the Main Post. The Nashua River runs through the North, Main, and South Posts. The area surrounding Devens is primarily rural residential properties. Portions of Devens have been redeveloped for commercial/industrial use.

Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. Fort Devens was used for a variety of training missions between 1917 and 1990. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Fort Devens was placed on the National Priorities List on November 21, 1989, due to environmental contamination at several sites.

Fort Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure (BRAC) Act of 1990, and officially closed in March 1996. As part of the Devens BRAC program, portions of the property formerly occupied by Devens were retained by the U.S. Army for reserve forces training and renamed the Devens Reserve Forces Training Area (DRFTA). Areas not retained as part of the DRFTA were transferred to new owners, the Massachusetts Development and Finance Agency (MassDevelopment), U.S. Department of Labor, U.S. Department of Justice, and the U.S. Fish and Wildlife Service, for reuse and redevelopment. In 2009, the DRFTA was renamed the U.S. Army Garrison Fort Devens.

2.1 Physical Characteristics

Devens lies within the Nashua River basin. The Nashua River flows north through the former North, Main, and South Posts (Figures 2-1 and 2-2). The Nashua River forms the western installation boundary on the former Main Post. Other notable surface water features include: Grove Pond located north of the Grove Pond wellfield, Plow Shop Pond located west of Grove Pond, Nonacoicus Brook flowing from Plow Shop Pond to the Nashua River, Cold Spring Brook located east of AOCs 57, 74, and 75, an unnamed stream located east of AOC 43G, Robbins Pond located east of AOC 43G, Willow Brook flowing north from Robbins Pond to Nonacoicus Brook, Cold Spring Brook Pond (AOC 40), and Mirror Lake and Little Mirror Lake located between Patton and Shabokin wells. The specific surface water bodies and their relations to specific areas of investigation are discussed in applicable sections.

The geography of Devens is characterized by undulating glacial terrain. The landforms are products of glacial erosion and deposition on a crystalline bedrock terrain. Terrain at Devens falls generally into three types. The least common is bedrock terrain, where rocks that have been resistant to both glacial and fluvial erosion remain as topographic highs, sometimes thinly veneered by glacial deposits. A more common terrain at Devens consists of tills deposited by glaciers. These landforms often conform to the shape of the underlying bedrock surface. They range from areas of comparatively low topographic relief to elongated hills (drumlins) [Harding Lawson Associates (HLA), 2000].

The most common terrain at Devens was formed by sediment accumulations in glacial-meltwater streams and lakes (glaciofluvial and glaciolacustrine deposits). Other prominent glacial meltwater features are kame and kettle topography present on the former Main Post near Mirror Lake and Little Mirror Lake located between the Patton and Shabokin wells.

2.2 Geology

The major glacial units consist of till, deltaic deposits from former glacial Lake Nashua, and deposits from glacial meltwater streams (Figure 2-3). Glacial till at Devens consists of unstratified gravel to silt and typically contains boulders. The till at the site is typically approximately 10 feet thick but is up to 60 feet

thick in the cores of drumlins. The glacial lake deposits consist chiefly of sand and gravelly sand. Lake bottom deposits consist of sand, silt, and clay. Post-glacial deposits consist of river terrace sands and gravels, fine alluvial sands and silts, as well as peat and silt and sands in swampy areas. Generalized surficial geology by AOC is described below and is based on the *2018 Surficial Materials Map of the Ayer Quadrangle, Massachusetts* (Stone and Stone, 2018) that in turn, was based on geologic units mapped by Richard Jahns in 1953 (Jahns, 1953).

- AOCs 20 and 21 – Mainly a mix of thick deposits of sand and gravel, sand and pebble to cobble gravel kame deposits, sand and pebble to cobble gravel terrace and delta-outwash plain deposits, and river terraces and floodplain silt and sand to the north. Some areas east of the WWTP Sludge Beds have been modified with artificial fill.
- Airfield (AOC 30, 31, and 50) – An extensive, relatively flat kame-plain remnant forms the majority of the airfield. The landform terminates on all sides in a bluff that slopes steeply downward 30 to 50 feet to grades established by Nashua River drainage to the west and south and Route 2A to the north and east. Soils are generally stratified sands and gravelly sand. Coarser materials are found in topset beds of deltas. These soils generally have significantly high hydraulic conductivities. Deeper soils beneath the northeastern end of the kame-plain are siltier and have lower conductivities. Several areas have been modified with artificial fill.

Bedrock beneath the portion of Devens covered under this PSCS has been mapped as part of the *Preliminary Bedrock Geologic Map of the Ayer Quadrangle, Massachusetts* (Kopera, 2006). Depth to bedrock beneath the former MAAF has been confirmed between 50 to 200 feet. Bedrock chiefly consists of low-grade metasedimentary rocks, gneisses, and granites. Due to limited bedrock exposures, contacts are considered approximate. The principal bedrock units underlining AOC 50 and the former MAAF are described below and illustrated on Figure 2-4.

- The Berwick Formation of Silurian age and described by Kopera as thinly to massively bedded, light green-grey, fine-grained metamorphosed calcareous siltstone, quartzite, and quartzofeldspathic granofels. Also contains a fine-grained, massively bedded muscovite-quartz-biotite quartzite and schist containing distinctive 1-millimeter knots of biotite.

The bedrock elevation contours were mapped using data gathered as part of the PFAS RI, previous investigations at Devens, well drilling records available through the Massachusetts Energy & Environmental Affairs Data Portal (eeaonline.eea.state.ma.us), and Massachusetts Geological Survey (Figure 2-5, Table 2-1). There is significant relief in bedrock elevations across Devens and the surrounding area. Within the study area (i.e. Area 3), bedrock elevations range from 66.94 feet (ft) North America Vertical Datum 1988 (NAVD88) to 277.24 ft NAVD88.

2.3 Regional Hydrogeology

The Nashua River is the eventual discharge locus for surface water and groundwater flow at Devens. The tributaries of the Nashua River at Devens are Nonacoicus Brook and Walker Brook on the former North Post; Cold Spring Brook (which is a tributary of the Nonacoicus Brook through Grove Pond and Plow Shop Pond) on the former Main Post. There is also a lesser stream, Willow Brook that discharges to Nonacoicus Brook to the north. Willow Brook originates from Robbins Pond and is fed by Robbins Pond, surface water runoff, storm water discharge, and groundwater. On the west side of the Nashua River there are also a number of tributaries west of Devens, specifically Catacoonamug Brook, Trout Brook, Morse Brook, Walker Brook, and Mulpus Brook. The groundwater flow direction at each AOC is addressed in applicable sections.

Glacial meltwater deposits constitute the primary overburden aquifer at Devens. Groundwater also occurs in the underlying bedrock; however, flow is limited because regional bedrock lacks primary porosity and/or has been affected by metamorphism that limits transmissivity (an example would be the degree of

development of transmissive partings parallel to layering). The result is bedrock groundwater flow that is primarily via fractures and dissolution voids.

The zones of highest transmissivity within the overburden are found in areas of thick glacial meltwater (outwash) deposits on the former North Post at Devens, and these encompass deposits in which the MacPherson and Walker and Patterson (Town of Shirley) water supply well is screened (Figure 2-6). Due to the high transmissivity of these overburden deposits, these areas are preferential groundwater flow areas. The zones of lowest transmissivity are typically associated with exposed till and bedrock.

Groundwater recharge occurs in upland areas and groundwater flows generally from the topographic highs to topographic lows. Groundwater discharges in wetlands, ponds, streams, and directly into the Nashua River.

The Devens Groundwater Use and Value is categorized as “High” as determined by MassDEP (MassDEP, 2003) and the MassDEP groundwater classification of MMCL/GW-1 is applied throughout Devens. The MassDEP approved water supply Zone II’s, as well as the potentially productive aquifer areas, and the Devens Aquifer Protection and Watershed Protection Districts are shown on Figure 2-6.

The synoptic water level measurements taken for the PFAS RI in the areas addressed in this report are presented in Tables 2-2, 2-3, and 2-4. The groundwater flow directions and gradients are discussed in the applicable sections and are shown on Figures 2-7, 2-8, and 2-9.

Hydraulic conductivities of overburden soil at AOC 50, and the former MAAF, ranged from 10^{-5} to 10^{-2} centimeters per second. The wide range of conductivities is related to the varying soil types encountered at AOC 50 and the former MAAF (e.g., sand, silty sand, and clayey silt) (Harding Lawson Associates [HLA], 2000).

3.0 AOCs 20 AND 21 PRELIMINARY SITE CHARACTERIZATION SUMMARY

3.1 Site Description

The Devens WWTP is active and is situated in the former North Post area southwest of the Nashua River and former MAAF (Figure 1-1). The site consists of structures to support wastewater treatment including 18 rapid infiltration beds (RIBs), three Imhoff tanks, a dosing tank, and a support building. The RIBs are located on a kame deposit that rises approximately 70 feet above the Nashua River floodplain. Municipal and industrial wastewater undergoes pretreatment in the WWTP before it is pumped to three Imhoff tanks, dosing tank, and then applied alternatively, to 18 RIBs.

Topography is generally flat across the beds, but slopes on each side in all directions. To the west of the RIBs, the topography is generally flat, however slopes steeply further west rising with the bedrock surface. To the north and south of the RIBs are low lying woods that gradually transition to wetland. To the east, four former sludge drying beds (AOC 21) are located. The sludge drying beds are below ground surface within secondary contaminant (raised platform, lined). These beds are no longer in use and are overgrown with brush and small diameter trees. East of the beds the land slopes gradually towards the Nashua River, transitioning from woods to wetlands before reaching the Nashua River.

The area is zoned for Environmental Business and Open Space/Recreation. There are no wells onsite that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A bedrock well (total depth of 1,000 feet below ground surface [bgs]) that is used as a backup irrigation water supply is located approximately 1,200 feet hydraulically upgradient (west) of the site at Little Leaf Farms (Figure 3-2). This well was sampled in 2018 and the results for the Massachusetts Contingency Plan (MCP) Maximum Contaminant Level/Method 1 Groundwater (MMCL/GW-1) sum of the six compounds (PFOA, PFOS, perfluorodecanoic acid [PFDA], perfluoronanoic acid [PFNA], perfluoroheptanoic acid [PFHpA], and perfluorohexanesulfonic acid [PFHxS]) were non-detect. The MacPherson water supply well for Devens is located approximately 2,500 feet to the south of AOC 20, and the Walker and Patterson water supply wells for the Town of Shirley are located approximately 3,500 feet to the southwest of AOC 20 (Figure 2-6). A permit is required from Devens Enterprise Commission for installation of any water supply well.

3.2 Facility History and Utilities

The WWTP was constructed by the Army in 1942 and is still in operation by MassDevelopment. Three components of the WWTP were initially identified as Study Areas: Imhoff tanks (SA 19), rapid infiltration beds (SA 20), and sludge drying beds (SA 21) (ABB Environmental Services Inc. [ABB-ES], 1993). The WWTP has a design capacity of 3.0 million gallons per day (mgd). The average daily flow was about 1.3 mgd (KGS, 2017). Less than 1 percent of the flow was from industrial sources, including vehicle wash rack discharge, caustic radiator wash water, floor drains, heating plant boiler blowdown, and swimming pool filter backwash (Argonne National Laboratory [ANL], 1992) (KGS, 2017).

Wastewater is carried to the main pumping station via a gravity-flow sanitary sewer and several small pump stations (KGS, 2017). At the main pumping station, the wastewater is pretreated by passing through a bar screen, grit chamber, and comminutor. The wastewater is then pumped to three parallel Imhoff tanks (settling tanks and sludge digestors), a dosing tank, RIBs (originally 22 beds, 0.8 acre each), and four sludge drying beds. The primary effluent from the Imhoff tanks discharges into a dosing tank, which intermittently applies wastewater to the RIBs. The infiltration basins are used in rotation. The application cycle involves discharge to nine basins for nine days, to another seven basins for seven days, and to the remaining six basins for six days (KGS, 2017). The application rate for each RIB was calculated to be about 25-28 meters per year (ANL, 1992) (KGS, 2017). Sludge from the Imhoff tanks is drained to four uncovered sludge drying beds two to three times annually. The sludge drying beds were equipped with 4-, 8-, and 10-inch clay pipe underdrains to collect supernatant. Before 1982, the supernatant was discharged to an adjacent wetland area located on the east bank of the Nashua River. After 1985, supernatant was collected and

pumped back into an infiltration basin. In the past, dried sludge, typically about 70 percent solids, from the sludge drying beds was removed and applied to the land at the former MAAF per the requirements of a state Class EH Sludge application permit. Land application of dried sludge from the sludge drying beds at the former MAAF is no longer conducted (ANL, 1992, ABB-ES, 1993). The WWTP has been upgraded to provide advanced treatment (secondary treatment, nitrogen removal, and disinfection) through sequence batch reactors and ultraviolet disinfections (Nashua River Watershed Association, 2018). The WWTP is designed to treat 3 mgd of wastewater and is operated under a MassDEP groundwater discharge permit. The upgraded WWTP has been in operation since September 2001 and treats less than 1 mgd of wastewater from Devens and the Massachusetts Correctional Institution in Shirley. The treated effluent is discharged to the groundwater via 18 RIBs (Nashua River Watershed Association, 2018). Infiltration rate testing was performed at the WWTP beds and on average rates ranged from 1.46 centimeters per hour [cm/hr] to 173 cm/hr (Haley Aldrich, Inc., 2007). Infiltrated water likely creates a hydraulic mound, resulting in localized radial groundwater flow beneath the infiltration beds. However, infiltrated water ultimately migrates in the direction of regional groundwater flow, which is to the east/northeast, toward the Nashua River.

3.3 PFAS RI Field Investigation

The RI field investigation at AOCs 20 and 21 included sampling existing monitoring wells, collecting surface water and sediment samples from an unnamed pond north of AOC 20 and an unnamed stream east of AOC 21, groundwater vertical profiling using DPT, soil borings using DPT, and a synoptic water level event.

Sampling locations are presented on Figure 3-4 and summarized in Table 3-1. The results are discussed in Section 3.4.

3.3.1 Existing Wells

Groundwater samples were collected from 11 existing monitoring wells at AOC 20 from April to May 2020 (Table 3-1, Figure 3-4). The groundwater results are discussed in Section 3.4.1.

3.3.2 DPT Vertical Profiles

The DPT vertical profiles are described below, are shown on Figure 3-4 and are summarized in Table 3-1. Eight vertical profiles were conducted at AOC 20 (20VP-19-01 through -08) from July to August 2019 within, cross-gradient, and upgradient of the RIBs (Table 3-1, Figure 3-4). All borings were completed down to refusal. At 20VP-19-08 there was no saturated overburden encountered and therefore no samples were collected.

Two vertical profiles were conducted at AOC 21 (21VP-19-01 and 21VP-19-02) in July 2019 (Table 3-1, Figure 3-4). Vertical profile location 21VP-19-01, was conducted adjacent to the former sludge drying beds, and 21VP-19-02 was conducted downgradient of the former sludge drying beds/RIBs, and adjacent to the west bank of the Nashua River. Both locations were completed down to refusal.

3.3.3 DPT Soil Borings

A total of eight soil borings (20SB-19-01 through -08) were conducted at AOC 20 in October 2019. All eight locations were located on-top of the RIBs. The results are summarized in Section 3.4.2.

Three soil borings (21SB-19-01 through -03) were conducted at AOC 21 in November 2019. All three locations were located within the former sludge drying beds. The results are summarized in Section 3.4.2.

3.3.4 Surface Water and Sediment

A surface water and sediment sample were collected from the unnamed pond north of AOC 20, and a sediment sample was collected from the unnamed stream east of AOC 21. A surface water sample was not collected at this location as the stream bed was dry during the sampling event. The results are discussed in

Section 3.4.3. Additional surface water and sediment samples were collected adjacent to AOC 20 and 21 within the Nashua River. These samples are discussed in detail in Sections 6.4.7 and 6.5.3.

3.3.5 Synoptic Water Level Survey

One synoptic water level monitoring event that encompassed AOC 20/21, AOC 30, AOC 31, AOC 50 was conducted on April 27, 2020 (Figure 2-9). A discussion on groundwater flow directions is presented in Section 3.4.1. Refer to Table 2-4.

3.4 PFAS Nature and Extent

Groundwater results are summarized on Figure 3-5 and in cross section (Figures 3-6 through Figure 3-8). The groundwater discussion evaluates PFAS concentrations with respect to; (1) the EPA Life-time Health Advisory (LHA) perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) concentrations individually or summed to 70 nanograms per liter (ng/L); and (2) the MMCL/GW-1 standard of the individual or summed concentration of six PFAS compounds (PFOA, PFOS, PFDA, PFNA, PFHpA, and PFHxS) of 20 ng/L. Soil sampling results are summarized on Figure 3-9 and are compared to MCP Method 1 S-1 Soil Category (S-1)/GW-1. Surface water and sediment sampling results are summarized on Figure 3-10 and are compared to EPA PFAS Site Specific Screening Levels for Former Fort Devens. All of the results are presented in tables in Appendix H. The media specific criteria are presented in Table 1-1.

3.4.1 Groundwater

As shown on Figure 2-9 and Figure 3-5, under ambient conditions, groundwater generally flows easterly across the RIBs and former sludge drying beds towards the Nashua River and southeasterly toward the Nashua River in the southern portion of the site. When wastewater is added to the RIBs, which occurs on a rotational basis, temporary mounding of groundwater beneath the beds that are being used likely occurs, resulting in local temporary radial flow in all directions.

AOC 20

Groundwater at AOC 20 was characterized through three groundwater samples collected during the SI (BERS-Weston, 2018a), and during the RI at 11 existing monitoring wells and seven vertical profiles. Samples were not collected from 20VP-19-08 since refusal was reached before encountering the water table.

Table 3-2 provides summary statistics of the results for the RI vertical profile samples. The summary statistics table provides statistics with respect to individual compounds (e.g., number of samples with PFOA that exceed the EPA LHA and the MMCL/GW-1 standard) and with respect to the sum of applicable compounds in the EPA LHA and the MMCL/MMCL/GW-1 standard (e.g., numbers of samples with the sum of PFOA+PFOS that exceed the EPA LHA, and number of samples with the sum PFOA+PFOS+PFHxS+PFNA+PFHpA+PFDA that exceed the MMCL/GW-1 standard]. Due to the summing of concentrations needed for comparison to the EPA LHA and the MMCL/GW-1 standard, the numbers of samples that exceed the EPA LHA or MMCL/GW-1 standard for individual compounds may not equal the numbers of samples that exceed the sum of the appropriate compounds for the EPA LHA or MMCL/GW-1 standard. One example is, if individual results of PFOA and PFOS were both below the EPA LHA, but the sum of the results exceeded the EPA LHA, then the sample would be counted as an exceedance of the EPA LHA even though the individual compounds would not be counted as exceedances.

A total of 35 vertical profile samples were collected. Of those samples, 25 samples (71%) of the samples had concentrations greater than the EPA LHA for PFOA+PFOS, and 35 samples (100%) had concentrations greater than the MMCL/GW-1 standard for the sum of the six compounds. Table 3-3 provides summary statistics of the results of the monitoring wells sampled as part of the RI for AOC 20. Of the 11 monitoring well samples collected, five samples (46%) had concentrations greater than the EPA LHA and eight samples (73%) had concentrations greater than the MMCL/GW-1. All of the wells at AOC 20 are screened in overburden, with the exception of MW-06, and MW-07 which are in shallow bedrock.

RIBS

Within the RIBs, the maximum PFOA+PFOS and sum of six compound concentrations (244 ng/L and 317 ng/L, respectively) detected were at existing monitoring well PZ-1 (screen 70-75 feet bgs). At vertical profile location 20VP-19-06, located in the middle section of the RIBs, PFAS concentrations were detected greater than the EPA LHA at the water table (63 feet bgs), and inconsistently down to refusal (156 feet bgs). However, compared to the MMCL/GW-1 standard, the sum of six compounds were detected from the water table down to refusal (156 feet bgs). The maximum concentrations greater the EPA LHA and sum of the six MMCL/GW-1 compounds (113 ng/L, and 154 ng/L, respectively) at 20VP-19-06 were detected at the 143-147 feet bgs interval. At vertical profile location 20VP-19-07, located in the northern portion of the RIBs, PFAS concentrations greater than the EPA LHA and the MMCL/GW-1 standard were detected from the water table (63 feet bgs) to refusal (157 feet bgs). The maximum concentrations for PFOA+PFOS and the sum of the six MMCL/GW-1 compounds (201 ng/L, and 259 ng/L, respectively), were detected at the 93-97 feet bgs interval. PFOS and PFOA were the two analytes consistently detected at higher concentrations compared to the other remaining MassDEP six compounds.

Downgradient

East (downgradient) of the RIBs (AOC 21 locations will be discussed separately), the maximum concentration was detected at existing monitoring well MW-02A. The sample was collected from the screen (18-33 feet bgs) and detected at a concentration of 250 ng/L for PFOA+PFOS and 649 ng/L for the sum of the six MMCL/GW-1 compounds. The top three analytes in order of decreasing concentration were PFHxS/PFOA/PFOS.

At MW-01A (screened 18-33 feet bgs), PFOA+PFOS was not detected above the EPA LHA but above the sum of six MMCL/GW-1 compounds at a concentration of 37.7 ng/L. The top three analytes in order of decreasing concentration were PFOA/PFHxS/PFHpA.

Cross-Gradient

In the immediate vicinity of the RIBs to the northeast (cross-gradient), the EPA LHA for PFOA+PFOS and the MMCL/GW-1 for the sum of the six compounds were exceeded with concentrations of 168 ng/L, and 218 ng/L, respectively at MW-04 (screen 7-22 feet bgs). The top three analytes in order of decreasing concentration were PFOS/PFOA/PFHpA, similar to what is observed within the RIBs.

Further north of the RIBs (20VP-19-02), the MMCL/GW-1 for the sum of six was exceeded down to refusal (33 feet bgs), but concentrations above the EPA LHA were only detected at the water table. The maximum concentrations greater than the EPA LHA and the sum of the six MMCL/GW-1 compounds (73 ng/L, and 95.3 ng/L, respectively) were detected at the water table (9 feet bgs) at this location. The top three analytes in order of decreasing concentration were PFOS, PFOA, and PFHpA.

Immediately south of the RIBs (cross-gradient) concentrations for PFOA+PFOS and the sum of the six MMCL/GW-1 compounds were detected above standards (decreasing with depth) from the water table (19 feet bgs) down to refusal (53 feet bgs) at 20VP-19-04. The maximum concentration of PFOA+PFOS (197 ng/L) and the sum of the six MMCL/GW-1 compounds (264 ng/L) were detected at the water table (19 feet bgs) at this location. Throughout the profile, the top three analytes in order of decreasing concentration were PFOS/PFOA/PFHxS.

Further south, concentrations of PFAS decrease as represented by locations 20VP-19-03 and WC-1A. The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compounds (110 ng/L and 161 ng/L, respectively) were detected at 20VP-19-03 in the last interval sampled (54-58 feet bgs) just above refusal (58 feet bgs). At the water table, the top three analytes in order of decreasing concentration were PFOA/PFOS/PFHpA, followed mostly by PFOA/PFHpA/PFOS with depth. The last interval is PFOA/PFOS/PFHxS.

Upgradient

Immediately northwest of the RIBs (PZ-6), the concentration of PFOA+PFOS (38 ng/L) were below the EPA LHA, however the concentration (48.9 ng/L) for the sum of the six compounds did exceed the MMCL/GW-1. The top three analytes (PFOS/PFOA/PFHpA) displayed a similar ratio to the RIBs.

West (upgradient) of the RIBs, there was only one sample collected at vertical profile 20VP-19-05. The PFOA+PFOS concentration (19.3 ng/L) did not exceed the EPA LHA, however the concentration (28.5 ng/L) for the sum of the six compounds did exceed the MMCL/GW-1. The top three analytes detected at the water table in order of decreasing concentrations were PFOA/PFOS/PFHpA.

To the southwest (upgradient) of the RIBs, at MW-WC-2 (screened 5.4-19.9 feet bgs), PFOA+PFOS was not detected above the EPA LHA but the sum of the six compounds (51.7 ng/L) did exceed the MMCL/GW-1. The top three analytes in order of decreasing concentration were PFOA/PFHpA/PFHxS.

Samples were collected from shallow bedrock wells MW-06 and MW-07. MW-06 is located cross-gradient (north-northwest) of the RIBs, and MW-07 is located upgradient (west) of the RIBs. Samples were non-detect for PFOA+PFOS and the sum of the six MMCL/GW-1 compounds at both locations.

AOC 21

Groundwater at AOC 21 was characterized through two groundwater samples collected during the SI (BERS-Weston, 2018a) and during the RI via two vertical profiles (21VP-19-01 and 21VP-19-02). Table 3-4 provides summary statistics of the results of the RI vertical profile samples.

A total of 20 vertical profile samples were collected from AOC 21 during the RI. Of those samples, 19 samples (95%) had concentrations greater than the EPA LHA for PFOA+PFOS and 20 samples (100%) had concentrations greater than the MMCL/GW-1 standard for the sum of six compounds.

Sludge Drying Beds

At the sludge drying beds, the maximum PFAS concentrations were detected at the water table at SI location SA21-17-02. The concentration of PFOA+PFOS was 320 ng/L and the sum of five compound (PFOA, PFOS, PFHpA, PFHxS, PFNA) (the SI samples were not analyzed from PFDA) concentration was 404 ng/L. Vertically, PFAS was detected at concentrations greater than the EPA LHA and the sum of the six MMCL/GW-1 compounds from the water table (23 feet bgs) down to refusal (95 feet bgs) (72 feet thick) at 21VP-19-01. The maximum concentrations at 21VP-19-01 that were greater than the EPA LHA and sum of the six MMCL/GW-1 compounds (256 ng/L and 304 ng/L, respectively) were detected 10 feet below the water table at the 33-37 feet bgs interval. The top three analytes in order of frequency detected were PFOS/PFOA/PFHxS.

Downgradient

Downgradient of the sludge drying beds (21VP-19-02), PFOA+PFOS concentrations were detected greater than the EPA LHA beginning 10-feet below the water table (13 feet bgs), down to refusal (127 feet bgs). The sum of six compounds were greater than the MMCL/GW-1 standard from the water table down to refusal (114 ft thick). The maximum concentration (161 ng/L) of PFOA+PFOS was detected at the 23-27 feet bgs interval, while the maximum concentration (214 ng/L) for the sum of six compounds was detected at the deepest interval (123-127 feet bgs). The top three analytes in order of decreasing concentration were PFOS/PFOA/PFHxS throughout the profile.

3.4.2 Soil

AOC 20

At AOC 20, eight borings were conducted during the RI. The RI soil samples were collected from 0-0.5, 0.5-3, 3-7, 7-15 feet bgs, and from the 2-foot interval above the water table (at select locations). A total of 35 soil samples were collected for the RI (Figure 3-6 & 3-9, Appendix H). Table 3-5 provides summary statistics of the results of the RI samples. Of the 35 RI samples collected:

- 2 samples (6%) had PFDA concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFHpA concentrations greater than the S-1/GW-1,
- 2 samples (6%) had PFHxS concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFNA concentrations greater than the S-1/GW-1,
- 5 samples (14%) had PFOS concentrations greater than the S-1/GW-1, and
- 1 sample (3%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected are:

- PFDA = 0.880 micrograms per kilograms ($\mu\text{g}/\text{kg}$) at 20SB-19-08 (0-0.5 feet bgs)
- PFHpA = 0.320 J $\mu\text{g}/\text{kg}$ at 20SB-19-08 (3-7 feet bgs)
- PFHxS = 0.470 $\mu\text{g}/\text{kg}$ at 20SB-19-01 (0-0.5 feet bgs)
- PFNA = 0.290 J $\mu\text{g}/\text{kg}$ at 20SB-19-08 (0.5-3 feet bgs)
- PFOS = 13.0 $\mu\text{g}/\text{kg}$ at 20SB-19-08 (0-0.5 feet bgs)
- PFOA = 1.80 $\mu\text{g}/\text{kg}$ at 20SB-19-08 (3-7 feet bgs)

Three locations (20SB-19-01, 20SB-19-03, and 20SB-19-08) had one or more sample intervals with detections of PFAS compounds greater than the MCP Method 1 S-1/GW-1 standard (Figure 3-9, Appendix H). The results of the soil sampling suggest that there are impacts to the soil at the WWTP but the impacts vary across the site.

AOC 21

At AOC 21, three soil borings were conducted during the RI. The RI soil samples were collected from 0-0.5, 0.5-3, 3-7 feet bgs, and from the 2-foot interval above the water table (at 21SB-19-01). The 7-15 feet bgs interval was shortened at the soil locations at AOC 21 due to encountering the water table shallower than 15 feet bgs. A total of 13 soil samples were collected during the RI (Figure 3-9, Appendix H). Table 3-6 provides summary statistics of the results of the RI samples. Of the 13 RI samples:

- 2 samples (15%) had PFDA concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFHpA concentrations greater than the S-1/GW-1,
- 2 samples (15%) had PFHxS concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFNA concentrations greater than the S-1/GW-1,
- 7 samples (54%) had PFOS concentrations greater than the S-1/GW-1, and
- 3 sample (23%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected are:

- PFDA = 0.460 $\mu\text{g}/\text{kg}$ at 21SB-19-03 (3-7 feet bgs)
- PFHpA = 0.230 J $\mu\text{g}/\text{kg}$ at 21SB-19-01 (0.5-3 feet bgs)
- PFHxS = 0.560 $\mu\text{g}/\text{kg}$ at 21SB-19-01 (0-0.5 feet bgs)
- PFNA = 0.260 J $\mu\text{g}/\text{kg}$ at 21SB-19-03 (3-7 feet bgs)
- PFOS = 19.0 J $\mu\text{g}/\text{kg}$ at 21SB-19-01 (0.5-3 feet bgs)
- PFOA = 2.20 $\mu\text{g}/\text{kg}$ at 21SB-19-01(3-7 feet bgs)

PFAS concentrations were greater than the S-1/GW-1 standards at both the SI soil borings (21SA-17-01 and -02) and at all three of the RI soil borings (21SB-19-01 through -03) (Figure 3-9, Appendix H). The results of the soil sampling suggest that historical sludge from WWTP operations have contributed to soil contamination above S-1/GW-1 standards.

3.4.3 Surface Water and Sediment

One co-located surface water and sediment sample were collected at AOC 20 (UP-19-01) and one sediment sample was collected at AOC 21 (US-19-01). A surface water sample was not collected at US-19-01 since it was dry during the sampling event.

The detections in surface water and sediment were below the EPA site-specific screening levels (SSSL) for PFAS at former Fort Devens (Table 1-1). The sampling location and data are summarized on Figure 3-10 and the data are presented in Appendix H. Of the three compounds (PFBS, PFOS, and PFOA) that have EPA SSSLs, PFBS was detected at a concentration of 8.40 ng/L, PFOS was detected at a concentration of 82.0 ng/L, and PFOA was detected at a concentration of 19.0 ng/L in the surface water sample from UP-19-01. These three compounds were non-detect in the co-located sediment sample for UP-19-01. For the sediment sample collected at location US-19-01, PFOS and PFOA were detected below EPA SSSLs at concentrations of 6.70 ng/L, and 0.460 J ng/L, respectively. PFBS was not-detected.

Additional surface water and sediment samples adjacent to AOCs 20 and 21 within the Nashua River were also collected and analyzed for PFAS. The results for these samples are also displayed on Figure 3-10. The data is discussed in Section 6.5.3.

4.0 AOC 30 PRELIMINARY SITE CHARACTERIZATION SUMMARY

4.1 Site Description

The former Drum Storage Area is located in the former North Post area at former MAAF (Figure 1-1). The former MAAF Drum Storage Area is comprised of two locations (labeled Area “A” and Area “B” for this report) north of the main airfield runway (Figure 4-1). These areas were used for drum storage, including 55-gallon drums of firefighting foam concentrate. The western most pad (Area A) is flat but the surface is slightly raised from the ground surface. The pad is asphalt and measures approximately 80 feet by 65 feet. The surrounding area slopes gently downward towards the north/northeast for approximately 90 feet, then becomes steeper as it approaches the Nashua River. To the west, and northwest of Area A, the surrounding area slopes gently for approximately 250 feet before becoming steeper as it approaches the Nashua River. The second former drum storage pad (Area B) is located approximately 440 feet east of Pad A, and approximately 445 feet northwest of the former fire station. A relatively flat grass field is located between the two Areas. The pad in Area B is concrete and flat and mostly even with surrounding grade. Currently, police vehicles are stored on the pad. A radio tower is located immediately to the west (Figure 4-4).

With the exception of the hangars, the former airfield including the former Drum Storage Area is currently leased by the Massachusetts State Police for training and vehicle storage. No drums are currently stored in the former Drum Storage Area. The former drum storage area is zoned for Special Use II and Innovation and Technology Business, which includes a broad range of industrial, light industrial, office, and research and development uses. There are currently no wells at the MAAF that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A permit is required from Devens Enterprise Commission for installation of any water supply well within Devens.

4.2 Facility History and Utilities

The former Drum Storage Area at the former MAAF were initially identified as SA 30 based on historical uses and potential contamination (ANL, 1992).

The former Drum Storage Area was an outdoor satellite accumulation point for storage of containerized hazardous waste for 90 days or less. Pallets with space for ten to fifteen 55-gallon drums were positioned at the end of the aircraft defueling area (KGS, 2017). During 1990, Fort Devens constructed a prefabricated 90-day storage area at another location, and the area is no longer in use (KGS, 2017). This area was used to store materials such as alkaline cleaners (USEPA waste D002), methyl ethyl ketone (FO05), contaminated JP-4 jet fuel (DO01), and paint thinners (DO01, D008) (KGS, 2017). During the ANL site assessment in 1988, the following materials were being stored at this site: naphtha, dry cleaning solution (such as PD-680), JP-4, aircraft cleaning compounds, lube oil, and waste solvent (F-listed wastes). The JP-4 drum was resting on asphalt rather than on the pallet. In addition to these materials, five empty drums were present (out of a total of 21 drums). Several drums were damaged. The drums were all exposed to the natural elements, and ponding was evident on the drum tops (KGS, 2017).

Reviews conducted of available historical documents did not indicate the storage of AFFF or fire suppressant foams; however, interviews conducted with persons knowledgeable of previous site activities indicated foams were stored and used for firefighting training (KGS, 2017).

There are no current or historical subsurface features located within the vicinity of AOC 30 as shown on Figure 4-2 and Figure 4-3.

4.3 Remedial Status

Prior to the PFAS investigation, an SI on soil, groundwater, surface water and sediment was conducted at SA 30 in 1992 (ABB-ES, 1996) under CERCLA. The SI concluded organic compounds (toluene, xylene, and PAHs) were observed predominantly in surface soils in unpaved areas. Concentrations of these analytes decreased with or were absent at depth. The SI indicated that due to the poor correlation between

PAH and TPH distribution in surface soils, it was suggested that airborne combustion product deposition is a likely source for the PAHs. There were no chlorinated solvents in soils. No observable contamination of groundwater had occurred as a result of potential releases from SA 30. No further action was recommended.

4.4 PFAS RI Field Investigation

The RI field investigation at AOC 30 included groundwater vertical profiling using DPT, soil borings using DPT, installation of piezometers, and synoptic water level measurements. Surface water and sediment samples were also collected in the Nashua River, adjacent to AOC 30. The details regarding the surface water and sediment samples will be discussed further in Section 6.4.7.

Sampling locations are presented on Figures 4-4 and 4-5 and summarized in Table 4-1. The results are discussed in Section 4.5.

4.4.1 DPT Vertical Profiles

The DPT vertical profiles are described below, are shown on Figures 4-4 and 4-5 and are summarized in Table 4-1.

Six vertical profiles (30VP-19-01 through -06) were conducted in July 2019 (Table 4-1, Figure 4-4).

4.4.2 Soil Borings

The AOC 30 soil borings (30SB-19-01 through -06) were drilled in October 2019. The data are discussed in Section 4.5.2.

4.4.3 Piezometers

A series of overburden water table piezometers (30PZ-19-01 through -05) were installed in July 2019. Two of the piezometers (30PZ-19-02 and 30PZ-19-05) were added to the program prior to the finalization of the work plan.

4.4.4 Synoptic Water Level Event

A synoptic water level event encompassing the AOC 30 piezometers, one new piezometer installed as part of AOC 31 (Section 5.3.3), and existing wells associated with the Airfield (AOC 50) was conducted on August 14, 2019. Refer to Table 2-2.

A second synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31 (Section 5.4.3), new piezometers that were installed as part of AOC 50 (Section 6.4.4), and existing wells associated with the Airfield (AOC 50) was conducted on October 7, 2019. Refer to Table 2-3.

A third synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31 (Section 5.4.3), new piezometers that were installed as part of AOC 50 (Section 6.4.4), existing wells associated with the Airfield (AOC 50), a staff gauge installed in the Nashua River (Section 6.4.5), and existing wells associated with AOC 20, was conducted on April 27, 2020. Refer to Table 2-4.

4.5 PFAS Nature and Extent

Groundwater results are summarized on Figures 4-5 and in cross-section (Figures 4-6 through Figure 4-8). Soil sampling results are summarized on Figure 4-9. Site-specific groundwater contours are presented on Figures 2-7, 2-8, 2-9, and Figure 4-5. All of the results are presented in tables in Appendix H. The media specific criteria are presented in (Table 1-1).

4.5.1 Groundwater

As shown on Figures 2-7 through 2-9 and Figure 4-5, groundwater in the vicinity of Area A, was observed to flow in a southwesterly direction (summer 2019) and a westerly direction toward the Nashua River (fall

2019 and spring 2020). Groundwater within the vicinity of Area B flows in a southwesterly direction and then flows westerly as it approaches the Nashua River.

Groundwater at AOC 30 was characterized through six groundwater samples collected during the SI (BERS-Weston, 2018a) and during the RI via six DPT vertical profiles. During the RI two existing monitoring wells (G6P-97-05X and MW-7[IT]) were sampled as part of the AOC 50 existing well sampling program. A discussion on the concentrations of these wells is presented with AOC 30 where applicable, since these wells are located upgradient to AOC 30.

A total of 23 vertical profile samples were collected for AOC 30. Two locations, 30VP-19-03, and 30VP-19-06, were conducted in the immediate vicinity of drum storage “Area A”, and drum storage “Area B”, respectively. The remaining locations were conducted upgradient, cross-gradient, and downgradient of these areas. Of the 23 vertical profile samples, 11 samples (48%) had concentrations greater than the EPA LHA for PFOA+PFOS and 20 samples (87%) had concentrations greater than the MMCL/GW-1 standard for the sum of the six compounds. None of the concentrations were greater than the GW-3 standard (protective of surface water). Statistics for monitoring wells G6P-97-05X and MW-7 (IT) were included as part of the AOC 50 area (Section 6.5).

Area A

PFOA+PFOS was detected above the EPA LHA in all sampling intervals from the water table (73 feet bgs) down to refusal (117 feet bgs), with the exception of interval (83-87 feet bgs), and the MMCL/GW-1 standard was exceeded in all intervals from the water table to refusal at 30VP-19-03. Concentrations generally decreased with depth. The maximum PFOA+PFOS and sum of six MMCL/GW-1 compound concentrations (3,530 ng/L, and 6,330 ng/L, respectively) were detected at the water table (73 feet bgs) adjacent to the north end of Area A at vertical profile location 30VP-19-03. The presence of the highest concentration at the water table at 30VP-19-03 suggests former historical activities have contributed to point-source contamination at Area A. At the water table, the top three analytes in order of decreasing concentration were PFOA/PFHxS/PFHpA. With depth, PFOA concentrations decrease, while concentrations of PFOS increase. Based on groundwater flow, it is possible that contamination from Area B moves towards Area A resulting in a co-mingled PFOS plume at depth.

Area B

Within Area B, there were only two intervals sampled at 30VP-19-06. Both the water table (73 feet bgs) and deeper sample (83-87 feet bgs) were above the EPA LHA and MMCL/GW-1. Higher concentrations of PFOA+PFOS (1,930 ng/L) and the sum of the six MMCL/GW-1 compounds (2,420 ng/L) were detected at the deeper interval, just above refusal (87 feet bgs) compared to water table concentrations (980 ng/L, and 1,360 ng/L). The top three analytes detected at 30VP-19-06, in order of decreasing concentration, were PFOS/PFHxS/PFOA.

Upgradient/Cross-gradient

Upgradient of Area A, PFOA+PFOS concentrations (53.2 ng/L) did not exceed the EPA LHA at the water table (20 feet bgs) at 30VP-19-05. Concentrations exceeding the EPA LHA were detected from 40-44 feet bgs (84 ng/L) and 45-49 feet bgs (363 ng/L). The sum of six compounds, however, did exceed the MMCL/GW-1 in all intervals at 30VP-19-05, with a maximum concentration of 495 ng/L at the 45-49 feet bgs interval. With the exception of the water table, the top three analytes detected in order of decreasing concentration were PFOS/PFHxS/PFOA.

Immediately upgradient of Area B, concentrations of PFAS were detected above the EPA LHA and MMCL/GW-1 at monitoring wells MW-7 (IT) (screen 22-32 feet bgs) and G6P-97-05X (screen 33-43 feet bgs). During the same sampling event (October, 2019), higher PFOA+PFOS and sum of six compounds concentrations (1,350 ng/L, and 2,710 ng/L, respectively) were detected in the shallower well (MW-7 (IT)) compared to G6P-97-05X. Comparing spring and fall data from G6P-97-05X, higher concentrations were

detected during the spring event when groundwater elevations were higher. The top three analytes detected in order of decreasing concentration for MW-7[IT] were PFHxS/PFOS/PFOA, and for G6P-97-05X were PFOS/PFHxS/PFOA. These wells were installed to monitor a surficial gasoline spill in the area in 1994. Former personnel indicated that during the filling of emergency generators, gasoline overflowed (quantities unknown) over the ice and down the hill in the vicinity of where these wells were installed. It is not known whether AFFF was used as part of the cleanup.

Based on the samples collected at Area B, PFOS and PFHxS are dominant at the water table down to refusal. This signature is also the same at upgradient locations G6P-97-05X and 30VP-19-05. Within the shallower overburden in this area, PFHxS and PFOS are dominant at the water table from MW-7 (IT) to downgradient SI locations SA30-17-05, SA30-17-04, and SA30-17-06. These differences at the water table, suggest that Area A and Area B are two separate point-sources.

Cross-gradient to both areas, two samples were collected at 30VP-19-01. At the water table (18 feet bgs), the concentration of PFOA+PFOS (14.2 ng/L) was below the EPA LHA, however at the deeper sample (28-32 feet bgs) the concentration of PFOA+PFOS (127 ng/L) was detected above the EPA LHA. Both of these intervals exceeded the MMCL/GW-1 with concentrations of 29.4 and 215 ng/L, respectively. The top three analytes in order of decreasing concentration detected at the deeper sample were PFOS/PFHxS/PFOA. Downgradient to 30VP-19-01, concentrations of PFOA+PFOS and the sum of the six MMCL/GW-1 compounds decrease (30VP-19-02). The MMCL/GW-1 was only exceeded at the deepest interval (38-42 feet bgs). The top three analytes in order of decreasing concentrations detected at the interval above refusal were PFOS/PFHxS/PFOA.

Downgradient

Downgradient of Area B (30VP-19-06), PFAS groundwater results decrease dramatically at the water table as represented by PFOA+PFOS and the sum of 5 compounds at SI location SA30-17-04, where concentrations were 128 ng/L, and 429 ng/L, respectively. It should be noted that the SI samples consisted of a single sample at the water table only. Further downgradient, PFOA+PFOS concentrations are less than the EPA LHA for the shallowest four sample intervals at 30VP-19-04, and then increase to above the EPA LHA at the 123-127 feet bgs interval to refusal (135 feet bgs). These increases in the deeper overburden along with groundwater flow suggest that upgradient sources are moving deeper in the overburden as it approaches this location and towards the Nashua River. Similar observations were observed at these two locations when reviewing the sum of the six MMCL/GW-1 compounds.

4.5.2 Soil

Six soil borings were conducted during the RI. The RI soil samples were collected from 0-0.5, 0.5-3, 3-7, 7-15 feet bgs, and from the 2-foot interval above the water table (at select locations). A total of 26 soil samples were collected during the RI (Figure 4-9, Appendix H). Table 4-3 provides summary statistics of the results of the RI samples. Of the 26 RI samples collected:

- 0 samples (0%) had PFDA concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFHpA concentrations greater than the S-1/GW-1,
- 10 samples (38%) had PFHxS concentrations greater than the S-1/GW-1,
- 1 sample (4%) had PFNA concentrations greater than the S-1/GW-1,
- 7 samples (27%) had PFOS concentrations greater than the S-1/GW-1, and
- 8 samples (31%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected in AOC 30 area are:

- PFDA = 0.230 J $\mu\text{g}/\text{kg}$ at 30SB-19-01 (0.5-3 feet bgs)
- PFHpA = 0.110 J $\mu\text{g}/\text{kg}$ at 30SB-19-01 (0-0.5 feet bgs)
- PFHxS = 7.20 $\mu\text{g}/\text{kg}$ at 30SB-19-01 (0.5-3 feet bgs)

- PFNA = 0.330 $\mu\text{g}/\text{kg}$ at 30SB-19-06 (3-7 feet bgs)
- PFOS = 100 $\mu\text{g}/\text{kg}$ at 30SB-19-06 (3-7 feet bgs)
- PFOA = 5.70 $\mu\text{g}/\text{kg}$ at 30SB-19-05 (7-15 feet bgs)

The results of the RI and SI soil sampling (Figure 4-9) suggest that historical storage activities conducted at the former drum storage areas have contributed to soil contamination surrounding the pads.

5.0 AOC 31 FIRE TRAINING AREA PRELIMINARY SITE CHARACTERIZATION SUMMARY

5.1 Site Description

The former FTA is located at the west end of the abandoned east/west trending runway in the former North Post area at former MAAF (Figure 1-1). The former FTA was a 50-ft by 50-ft asphalt-covered eight-inch thick concrete pad (Figure 5-1). The area now contains small brush and broken up concrete and asphalt. The immediate area surrounding the FTA is generally flat. West of the site, the ground surface slopes steeply to the west. At the base of the slope is the Nashua River floodplain and river.

Most of the former MAAF including the former FTA is currently leased by the Massachusetts State Police for training and vehicle storage. The former FTA is not currently used for fire training activities. The area is zoned for Special Use II and Innovation and Technology Business, which includes a broad range of industrial, light industrial, office, and research and development uses. There are currently no wells at the MAAF that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A permit is required from Devens Enterprise Commission for installation of any water supply well within Devens.

5.2 Site History and Utilities

Approximately once a year between 1975 and 1986, as part of fire training exercises, an abandoned shell of a U-8 airplane was doused with fuel and paint thinner and was open-burned within the bermed area (ABB-ES, 1993). No discharge of fuel from the training pit was reported. Other disposal activities at SA 31 included burning of fuel samples from the laboratory about once per year (KGS, 2017). AFFF was historically used during the fire training exercises (KGS, 2017).

Interviews conducted with the Devens Fire Chief indicated that AFFF foam was historically used during firefighting training exercises. Based upon interviews with the Devens Fire Chief, fire suppression foams were mixed with water, placed in a pump tank, and then transported to the training area for use (KGS, 2017). Interviews with the Massachusetts State Police indicated firefighting foams are not used during their driver training activities.

The current and previous subsurface features are shown on Figures 4-2 and 4-3.

5.3 Remedial Status

Prior to the PFAS investigation, an SI on soil, and groundwater was conducted at SA 31 in 1992 (ABB-ES, 1996) under CERCLA. The SI concluded the petroleum-related organic compounds (TPHC and PAHs) were detected in soil samples located immediately below the concrete pad. These detected analytes were consistent with those presumed to have been used there. No observable contamination of groundwater had occurred as a result of potential releases associated with fire-fighting training activities at SA 31. No further action was recommended.

5.4 AOC 31 RI Field Investigation

The AOC 31 RI field investigation included the sampling of groundwater vertical profiling using DPT, soil borings using DPT, installation of piezometers, and synoptic water level measurements. Surface water and sediment samples were also collected in the Nashua River, adjacent to AOC 31. The details regarding the surface water and sediment samples will be discussed further in Sections 6.4.7 and 6.5.3.

Sampling locations are presented on Figures 5-1 and 5-2 and summarized in Table 5-1. The results are discussed in Section 5.5.

5.4.1 DPT Vertical Profiles

Two phases of DPT vertical profiles were conducted at AOC 31. As results from the first phase were received and reviewed, proposed vertical profiles were moved to better delineate the PFAS contamination. The DPT vertical profiles are described below, are shown on Figures 5-1 and 5-2 and are summarized in Table 5-1.

Three vertical profiles (31VP-19-01, -04 and -05) were conducted from August to September 2019 (Table 5-1, Figure 5-1). Based on the high concentrations observed at 31VP-19-01 and the results from the Area 1 PFAS vertical profile sampling which suggested PFAS was travelling significant distance from source area(s), it was likely that PFAS impacts from the former FTA had already traveled to the Nashua River. Therefore vertical profile locations 31VP-19-06, -07, and -08 were recommended to the BCT to extend further west towards the Nashua River in order to evaluate downgradient concentrations as they approach the river, rather than evaluating concentrations closer to the source area (i.e. former FTA). These points were drilled adjacent to the east bank of the Nashua River under a second phase from September to October 2019. The data are discussed in Section 5.5.1.

5.4.2 Soil Borings

The AOC 31 soil borings (31SB-19-01 through -07) and a concrete sample (associated with soil boring location 31SB-19-07) were drilled in October 2019. The data are discussed in Section 5.5.2.

5.4.3 Piezometers

A series of piezometers (31PZ-19-01 through -02S/D) were installed in August and October 2019, respectively. Piezometer 31PZ-19-01 and 31PZ-02S were installed at the water table. Piezometer 31PZ-19-02D was installed in the deep overburden at a depth of 65-70 feet bgs. The shallow (31PZ-19-02S) and deep (31PZ-19-02D) piezometers were installed as a co-located pair in order to assess the vertical hydraulic gradient of groundwater as it approaches the Nashua River.

5.4.4 Synoptic Water Level Event

A synoptic water level event encompassing the AOC 30 piezometers, one new piezometer installed as part of AOC 31, and existing wells associated with the Airfield (AOC 50) was conducted on August 14, 2019. Refer to Table 2-2.

A second synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31, new piezometers that were installed as part of AOC 50 (Section 6.4.4) and existing wells associated with AOC 50 was conducted on October 7, 2019. Refer to Table 2-3.

A third synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31, new piezometers that were installed as part of AOC 50 (Section 6.4.4), existing wells associated with AOC 50, a staff gauge installed in the Nashua River (Section 6.4.5), and existing wells associated with AOC 20, was conducted on April 27, 2020. Refer to Table 2-4.

Vertical gradients at well pair 31PZ-02S/D, were assessed using the fall 2019 and spring 2020 groundwater elevations in order to evaluate gradients as groundwater approaches the Nashua River. As shown in Table 2-5, groundwater gradients are minimal but upward in both the spring 2020 (-0.007 ft/ft) and fall 2019 (-0.004 ft/ft).

5.5 PFAS Nature and Extent

Groundwater results are summarized on Figure 5-2 and in the cross-sections (Figures 5-4 through 5-6). Soil sampling results are summarized on Figure 5-7. Site-specific groundwater contours are presented on Figures 2-7, 2-8, Figure 2-9, and Figure 5-2. All of the results are presented in the tables in Appendix H. The media specific criteria are presented in (Table 1-1).

5.5.1 Groundwater

As shown on Figures 2-7, 2-8, and 2-9 and Figure 5-2, groundwater generally flows across the airfield from the northeast to the southwest. From the former FTA, groundwater flows west towards the Nashua River.

Groundwater at AOC 31 was characterized through six groundwater samples collected during the SI (BERS-Weston, 2018a), and during the RI via six DPT vertical profiles. It should be noted that the SI samples consisted of a single sample at the water table only. A total of 50 vertical profile samples were collected during the RI. Table 5-2 provides summary statistics of the results of the vertical profile samples. Of those samples, 38 samples (76%) had concentrations greater than the EPA LHA and 43 samples (86%) had concentrations greater than the MMCL/GW-1 standard. None of the concentrations were greater than the GW-3 standard (protective of surface water).

Former FTA

The maximum PFOA+PFOS and sum of six compound concentrations (39,000 ng/L, and 42,900 ng/L, respectively) were detected at the water table (63 feet bgs) in the center of the former FTA at SI location SA31-17-01. The vertical profile (31VP-19-01) which was also taken within the former FTA, detected PFOA+PFOS above the EPA LHA in all sampling intervals from the water table (63 feet bgs) down to refusal (195.5 feet bgs), with the exception of intervals (73-77, 83-87, 153-157, and 183-187 feet bgs). The MMCL/GW-1 for the sum of the six compounds was exceeded in all intervals from the water table to refusal at this location, with the exception of the 183-187 ft sample interval. At the vertical profile location, the maximum PFOA+PFOS concentration (5,830 ng/L) was detected at the water table and the maximum sum of the six MMCL/GW-1 compounds (10,200 ng/L) were detected at interval 123-127 feet bgs. The difference is primarily due to increases in the PFHxS and PFOA concentrations.

Overall, high concentrations of PFAS (primarily PFOS and PFHxS) were detected at the water table (63 feet bgs). Comparatively, significant decreases in PFAS concentrations were observed below the water table (63 feet bgs) to a depth of 93 feet bgs. A significant increase of PFAS concentrations were then observed from 93 to 137 feet bgs (44-ft thick). These increases were primarily caused by an in flux of PFOA, PFHxS, and PFHpA. Concentrations then decrease from 143-157 feet bgs, with another flux of higher concentrations of mostly PFOA and PFHxS between 163 to 177 feet bgs. Concentrations from 183-187 feet bgs, decrease dramatically to below 15 ng/L for the sum of the six MMCL/GW-1 compounds. Concentrations then increase sharply in the last sample (192-195.5 feet bgs) at refusal (195.5 feet bgs). Variability in concentrations with depth across the entire vertical profile suggests additional upgradient source(s).

Upgradient

There are numerous vertical profile and monitoring wells located upgradient of AOC 31 which will be addressed as part of AOC 50 (Section 6.0).

Crossgradient

Crossgradient of the former FTA to the northwest, PFAS contamination was detected above the EPA LHA and MMCL/GW-1 at location 31VP-19-04. Overall, higher concentrations of PFAS (primarily PFHxS) were detected at the water table (69 feet bgs). Comparatively, significant decreases in PFAS concentrations were observed below the water table (69 feet bgs) to a depth of 93 feet bgs. A significant increase of PFAS concentrations were observed from 99 to 132 feet bgs (33-ft thick). These increases were primarily caused primarily by a flux of PFHxS, PFOA, and PFHpA. The maximum concentration of PFOA+PFOS (570 ng/L) was detected at the 99-103 feet bgs interval (~30 feet below the water table [69 feet bgs]) and the maximum concentration of sum of the six MMCL/GW-1 compounds (3,380 ng/L) was detected at the 109-113 feet bgs interval (~40 feet below the water table). The top three analytes detected throughout most of this vertical profile, in order of decreasing concentration, were PFHxS/PFOA/PFHpA. Concentrations of PFOS were either non-detect or lower than the three compounds listed above. Variability in concentrations

with depth across the entire vertical profile suggests additional upgradient source(s). Results from additional crossgradient locations to the north and south are discussed as part of AOC 50.

Downgradient

Downgradient of the FTA as groundwater approaches the Nashua River (31VP-19-06, 31VP-19-07, and 31VP-19-08), the higher concentrations were observed at and north of 31VP-19-07, compared to the south (31VP-19-08). The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compounds (1,870 ng/L and 2,410 ng/L, respectively) were detected 20-feet below the water table (8 ft bgs) at 31VP-19-07. The top three analytes, in order of decreasing concentration, within this interval, were PFOS/PFHxS/PFOA. North of 31VP-19-07, at 31VP-19-06, the maximum PFOA+PFOS and sum of the six MMCL/GW-1 compounds (1,210 ng/L and 2,240 ng/L, respectively) were detected 10-feet below the water table (13 ft bgs) at 31VP-19-06. The top three analytes, in order of decreasing concentration, within this interval, were PFOA/PFHxS/PFOS.

To the south of 31VP-19-07, at 31VP-19-08, the maximum PFOA+PFOS and sum of the six MMCL/GW-1 compounds (349 ng/L and 649 ng/L, respectively) were observed at the water table (13 ft bgs). Concentrations were above the EPA LHA and MMCL/GW-1 for the sum of the six compounds down to refusal and were relatively stable. The top three analytes, in order of decreasing concentration, at the water table were PFHxS/PFOA/PFOS. At the interval 10-feet below the water table this ratio changed slightly to PFHxS/PFOS/PFOA. Below this interval (23-27 feet bgs), the ratio then switches to PFOS/PFOA/PFHxS down to refusal (87 feet bgs).

The upward vertical gradients observed at the edge of the Nashua River downgradient of AOC 31 suggest some portion of the PFAS impacted groundwater is discharging to the river.

West of the Nashua River

West of the Nashua River, west of AOC 31, the EPA LHA and MMCL/GW-1 was not exceeded at 31VP-19-05.

5.5.2 Soil

Seven borings were conducted during the RI. The RI soil samples were collected from 0-0.5, 0-0.5-3, 3-7, 7-15 feet bgs, and from the 2-foot interval above the water table. A total of 26 soil samples were collected during the RI (refer to Figure 5-7, Appendix H). Table 5-3 provides summary statistics of the results of the RI samples. Of the 25 RI samples collected:

- 7 samples (28%) had PFDA concentrations greater than the S-1/GW-1,
- 2 samples (8%) had PFHpA concentrations greater than the S-1/GW-1,
- 25 samples (100%) had PFHxS concentrations greater than the S-1/GW-1,
- 3 samples (12%) had PFNA concentrations greater than the S-1/GW-1,
- 25 samples (100%) had PFOS concentrations greater than the S-1/GW-1, and
- 18 samples (72%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected in AOC 31 area are:

- PFDA = 0.960 µg/kg at 31SB-19-01 (0.5-3 feet bgs)
- PFHpA = 0.510 µg/kg at 31SB-19-01 (0.5-3 feet bgs)
- PFHxS = 67.0 µg/kg at 31SB-19-05 (3-7 feet bgs)
- PFNA = 0.450 µg/kg at 31SB-19-05 (0-0.5 feet bgs)
- PFOS = 530 µg/kg at 31SB-19-01 (3-7 feet bgs)
- PFOA = 53.0 µg/kg at 31SB-19-05 (3-7 feet bgs)

Locations with the maximum detected PFAS compounds are located within the former FTA footprint and are mostly PFOS and PFHxS dominant.

A sample from the concrete associated with the former FTA was also sampled at in the vicinity of location 31SB-19-07 and analyzed for PFAS. The concentrations are as follows:

- PFDA = not-detected
- PFHpA = 1.60 $\mu\text{g}/\text{kg}$
- PFHxS = 41.0 $\mu\text{g}/\text{kg}$
- PFNA = not-detected
- PFOS = 95.0 $\mu\text{g}/\text{kg}$
- PFOA = 4.90 $\mu\text{g}/\text{kg}$

The results from the concrete indicate that AFFF from former fire training has sorbed into the concrete surrounding the former FTA.

6.0 AOC 50 FORMER MOORE ARMY AIRFIELD PRELIMINARY SITE CHARACTERIZATION SUMMARY

6.1 Site Description

The former MAAF is located in the former North Post area at former Fort Devens, Massachusetts (Figure 1-1). Under the PFAS RI field program, AOC 50 is comprised of the entire former MAAF including the tetrachloroethylene (PCE) Source Area, the former Devens Fire Station, Hangar Buildings 3818 and 3813, and the airfield. The other AOCs with the former MAAF, specifically AOC 30 and AOC 31, are discussed previously.

All but approximately 14 acres of the former MAAF (approximately 246 acres total) were transferred to MassDevelopment for reuse in 1997. Currently, the airfield is closed to aircraft traffic and is used by the Massachusetts State Police for training purposes and vehicle storage. The former MAAF is zoned for Special Use II and Innovation and Technology Business by MassDevelopment. Under the Devens Reuse Plan dated 14 November 1994, Special Use II and Innovation and Technology Business includes a broad range of industrial, light industrial, office, and research and development use. MassDevelopment is considering repairs and upgrades for the Massachusetts State Police's use of the airfield, but the plans are still under development. The Devens Army Installation retained approximately nine acres of the former airfield for vehicle storage and maintenance around the Hangars, and approximately four acres in and around the AOC 50 Source Area for remediation activities. The Hangars are not occupied.

The USFWS owns undeveloped land south and west of the former airfield. The area is zoned Open Space/Recreation.

The Merrimack Warehouse Realty Co., Inc. owns the area north of Rt. 2A. The property is zoned commercial and is developed with a building used for the manufacture of windshield washer fluid and as a storage facility. A fire pond and detention basin is located on the property and would be used for fire suppression source water in the event of a fire.

The AOC 50 PCE Source Area is lower in elevation than the airfield. The ground then steeply slopes up to the west/southwest to the airfield which sits topographically higher. The airfield is generally flat. As the airfield approaches the Nashua River towards the southwest, west, and northwest the ground slopes steeply downwards towards the Nashua River.

6.2 Site History and Utilities

The main portion of the former MAAF consisted of two fixed wing runways, two rotary wing runways, a parking area for 15 rotary-wing aircraft, and aircraft hangars (Buildings 3813 and 3818) (Figure 6-1). The northern part of the former MAAF, south of Route 2A/Fitchburg Road, was used for the maintenance and storage of parachutes and former fueling systems were in this area.

The PCE Source Area, the former Devens Fire Station, Hangar Buildings 3818 and 3813, and historic airfield operations related to PFAS are described below.

- There was no documented usage or storage of AFFF at the AOC 50 PCE plume source area identified during the PA (KGS, 2017) or SI (BERS-Weston, 2018b).
- Due to the age of the fueling systems associated with AOC 50 (discontinued after the late 1940s), AFFF was not used for fire suppression (KGS, 2017).
- There is no documentation of AFFF being used in the fire suppression systems at the former hangar buildings (Buildings 3813 and 3818). However, AFFF may have been stored in the former hangar area during the operational period of the airfield (KGS, 2017).
- AFFF concentrate was also reportedly stored in 5-gallon pails and within firefighting equipment stored at the former MAAF Fire Station (KGS, 2019a).

- Both Devens Fire Chief LeBlanc and former Devens Fire Chief Broderick. Both Fire Chiefs could not specifically recall aircraft crashes or fires at the former MAAF. However, Chief LeBlanc acknowledged that when aircraft were reported to be using the airfield during an emergency, the fire trucks would respond and foam portions of the runway during aircraft landing. Historical review of aircraft landing and takeoff procedures indicated the use of fire apparatus being staged near the runway. Interviews conducted with Fire Chief LeBlanc confirmed this procedure; however, he could not specifically recall an incident when the runway was foamed. Both Fire Chiefs indicated the main airfield runway may have been foamed during firefighting and crash training. Both Fire Chief LeBlanc and former Fire Chief Broderick noted that “training foam” was primarily used, due to the expense of AFFF; however, neither could verify how often training foam was used compared to AFFF (KGS, 2017).
- Dried sludge from the Devens WWTP (AOC 21) was periodically spread on the ground surface at AOC 50. The area of historic sludge disposal to the ground surface at former MAAF was reportedly along the southwestern side of the main runway and in a triangular area of grass located in the center of the airfield (KGS, 2019a).

The current and previous subsurface features are shown on Figures 4-2 and 4-3.

6.3 Remedial Status

AOC 50 was originally identified for investigation due to the presence of two World War II vintage fueling systems (Fueling Systems A and B) (Figure 6-1). Environmental investigation commenced in 1992 with the completion of a SI (HLA, 2000). This was followed by removal of the fueling systems (including two USTs), a supplemental SI, and installation and operation of a soil vapor extraction (SVE) system to address PCE contamination discovered near the Former Fueling System B. Based on results of these investigations, a Phase III SI was conducted, and finally, after being renamed an AOC, a RI was initiated in 1996 and the final RI report was issued in 2000 (HLA, 2000). The primary contaminants addressed by the RI were PCE and related chlorinated compounds. However, during the course of the RI, low levels of fuel-related compounds (e.g., BTEX) were observed and evaluated in a separate report scheduled for simultaneous release (HLA, 2000).

The AOC 50 Source Area was used for the storage and maintenance of parachutes from the early 1970s to closure of the installation in 1996. The buildings in the AOC 50 Source Area include Buildings 3803 (the former parachute shop, used primarily as a storage and maintenance facility), 3840 (the former parachute shakeout tower), 3824 (a gazebo), and 3801 (the former 10th Special Forces airplane parachute simulation building) (Figure 6-1). A drywell associated with the floor and roof drains in Building 3840 and sinks located in Building 3803 was identified (Figure 6-1). PCE was used to spot-clean parachutes and may have entered sinks at Building 3803. Also, a PCE drum-storage area was located adjacent to Building 3801, later named the Former Drum Storage Area (FDSA) (Figure 6-1). The investigations indicated PCE was used in small amounts and that waste PCE evaporated or was disposed of at AOC 50 Source Area. Both the former dry well area and the former PCE drum storage area were subjects of removal actions; however, groundwater contamination with chlorinated compounds (primarily PCE) was identified. A groundwater plume was identified that extended southwest from the Source Area towards the Nashua River (Figure 6-1).

As documented in the ROD, the selected remedy for AOC 50 was SVE, enhanced reductive dechlorination (ERD) (with solubilized inorganic controls), In-Well Striping (IWS)/Aerobic Bioremediation, Monitoring, and Institutional Controls. In addition, Geochemical additives and In-situ Chemical Oxidation were included as contingencies to address inorganics and volatile organic compounds (VOCs), respectively, in the event that monitoring data indicate that implementation of these contingencies was warranted (ARCADIS, 2004).

In September 2004, a full-scale remedial action at AOC 50 was implemented that included SVE in the source area, ERD throughout the plume, and an IWS system at the western edge of the plume. The first ERD injection event was conducted in October 2004. The SVE system was discontinued in November 2005, as the monitoring program indicated that the recoverable mass of chlorinated VOCs (CVOCs) was removed from the vadose zone. The IWS was shut off in March 2013 once it was determined that it was not needed to treat dissolved arsenic or to “polish” the residual CVOC plume (Sovereign, 2013a). Semi-annual ERD injections continued through 2014. Annual ERD injections were completed in 2015, 2017, 2018, and 2019 (KGS, 2020d). Groundwater monitoring has been conducted since the start of the remedy. Through treatment in the source area and natural attenuation, CVOC concentrations in the North Plume have decreased below the cleanup criterion. As documented in the 2019 AOC 50 Annual Report (KGS, 2020d), since 2004, the PCE plume has decreased in size (15.5 acres in 2004 to 7.74 acres in 2019), and concentration (maximum concentration 14,000 micrograms per liter [$\mu\text{g/L}$] to 36 $\mu\text{g/L}$).

6.4 AOC 50 PFAS RI Field Investigation

The AOC 50 RI field investigation included the sampling of existing monitoring wells, groundwater vertical profiling using DPT, soil borings using DPT, surface water and sediment sampling, installation of piezometers, and synoptic water level measurements.

Sampling locations are presented on Figure 6-1 and summarized in Table 6-1. The results are discussed in Section 6.5.

6.4.1 Existing Monitoring Wells

Groundwater samples were collected from existing monitoring wells at AOC 50 from April 2019 to May 2019 in general accordance with the *Area 3 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2019a) (Table 6-1, Figure 6-1).

Groundwater samples were collected from an additional six existing monitoring wells (G6M-02-01X, G6M-13-05X, G6M-18-01, G6P-97-05X, XSA-12-96X, and XSA-12-98X) at AOC 50 in October 2019 and May 2020 in accordance with the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019b). The groundwater results are discussed in Section 6.5.

6.4.2 DPT Vertical Profiles

The DPT vertical profiles are described below, are shown on Figure 6-1 and are summarized in Table 6-1.

The AOC 50 vertical profiles were positioned in locations that were thought to be within the source area as well as cross-gradient, upgradient, and downgradient of the suspected source areas to assess the nature and extent of PFAS in groundwater in this area.

Two vertical profiles G6M-18-01 and G6M-18-02 were conducted in October 2018, and thirteen vertical profiles (50VP-19-01 through -13) were conducted from July to October 2019 (Table 6-1, Figure 6-1).

6.4.3 Soil Borings

The AOC 50 soil borings (50SB-19-01 through -12) were drilled between October and November 2019. The data are discussed in Section 5.4.2.

6.4.4 Piezometers

A series of overburden water table piezometers (50PZ-19-01 through -07) were installed between July and August 2019, respectively. These piezometers were surveyed in April 2020.

6.4.5 Staff Gauge

One staff-gauge (NRSG-01) was installed within the Nashua River on April 4, 2020. The staff-gauge is a 4-ft fiberglass gauge, mounted to a steel rod. The top reading (4-ft mark) was surveyed.

6.4.6 Synoptic Water Level Event

A synoptic water level event encompassing the AOC 30 piezometers, one new piezometer installed as part of AOC 31, and existing wells associated with the Airfield (AOC 50) was conducted on August 14, 2019.

A second synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31, and new piezometers that were installed as part of AOC 50, and existing wells associated with the Airfield (AOC 50) was conducted on October 7, 2019.

A third synoptic water level event encompassing the AOC 30 piezometers, additional piezometers installed as part of AOC 31, new piezometers that were installed as part of AOC 50, existing wells associated with the Airfield (AOC 50), the staff gauge installed in the Nashua River, and existing wells associated with AOC 20, was conducted on April 27, 2020.

Vertical gradients at well pair G6M-96-22A/B, were assessed using the fall 2019 and spring 2020 groundwater elevations in order to evaluate gradients north of Route 2A. As shown in Table 2-5, groundwater gradients are minimal but downward in both the fall (0.014 ft/ft) and spring (0.028 ft/ft).

Within the AOC 50 PCE Source Area, groundwater elevations at monitoring well pairs G6M-95-25A/B, and G6M-04-10A/X were used to evaluate vertical gradients within this area. As shown in Table 2-5, groundwater gradients are minimal and mostly downward in spring, summer, and fall ranging from 0.013 ft/ft to 0.064 ft/ft. Given the relatively flat horizontal gradient within the source area, the vertical gradient data provides evidence that this area is primarily a recharge zone (where groundwater moves vertically rather than spatially). It should be noted, a slight upward gradient was calculated at -0.022 ft/ft at well pair G6M-04-10A/X (summer 2019).

Downgradient of the airfield, groundwater elevations at monitoring well pair G6M-04-06X and G6M-04-07X were used to evaluate vertical gradients within this area. As shown in Table 2-5, groundwater gradients were minimal but upward in the fall 2019 (-0.004 ft/ft) and downward in the spring 2020 (0.006 ft/ft).

6.4.7 Surface Water/Sediment Sampling

Between October 14 to 18, 2019, thirteen surface water/sediment locations within the Nashua River, and two surface water/sediment locations located within an unnamed wetland west of the airfield (AFW-19-01 and -02). The last surface water/sediment sample (NR-19-14) was collected on December 18, 2019. Locations NR-19-02 thru NR-19-13 were located within the Nashua River in areas where there may be impacts from Area 3 AOCs. Location NR-19-01 was located upstream of Area 3, and NR-19-14 was located downstream of the former MAAF.

6.5 PFAS Nature and Extent

Groundwater results are summarized on Figure 6-2 and in cross-section (Figures 6-3 through 6-6). Soil sampling results are summarized on Figure 6-7 and surface and sediment sampling results are summarized on Figure 2-10. Site-specific groundwater contours are presented on Figures 2-7, 2-8, 2-9, and Figure 6-2. All of the results are presented in tables in Appendix H. The media specific criteria are presented in (Table 1-1).

6.5.1 Groundwater

As shown on Figures 2-7, 2-8, and 2-9 and Figure 6-2, in general, groundwater flows southwest toward the Nashua River. As the river curves to the north and northeast in the northern portion of the site, the groundwater flows more to the west.

Groundwater at AOC 50 was characterized through 20 groundwater samples collected during the SI (BERS-Weston, 2018a), and during the RI from 33 existing wells, and 15 vertical profile locations. It should be noted that the SI samples consisted of a single sample at the water table only. During the RI, a total of 45 samples were collected from existing monitoring wells, and 98 vertical profile samples were collected.

Table 6-2 provides summary statistics of the results of the vertical profile samples. Of the 98 vertical profile samples, 55 samples (56%) had concentrations greater than the EPA LHA and 77 samples (79%) had concentrations greater than the MMCL/GW-1 standard. Table 6-3 provides summary statistics of the results of the existing monitoring wells. Of the 45 samples collected from the monitoring wells, 29 samples (64%) had concentrations greater than the EPA LHA and 43 samples (86%) had concentrations greater than the MMCL/GW-1 standard. None of the concentrations were greater than the GW-3 standard (protective of surface water). A discussion of the results per area, beginning at the northeast portion of the site moving with groundwater flow to the southwest towards the Nashua River, is presented below.

North of Route 2A

Out of three vertical profiles that were conducted north of Route 2A, east of AOC 50 PCE Source Area, PFAS concentrations were highest at 50VP-19-01. The EPA LHA was exceeded in all intervals at 50VP-19-01 with the exception of the 39-43 ft bgs interval. The MMCL/GW-1 was exceeded in all intervals at this location. The maximum concentrations of PFOA+PFOS and the sum of the six MMCL/GW-1 compounds (411 ng/L and 753 ng/L, respectively) were detected in sample interval 59-63 ft bgs at 50VP-19-01. PFAS concentrations decrease to the southeast as represented by locations 50VP-19-02 and 50VP-19-03. The EPA LHA was not exceeded at 50VP-19-03.

AOC 50 PCE Source Area

Overall, within the AOC 50 PCE source area, concentrations above the EPA LHA were detected from 35 to 62 ft bgs. There were no LHA exceedances at the water table. Conversely, the MMCL/GW-1 was exceeded in all of the wells sampled from the water table (approximately 10 ft bgs) to 70 ft bgs, with the exception of G6M-04-13X and G6M-96-26B. The maximum PFOA+PFOS and sum of the six MMCL/GW-1 concentrations (580 ng/L, and 1,240 ng/L, respectively) detected within the AOC 50 PCE source area were at existing monitoring well G6M-13-05X (screen 45-55 feet bgs).

With the exception of G6M-04-10X and G6M-96-25B, all of the samples collected within the AOC 50 PCE Source Area contained higher concentrations of PFHxS compared to other PFAS compounds. At G6M-04-10X and G6M-96-25B, PFOS was detected at a higher concentration compared to PFHxS. The second highest PFAS compound detected at all locations was mostly PFOS, with the following exceptions; G6M-92-10X (PFOA), G6M-04-13X (PFOA), and G6M-96-26A (PFOA).

Former Hangars

With the exception of AOC50-17-06, all of the SI and RI locations surrounding the hangars, had at least one sample that exceeded the EPA LHA. The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compound concentrations detected within the vicinity of the former airplane hangars was at the water table (63 feet bgs) at SI location AOC50-17-03. This location is immediately west of Hangar 3818 and the concentrations of PFOA+PFOS and sum of five compounds (PFOA, PFOS, PFHpA, PFHxS, PFNA) (the SI samples were not analyzed from PFDA) were 2,110 ng/L, and 3,850 ng/L, respectively. It should be noted that the SI samples consisted of a single sample at the water table only. A co-located RI vertical profile (50VP-19-05) was installed in the vicinity to evaluate vertical distribution. PFOA+PFOS and sum of the six MMCL/GW-1 compound concentrations (670 ng/L, and 1,700 ng/L, respectively) were detected at the water table at vertical profile location 50VP-19-05. Further at this location, with the exception of two sample intervals (83-87 feet bgs and 93-97 feet bgs), PFOA+PFOS was detected above the EPA LHA in all other intervals down to refusal (107 feet bgs). The MMCL/GW-1 was exceeded in all intervals at this location, with the exception of 83-87-feet bgs. The top three analytes detected at the water table, in order of decreasing concentration were PFHxS/PFOA/PFOS. Variability in concentrations with depth across the entire vertical profile suggests additional upgradient source(s).

Upgradient of Hangar 3818 (50VP-19-04), PFOA+PFOS was not-detected above the EPA LHA at the water table (49 feet bgs), however the MMCL/GW-1 was exceeded. The deeper sample intervals all had concentrations greater than the EPA LHA. The maximum concentrations of PFOA+PFOS (400 ng/L) and

the sum of the six MMCL/GW-1 compounds (807 ng/L) at this location were detected 20 feet below the water table (49 feet bgs) at sample interval 69-73 feet bgs. The top three analytes detected at the water table, in order of decreasing concentrations were PFHxS/PFOA/PFHpA. Below the water table, in order of decreasing concentrations, the top three analytes detected were PFHxS/PFOS/PFOA. This ratio is similar to the AOC 50 PCE Source Area.

At Hangar 3813, based on the SI data, the highest concentrations were PFHxS compared to other PFAS compounds at the water table, and show a similar ratio of PFAS to the AOC 50 PCE Source Area. It should be noted that the SI samples consisted of a single sample at the water table only.

Upgradient of Hangar 3813, both the EPA LHA and MMCL/GW-1 were exceeded at locations G6M-02-01X and G6M-04-03X. During the same sampling event (spring 2019), the maximum PFOA+PFOS and sum of the six MMCL/GW-1 compounds concentrations (427 ng/L and 841 ng/L, respectively) were detected at G6M-02-01X. G6M-02-01X was also sampled in the fall 2019 and spring 2020. During the fall 2019 event, concentrations of PFOA+PFOS and sum of the six compounds were 450 ng/L and 865 ng/L, respectively. Spring 2020 PFOA+PFOS and sum of the six compounds were 430 ng/L and 845 ng/L, respectively, and were similar to spring 2019 data. The increases in concentrations during the fall were primarily due to an increase in PFOA.

Crossgradient of the hangars to the east at G6M-97-09B, there was not an EPA LHA exceedance however the MMCL/GW-1 was exceeded at a concentration of 24.7 ng/L for the sum of six compounds.

Former Fire Station

Vertical profile location 50VP-19-06 was installed south of the garage located on the south side of the former fire station. At this location PFAS was detected above the EPA LHA and MMCL/GW-1 from the water table (63 feet bgs) down to refusal (96 feet bgs). The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compound concentrations (1,750 ng/L, and 2,090 ng/L, respectively) were detected 10-feet below the water table (63 feet bgs). Concentrations decreased from 77 to 87 feet bgs, then increased from 92-96 feet bgs.

The top three analytes detected at the water table, in order of decreasing concentrations, were PFHxS/PFOA/PFHpA. Below the water table, increases of PFOS compared to PFHpA were observed.

Eastern Portion of the Airfield

Within the eastern portion of the Airfield (Figure 4-2 and Figure 6-2), potential sources included sludge application fields, stormwater discharge areas, and the runway itself. This portion of the airfield represents areas of lower PFAS concentrations compared to the western portion of the airfield. The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compound concentrations detected within the eastern portion of the airfield was at the water table (approximately 51 feet bgs) at SI location AOC50-17-08. This location is within a paved area right off the runway. It should be noted that the SI samples consisted of a single sample at the water table only. The concentrations of PFOA+PFOS and sum of five compounds (PFOA, PFOS, PFHpA, PFHxS, PFNA) (the SI samples were not analyzed from PFDA) were 372 ng/L, and 397 ng/L, respectively.

There were only two other locations, AOC50-17-14 (SI location) and 50VP-19-09, within the eastern portion of the airfield that exceeded the EPA LHA. All of the locations, with the exception of 50VP-19-10 and 50VP-19-11 had at least one sample that exceeded the MMCL/GW-1 for the sum of six compounds.

Western Portion of the Airfield

Vertical profiles and SI locations within the western portion of the airfield were placed to investigate sludge application fields, potential PFAS from the runways, and evaluate downgradient migration from potential upgradient sources (e.g., Former Fire Station, AOC 50, hangars). Downgradient of the upgradient source areas within the western portion of the airfield, the maximum concentrations detected were at G6M-18-02.

This location is adjacent to the abandoned runway, crossgradient to the former FTA (AOC 31), and within an area where sludge from AOC 21 was reported to have been applied. PFAS concentrations at this location were detected above the EPA LHA and MMCL/GW-1 from the water table (64 feet bgs) down to refusal (128 feet bgs). Overall, the lowest concentrations of PFAS (albeit above the LHA and MMCL/GW-1) were detected at the water table (64 feet bgs). Below the water table, from 73 ft to refusal (128 feet bgs), significant increases in PFAS concentrations were observed. The maximum PFOA+PFOS and sum of the six MMCL/GW-1 compound concentrations (10,500 ng/L, and 17,800 ng/L, respectively) were detected 20-ft below the water table at sample interval 84-88 feet bgs. Variability in concentrations with depth across the entire vertical profile suggests additional upgradient source(s). Given the fact that shallower intervals contained lower concentrations of PFAS compared to the deeper intervals, the data also suggests that the sludge is not a significant contributor to groundwater contamination.

The second highest PFAS concentrations were detected at G6M-18-01. The maximum PFOA+PFOS and sum of six MMCL/GW-1 concentrations (5,200 ng/L, 10,900 ng/L, respectively) detected within this profile was at the deepest interval sampled (116-126 feet bgs). The LHA was not exceeded from the water table (60 feet bgs) down to 90 feet bgs. The MMCL/GW-1 was exceeded from the water table to the deepest sample (116-126 feet bgs). Given the fact that shallower intervals contained lower concentrations of PFAS compared to the deeper intervals, the data suggests that the sludge is not a significant contributor to groundwater contamination.

Overall, the EPA LHA was exceeded in at least one sample in every location within the western portion of the airfield with the exception of AOC50-17-11, AOC50-17-10, G6M-02-13X, G6M-01-01X, G6M-02-07X, G6M-03-11X, G6M-04-06X, and G6M-04-07X. The MMCL/GW-1 for the sum of six compounds was exceeded in at least one sample in every location with the exception of AOC50-17-11. The western portion contains higher concentrations and a thicker portion of the saturated overburden impacted with PFAS as a result of the co-mingling of multiple sources located upgradient compared to the eastern portion of the airfield.

West of the Nashua River

West of the Nashua River, concentrations of PFOA+PFOS and the sum of the six compounds were detected above the EPA LHA and MMCL/GW-1, respectively at locations G6M-04-08X, G6M-04-14X, and 50VP-19-08. The maximum PFOA+PFOS concentration (158 ng/L) were observed 10-ft below the water table (9 feet bgs) at 50VP-19-08 and the maximum sum of the six MMCL/GW-1 compound concentration (222 ng/L) were detected at G6M-04-14X (screen 80-90 ft bgs). At the vertical profile location 50VP-19-08, concentrations were not above the EPA LHA or MMCL/GW-1 at the water table but did exceed 10-feet below the water table down to the end of the boring (83 ft bgs).

The majority of samples collected west of the Nashua River were PFOS dominant and display an overall different ratio (PFOS/PFOA/PFHxS) compared to east of the River (PFHxS/PFOA/PFOS, and/or PFHxS/PFOS/PFOA).

6.5.2 Soil

Twelve borings were conducted during the RI. The RI soil samples were collected from 0-0.5, 0-0.5-3, 3-7, 7-15 feet bgs, and from the 2-foot interval above the water table (at select locations). A total of 51 soil samples were collected during the RI (Figure 6-7, Appendix H). Table 6-4 provides summary statistics of the results of the RI samples. Of the 51 RI samples collected:

- 1 sample (2%) had PFDA concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFHpA concentrations greater than the S-1/GW-1,
- 17 samples (33%) had PFHxS concentrations greater than the S-1/GW-1,
- 0 samples (0%) had PFNA concentrations greater than the S-1/GW-1,
- 12 samples (24%) had PFOS concentrations greater than the S-1/GW-1, and

- 10 samples (20%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected in AOC 50 area are:

- PFDA = 0.410 µg/kg at 50SB-19-01 (0-0.5 feet bgs)
- PFHpA = 0.480 µg/kg at 50SB-19-03 (7-15 feet bgs)
- PFHxS = 19.0 µg/kg at 50SB-19-03 (0.5-3 feet bgs)
- PFNA = 0.210 J µg/kg at 50SB-19-08 (0-0.5 feet bgs)
- PFOS = 45.0 J µg/kg at 50SB-19-03 (0-0.5 feet bgs)
- PFOA = 26.0 µg/kg at 50SB-19-03 (0.5-3 feet bgs)

The majority of the exceedances in soil samples collected across the airfield were PFHxS dominant, followed by PFOS. The majority of the maximum PFAS concentrations were associated with the former fire station (50SB-19-03). North of Route 2A, the higher concentrations of PFAS were generally detected at 50SB-19-09, compared to 50SB-19-10, and were higher in PFOS compared to other PFAS compounds. The majority of the samples collected with former sludge application fields (50SB-19-06, -07, -08, -10, -11, and 12) were mostly non-detect or very low concentrations below standards. The only exception was the surface sample at 50SB-19-08 which had concentrations of PFOS and PFOA slightly above standards.

6.5.3 Surface Water and Sediment

All of the detections in surface water and sediment in the Nashua River were below the EPA SSSLs for PFAS at former Fort Devens (Table 1-1). The sampling locations and data are summarized on Figure 3-10 and the data are presented in Appendix H.

In the Nashua River, PFOA concentrations in the surface water, at locations NR-19-01 through -14, ranged from 10.0 ng/L to 28.0 ng/L (the maximum concentration was detected at NR-19-06), the PFOS concentrations ranged from 6.10 ng/L to 56.0 ng/L (the maximum concentration was detected at NR-19-06), and the PFBS concentrations ranged from 1.80 ng/L to 9.90 ng/L (the maximum concentration was detected at NR-19-02).

In the Nashua River, PFOA concentrations in sediment, at locations NR-19-01 through -14, ranged from non-detect to 0.590 J µg/kg (the maximum concentration was detected at NR-19-01), PFOS concentrations ranged from non-detect to 5.20 µg/kg (the maximum was detected at NR-19-12), and PFBS was not detected.

In the unnamed wetland west of the runway, PFOA concentrations in the surface water were 4.5 ng/L at AFW-19-01, and 9.30 ng/L at AFW-19-02, the PFOS concentrations were 6.70 ng/L at AFW-19-01 and 13.0 ng/L at AFW-19-02, and the PFBS concentrations were 0.510 J at AFW-19-01, and 1.50 J ng/L at AFW-19-02.

In the unnamed wetland west of the runway, PFOA concentrations in sediment were 0.770 J µg/kg at AFW-19-01, and 1.20 J µg/kg at AFW-19-02, the PFOS concentrations were 5.30 J µg/kg at AFW-19-01 and 16.0 µg/kg at AFW-19-02, and the PFBS was not detected.

7.0 BACKGROUND SURFACE WATER/SEDIMENT

As part of the RI, on December 18 and December 20, 2019, and March 20, 2020, seven surface water/sediment locations were sampled to evaluate background PFAS concentrations at locations not associated with the former Fort Devens. Not all locations proposed in the work plan were sampled due to access issues. Specifically, BB-19-02, BP-19-01, FP-19-03, and MB-19-01 have not been sampled. A summary of the data below will be presented and a decision will be made with the BCT to determine whether the additional locations presented in the work plan should be moved and/or are necessary.

A background sample was also collected within Balch Pond (BP-18-01) in 2018 during Area 1 PFAS RI activities. Those results are incorporated in the discussion below.

7.1.1 Results

All of the detections in surface water and sediment background locations were below the EPA SSSLs for PFAS at former Fort Devens (Table 1-1). The sampling locations and data are summarized on Figure 7-1 and the data are presented in Appendix H.

In summary, PFOA concentrations in the surface water ranged from 3.30 ng/L to 16.0 ng/L (the maximum concentration was detected at BP-18-01), the PFOS concentrations ranged from 1.50 J ng/L to 6.50 ng/L (the maximum concentration was detected at BP-18-01), and the PFBS concentrations ranged from 0.600 J ng/L to 7.80 ng/L (the maximum concentration was detected at WAB-19-01).

In sediment, PFOA concentrations ranged from non-detect to 2.80 µg/kg (the maximum concentration was detected at SR-19-01), the PFOS concentrations ranged from non-detect to 7.90 µg/kg (the maximum concentration was detected at SR-19-01), and the PFBS concentrations were non-detect. Specific results for each location are presented below:

- Squannacook River in the Town of Shirley - PFOA, PFOS, and PFBS were detected at concentrations of 7.80 ng/L, 2.80 J ng/L, and 0.600 J ng/L, respectively in surface water. PFOA, PFOS, and PFBS in sediment were detected at concentrations of 2.70 µg/kg, 7.90 µg/kg, and non-detect, respectively.
- Bowers Brook in the Town of Harvard - PFOA, PFOS, and PFBS were detected at concentrations of 3.30 ng/L, 2.40 J ng/L, and 1.10 J ng/L, respectively in surface water. PFOA, PFOS, and PFBS in sediment were not-detected.
- Balch Pond in the Town of Ayer - PFOA, PFOS, and PFBS were detected at concentrations of 16.0 ng/L, 6.50 ng/L, and 1.00 J ng/L, respectively in surface water. PFOS and PFBS in sediment were not-detected. PFOA in sediment was detected at a concentration of 0.160 J µg/kg.
- Flannigan's Pond in the Town of Ayer - PFOA concentrations in the surface water were 4.30 ng/L (FP-20-01) and 11.0 ng/L (FP-20-02), the PFOS concentrations were 3.20 J ng/L (FP-20-01) and 5.70 ng/L (FP-20-02), and the PFBS concentrations were 0.780 J ng/L (FP-20-01), and 0.830 J ng/L (FP-20-02). PFOA, PFOS, and PFBS in sediment were not-detected in sediment at both locations.
- Nashua River by Jackson Road (NRBK-19-01)- PFOA, PFOS, and PFBS were detected at concentrations of 10.0 ng/L, 4.00 ng/L, and 2.90 ng/L, respectively in surface water. PFOA, and PFBS in sediment were not-detected. PFOS in sediment was detected at a concentration of 0.420 J µg/kg.
- Nashua River in the Town of Lancaster (NRBK-19-02)- PFOA, PFOS, and PFBS were detected at concentrations of 10.0 ng/L, 4.20 ng/L, and 3.20 ng/L, respectively in surface water. PFOA and PFOS in sediment were detected at concentrations of 0.180 J µg/kg and 0.750 J µg/kg, respectively. PFBS was non-detect.

- Walker Brook in the Town of Shirley - PFOA, PFOS, and PFBS were detected at concentrations of 6.20 ng/L, 1.50 J ng/L, and 7.80 ng/L, respectively in surface water. PFOA, and PFBS in sediment were not-detected. PFOS in sediment was detected at a concentration of 0.720 J µg/kg.

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**Table 1-1
Select PFAS Criteria
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

EPA											Massachusetts				
Lifetime Health Advisory Drinking Water		Site-Specific PFAS Screening Levels For the Former Fort Devens									Massachusetts Maximum Contaminant Levels for Drinking Water and GW-1 Standard		GW-3 Standard	S-1 SOIL & GW-1	
Summed Value	Individual Concentrations	Ingestion, Surface water	Ingestion, Groundwater		Dermal + Ingestion, Soil				Ingestion, Fish		Summed Value	Individual Concentrations	Individual Concentrations	Individual Concentrations	
		Child Recreator	Child Resident	Adult Commercial Worker	Child Recreator	Child Resident	Adult Commercial Worker	Adult Construction Worker	Adult	Child					
ng/L		ng/L	ng/L		µg/kg				mg/kg		ng/L		ng/L	µg/kg	
PFBS			2,030,000	40,100	234,000	609,000	126,000	428,000	631,000	7.95	6.13				
PFOS	70	70	2,030	40.1	234	609	126	631	428	7.95X10-3	6.13X10-3	20	20	5.0E+05	2
PFOA		70	2,030	40.1	234	609	126	631	428	7.95X10-3	6.13X10-3		20	4.0E+07	0.72
PFDA													20	4.0E+07	0.3
PFHpA													20	4.0E+07	0.5
PFHxS													20	5.0E+05	0.3
PFNA													20	4.0E+07	0.32

Notes:
PFBS = Perfluorobutanesulfonic Acid
PFDA = Perfluorodecanoic Acid
PFHpA = Perfluoroheptanoic Acid
PFHxS = Perfluorohexanesulfonic Acid
PFNA = Perfluorononanoic Acid
PFOS = Perfluorooctanesulfonic Acid
PFOA = Perfluorooctanoic Acid
ng/L = nanograms per liter
µg/L = micrograms per liter
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

Table 2-1
Bedrock Elevations
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Bedrock Elevation (ft NAVD88)	Notes
20373	3032620.33	621929.81	275.58	Bedrock confirmed
20388	3028805.15	624936.08	158.81	Bedrock confirmed
20394	3035414.44	624799.81	202.36	Bedrock confirmed
20397	3028805.15	624936.08	155.81	Bedrock confirmed
20407	3034430.08	622483.34	248.05	Bedrock confirmed
20409	3031776.84	622046.01	249.37	Bedrock confirmed
20604	3028980.41	624996.59	96.05	Bedrock confirmed
20634	3029641.10	632392.17	256.11	Bedrock confirmed
132739	3036305.22	622730.82	256.13	Bedrock confirmed
258714	3036436.10	630314.01	150.65	Bedrock confirmed
258715	3036337.89	629777.30	161.78	Bedrock confirmed
258737	3036481.87	629619.12	168.02	Bedrock confirmed
274705	3035063.60	623410.29	234.00	Bedrock confirmed
310670	3031958.87	622171.27	258.82	Bedrock confirmed
612787	3037161.14	630443.47	210.68	Bedrock confirmed
663258	3034044.41	622542.30	245.12	Bedrock confirmed
20VP-19-01	3032600.39	624892.23	197.82	Refusal
20VP-19-02	3033357.35	625001.25	174.25	Refusal
20VP-19-03	3030129.29	625936.96	151.23	Refusal
20VP-19-04	3030532.95	625910.05	169.10	Refusal
20VP-19-05	3030678.03	624902.02	197.67	Refusal
20VP-19-06	3031415.26	625703.92	114.07	Refusal
20VP-19-07	3031901.54	625532.42	114.02	Refusal
20VP-19-08	3032067.88	624796.52	209.83	Refusal
21VP-19-01	3031387.24	626348.59	127.08	Refusal
21VP-19-02	3031603.90	627229.54	82.99	Refusal
30VP-19-01	3035432.10	626818.69	188.80	Refusal
30VP-19-02	3035422.41	626555.89	176.88	Refusal
30VP-19-03	3035147.30	626449.20	149.04	Refusal
30VP-19-04	3034928.90	626262.80	131.90	Refusal
30VP-19-05	3035471.80	627375.50	175.10	Refusal
30VP-19-06	3035031.44	627007.63	178.20	Refusal
31VP-19-01	3033967.58	626254.21	71.84	Refusal
31VP-19-04	3034167.00	626075.50	134.66	Refusal
31VP-19-05	3033990.08	624904.81	168.76	Refusal
31VP-19-06	3034307.57	625075.40	122.20	Refusal
31VP-19-07	3034028.75	625391.59	109.31	Refusal
31VP-19-08	3033810.30	625434.74	116.46	Refusal
50VP-19-01	3035340.65	628439.14	146.90	Refusal
50VP-19-02	3035185.21	628536.37	157.91	Refusal
50VP-19-03	3035071.22	628588.60	164.54	Refusal
50VP-19-04	3034979.40	627822.10	155.78	Refusal

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Bedrock Elevations
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Devens PFAS Remedial Investigation

Location Name	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Bedrock Elevation (ft NAVD88)	Notes
50VP-19-05	3034810.35	627560.82	156.89	Refusal
50VP-19-06	3034649.60	627345.50	169.21	Refusal
50VP-19-07	3033667.76	626493.31	100.55	Refusal
50VP-19-08	3033351.49	625812.29	128.50	Refusal
50VP-19-09	3033897.90	628849.20	148.11	Refusal
50VP-19-10	3033509.90	628182.90	177.99	Refusal
50VP-19-11	3032501.90	629266.60	141.16	Refusal
50VP-19-12	3031601.90	628575.60	158.53	Refusal
50VP-19-13	3034626.90	625891.90	86.03	Refusal
Br. #A-19-7 - West Main St.	3028340.07	628919.41	183.44	Bedrock confirmed
BRIDGE # A-19-7	3028340.07	628919.41	155.28	Bedrock confirmed
EW-01	3027960.20	629942.81	130.95	Bedrock confirmed
EW-04	3027991.00	629895.33	120.40	Bedrock confirmed
G6M-97-05B	3033730.40	626265.10	66.94	Bedrock confirmed
G6M-97-09B	3034545.25	628271.92	174.80	Bedrock confirmed
G6M-97-28X	3034102.75	627185.77	126.63	Bedrock confirmed
G6M-97-29X	3033674.22	626736.78	74.00	Bedrock confirmed
G6P-97-05X	3035151.10	627296.40	190.49	Refusal
HA-1	3031667.55	625631.66	109.60	Bedrock confirmed
HA-3	3031436.86	624622.36	216.80	Bedrock confirmed
LIDAR13	3027686.65	628528.99	239.72	Bedrock confirmed
LIDAR17	3027822.07	628534.20	236.16	Bedrock confirmed
LIDAR37	3030483.53	630520.31	257.34	Bedrock confirmed
LIDAR7	3027767.38	629200.86	277.24	Bedrock confirmed
LIDAR8	3027814.26	629375.34	271.51	Bedrock confirmed
LLFARM-SHI	3030689.69	624154.01	226.00	Bedrock confirmed
MA-SMW_74	3028040.27	625163.67	89.23	Bedrock confirmed
MPVP-19-01	3028348.23	626014.80	113.43	Refusal
MPVP-19-02	3027861.05	626185.67	117.85	Refusal
MPVP-19-03	3027549.00	626769.00	132.86	Refusal
MPVP-19-04	3027636.00	627594.00	163.41	Refusal
MPVP-19-06	3028163.00	626523.00	121.34	Refusal
MPVP-19-07	3028478.01	626276.77	113.74	Refusal
MPVP-19-08	3029282.73	627333.91	146.50	Refusal
MW-06	3033479.80	624410.40	208.21	Bedrock confirmed
MW-07	3031439.80	624609.60	222.20	Bedrock confirmed
N1-P2	3027867.76	630723.38	156.28	Bedrock confirmed
Pt-A	3033601.22	626726.78	74.40	Bedrock confirmed
Pt-B	3033941.85	627669.65	141.60	Bedrock confirmed
Pt-C	3034541.36	628260.99	175.60	Bedrock confirmed
Pt-D	3034699.41	627904.01	155.50	Bedrock confirmed
Pt-E	3034887.44	628217.39	155.25	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Bedrock Elevation (ft NAVD88)	Notes
Pt-F	3034966.47	628522.60	154.60	Bedrock confirmed
Pt-G	3035067.30	628081.14	152.90	Bedrock confirmed
Pt-H	3035020.97	628154.72	157.74	Bedrock confirmed
Pt-I	3035339.80	628429.95	145.80	Bedrock confirmed
Pt-J	3035318.00	628421.77	152.84	Bedrock confirmed
Pt-K	3035143.60	628536.22	151.52	Bedrock confirmed
Pt-L	3035187.20	628331.84	154.26	Bedrock confirmed
Pt-M	3035162.67	628389.07	137.31	Bedrock confirmed
Pt-N	3035162.67	627301.77	190.90	Bedrock confirmed
Pt-O	3034898.34	627064.69	172.90	Bedrock confirmed
SB-03	3028012.67	629815.70	127.30	Bedrock confirmed
SB-16-06	3027901.38	629772.99	147.89	Bedrock confirmed
SB-16-07	3027908.62	629816.11	126.04	Bedrock confirmed
SB-16-08	3027908.54	629880.77	136.54	Bedrock confirmed
SB-16-09	3027890.08	630093.61	162.42	Bedrock confirmed
SB-16-10	3027890.01	630150.19	156.30	Bedrock confirmed
SB-16-11	3027889.96	630195.99	145.61	Bedrock confirmed
SB-16-12	3027889.88	630268.74	138.46	Bedrock confirmed
SB-16-13	3028475.67	629515.00	182.61	Bedrock confirmed
SB-16-14	3028495.64	629576.99	188.77	Bedrock confirmed
SB-16-15	3028521.07	629647.07	185.02	Bedrock confirmed
SB-16-16	3028553.76	629742.76	155.88	Bedrock confirmed
SB-16-17	3028524.52	629819.51	149.03	Bedrock confirmed
SB-16-18	3028546.35	629854.56	110.37	Bedrock confirmed
SB-16-19	3028442.69	629652.41	176.84	Bedrock confirmed
SB-16-20	3028274.04	629628.56	195.83	Bedrock confirmed
SB-16-21	3028601.19	629488.72	184.90	Bedrock confirmed
SB-3	3028484.49	629522.42	183.00	Bedrock confirmed
SEA-8	3028127.50	630407.22	146.65	Bedrock confirmed
SHL-22	3028163.04	630056.40	104.06	Bedrock confirmed
SHL-5/WT-5	3028125.10	630192.21	138.81	Bedrock confirmed
SHL-8D	3028126.57	630407.10	146.95	Bedrock confirmed
SHM-05-39A	3028544.28	629761.38	152.79	Bedrock confirmed
SHM-05-39B	3028543.68	629765.33	152.78	Bedrock confirmed
SHM-05-40X	3028514.16	629636.83	185.55	Bedrock confirmed
SHM-07-03	3028444.63	629411.08	174.00	Bedrock confirmed
SHM-07-05	3028513.39	629631.98	177.62	Bedrock confirmed
SHM-10-01	3028617.32	628868.44	131.64	Bedrock confirmed
SHM-10-02	3028700.13	628381.41	118.12	Bedrock confirmed
SHM-10-03	3029000.27	628436.33	157.70	Bedrock confirmed
SHM-10-04	3029485.34	628959.21	114.73	Bedrock confirmed
SHM-10-05A	3028943.39	630441.84	125.24	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Bedrock Elevation (ft NAVD88)	Notes
SHM-10-06	3027882.54	630215.62	149.99	Bedrock confirmed
SHM-10-06A	3027895.73	630300.71	135.46	Bedrock confirmed
SHM-10-08	3028526.47	628351.74	149.18	Bedrock confirmed
SHM-10-09	3028460.97	628759.22	126.00	Bedrock confirmed
SHM-10-10	3028873.64	629105.25	143.43	Bedrock confirmed
SHM-10-16	3028355.25	629834.23	121.72	Bedrock confirmed
SHM-11-06	3027590.05	630411.30	181.27	Bedrock confirmed
SHM-13-01	3028294.76	628556.66	154.79	Bedrock confirmed
SHM-13-02	3028713.88	628980.64	145.88	Bedrock confirmed
SHM-13-03	3028990.91	629173.39	156.83	Bedrock confirmed
SHM-13-04	3028606.18	629479.56	182.34	Bedrock confirmed
SHM-13-05	3028776.73	629829.47	140.57	Bedrock confirmed
SHM-13-06	3028694.87	629245.10	167.23	Bedrock confirmed
SHM-13-08	3028837.54	629515.32	157.17	Bedrock confirmed
SHM-93-22C	3028158.60	630045.70	104.02	Bedrock confirmed
SHM-96-5B	3028112.94	630158.14	125.93	Bedrock confirmed
SHM-99-31X	3028561.83	629908.75	110.65	Bedrock confirmed
SHM-99-32X	3028574.65	630168.76	131.07	Bedrock confirmed
SHP-2016-06	3027906.15	629710.34	173.05	Bedrock confirmed
SHP-2016-1B	3027975.00	629925.01	122.69	Bedrock confirmed
SHP-2016-2B	3028205.00	629925.00	110.73	Bedrock confirmed
SHP-2016-3B	3028179.99	630000.01	108.13	Bedrock confirmed
SHP-2016-4B	3028150.00	629899.99	112.57	Bedrock confirmed
SHP-2016-5B	3028120.01	629960.01	102.38	Bedrock confirmed
SHP-99-31A	3028559.08	629895.03	110.76	Bedrock confirmed
SHW-07-05	3028455.38	628555.24	177.62	Bedrock confirmed

Notes:

ft NAVD88 = feet North America Vertical Datum 1988

Table 2-2
Synoptic Water Level Event Airfield, August 14, 2019
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
30PZ-19-01	224.63	08/14/2019	17.65	206.98
30PZ-19-02	267.12	08/14/2019	60.88	206.24
30PZ-19-03	267.90	08/14/2019	64.65	203.25
30PZ-19-04	266.80	08/14/2019	64.25	202.55
30PZ-19-05	223.77	08/14/2019	11.08	212.69
31PZ-19-01	269.38	08/14/2019	66.89	202.49
50PZ-19-01	252.02	08/14/2019	42.10	209.92
50PZ-19-02	264.94	08/14/2019	57.90	207.04
G6M-02-01X	262.44	08/14/2019	53.35	209.09
G6M-02-03X	263.03	08/14/2019	58.15	204.88
G6M-02-04X	264.92	08/14/2019	60.13	204.79
G6M-02-08X	224.23	08/14/2019	12.35	211.88
G6M-02-11X	263.93	08/14/2019	60.40	203.53
G6M-03-07X	262.66	08/14/2019	56.00	206.66
G6M-03-10X	265.81	08/14/2019	62.53	203.28
G6M-04-01X	261.15	08/14/2019	51.38	209.77
G6M-04-02X	266.55	08/14/2019	59.14	207.41
G6M-04-03X	264.29	08/14/2019	55.95	208.34
G6M-04-04X	262.66	08/14/2019	57.35	205.31
G6M-04-05X	258.13	08/14/2019	54.90	203.23
G6M-04-10A	224.02	08/14/2019	12.79	211.23
G6M-04-10X	224.22	08/14/2019	12.50	211.72
G6M-04-11X	229.47	08/14/2019	18.55	210.92
G6M-04-15X	253.23	08/14/2019	41.55	211.68
G6M-04-22X	255.89	08/14/2019	45.08	210.81
G6M-04-31X	255.91	08/14/2019	44.96	210.95
G6M-07-02X	225.10	08/14/2019	12.79	212.31
G6M-13-01X	266.82	08/14/2019	63.40	203.42
G6M-13-02X	263.82	08/14/2019	59.31	204.51
G6M-13-03X	264.37	08/14/2019	57.28	207.09
G6M-13-04X*	266.31	08/14/2019	63.65	202.66
G6M-13-05X	225.00	08/14/2019	13.41	211.59
G6M-18-01	264.24	08/14/2019	60.46	203.78
G6M-18-02	268.33	08/14/2019	65.80	202.53
G6M-95-19X	223.89	08/14/2019	11.65	212.24
G6M-95-20X	224.61	08/14/2019	12.19	212.42
G6M-96-22A	217.59	08/14/2019	4.74	212.85
G6M-96-22B	217.56	08/14/2019	5.10	212.46
G6M-96-25A*	225.52	08/14/2019	12.22	213.30
G6M-96-25B	225.64	08/14/2019	14.81	210.83
G6M-97-05B	268.12	08/14/2019	65.13	202.99

Table 2-2
Synoptic Water Level Event Airfield, August 14, 2019
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
G6M-97-28X	265.69	08/14/2019	60.96	204.73
G6P-97-05X	236.72	08/14/2019	26.00	210.72

Notes:

* = well not used in contouring due to different vertical head compared to surrounding wells with a similar screen interval.

MPE = Measuring Point Elevation

NAVD88 = North America Vertical Datum 1988

Table 2-3
Synoptic Water Level Event Airfield, October 7, 2019
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
30PZ-19-01	224.63	10/07/2019	21.16	203.47
30PZ-19-02	267.12	10/07/2019	62.02	205.10
30PZ-19-03	267.90	10/07/2019	65.68	202.22
30PZ-19-04	266.80	10/07/2019	65.14	201.66
30PZ-19-05	223.77	10/07/2019	12.30	211.47
31PZ-19-01	269.38	10/07/2019	68.70	200.68
31PZ-19-02D	209.48	10/07/2019	8.60	200.88
31PZ-19-02S	209.44	10/07/2019	8.81	200.63
50PZ-19-01	252.02	10/07/2019	42.98	209.04
50PZ-19-02	264.94	10/07/2019	59.03	205.91
50PZ-19-03	258.40	10/07/2019	45.10	213.30
50PZ-19-04	260.37	10/07/2019	52.20	208.17
50PZ-19-05	256.51	10/07/2019	44.40	212.11
50PZ-19-06	255.54	10/07/2019	51.05	204.49
50PZ-19-07	270.11	10/07/2019	69.15	200.96
G6M-02-01X	262.44	10/07/2019	54.37	208.07
G6M-02-03X	263.03	10/07/2019	59.97	203.06
G6M-02-04X*	264.92	10/07/2019	62.03	202.89
G6M-02-06X	209.73	10/07/2019	8.44	201.29
G6M-02-07X*	210.72	10/07/2019	9.65	201.07
G6M-02-08X*	224.23	10/07/2019	14.68	209.55
G6M-02-11X	263.93	10/07/2019	61.64	202.29
G6M-02-12X	262.46	10/07/2019	59.30	203.16
G6M-02-13X	263.61	10/07/2019	60.85	202.76
G6M-03-07X	262.66	10/07/2019	57.45	205.21
G6M-03-08X	258.60	10/07/2019	56.61	201.99
G6M-03-09X	258.89	10/07/2019	56.89	202.00
G6M-03-10X	265.81	10/07/2019	63.69	202.12
G6M-04-01X	261.15	10/07/2019	52.49	208.66
G6M-04-02X	266.55	10/07/2019	60.80	205.75
G6M-04-03X	264.29	10/07/2019	57.02	207.27
G6M-04-04X	262.66	10/07/2019	58.90	203.76
G6M-04-05X	258.13	10/07/2019	56.11	202.02
G6M-04-06X	263.97	10/07/2019	62.68	201.29
G6M-04-07X	263.82	10/07/2019	62.42	201.40
G6M-04-08X	209.55	10/07/2019	8.27	201.28
G6M-04-09X	242.66	10/07/2019	31.98	210.68
G6M-04-10A	224.02	10/07/2019	13.09	210.93
G6M-04-10X	224.22	10/07/2019	13.58	210.64
G6M-04-11X	229.47	10/07/2019	19.61	209.86
G6M-04-13X	225.88	10/07/2019	14.81	211.07
G6M-04-14X	210.61	10/07/2019	9.33	201.28

Table 2-3
Synoptic Water Level Event Airfield, October 7, 2019
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
G6M-04-15X	253.23	10/07/2019	42.65	210.58
G6M-04-22X	255.89	10/07/2019	46.13	209.76
G6M-04-31X	255.91	10/07/2019	46.02	209.89
G6M-07-02X	225.10	10/07/2019	14.54	210.56
G6M-13-01X*	266.82	10/07/2019	56.51	210.31
G6M-13-02X	263.82	10/07/2019	60.85	202.97
G6M-13-03X	264.37	10/07/2019	58.90	205.47
G6M-13-04X	266.31	10/07/2019	63.90	202.41
G6M-13-05X	225.00	10/07/2019	14.49	210.51
G6M-13-06X	224.37	10/07/2019	13.99	210.38
G6M-18-01	264.24	10/07/2019	61.95	202.29
G6M-18-02	268.33	10/07/2019	67.20	201.13
G6M-95-19X	223.89	10/07/2019	12.73	211.16
G6M-95-20X	224.61	10/07/2019	13.32	211.29
G6M-96-22A	217.59	10/07/2019	5.77	211.82
G6M-96-22B	217.56	10/07/2019	6.05	211.51
G6M-97-05B	268.12	10/07/2019	66.35	201.77
G6M-97-28X	265.69	10/07/2019	62.50	203.19
G6P-97-05X	236.72	10/07/2019	27.36	209.36
MW-3	265.75	10/07/2019	63.25	202.50
MW-7*	264.97	10/07/2019	63.20	201.77
MW-7 (IT)	234.00	10/07/2019	Dry	NA
XSA-12-95X	269.63	10/07/2019	70.40	199.23
XSA-12-96X	269.99	10/07/2019	69.00	200.99
XSA-12-97X	270.78	10/07/2019	71.23	199.55
XSA-12-98X	209.61	10/07/2019	8.94	200.67

Notes:

* = well not used in contouring due to different vertical head compared to surrounding wells with a similar screen interval.

NA = Not Applicable

MPE = Measuring Point Elevation

NAVD88 = North America Vertical Datum 1988

Table 2-4
Synoptic Water Level Event Area 3, April 27, 2020
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
30PZ-19-01	224.63	04/27/2020	15.55	209.08
30PZ-19-02	267.12	04/27/2020	60.12	207.00
30PZ-19-03	267.90	04/27/2020	62.8	205.10
30PZ-19-04	266.80	04/27/2020	62.01	204.79
30PZ-19-05	223.77	04/27/2020	9.81	213.96
31PZ-19-01	269.38	04/27/2020	64.68	204.70
31PZ-19-02D	209.48	04/27/2020	5.54	203.94
31PZ-19-02S	209.44	04/27/2020	5.9	203.54
50PZ-19-01	252.02	04/27/2020	41.8	210.22
50PZ-19-02	264.94	04/27/2020	57.23	207.71
50PZ-19-03	258.40	04/27/2020	43.58	214.82
50PZ-19-04	260.37	04/27/2020	51.03	209.34
50PZ-19-05	256.51	04/27/2020	43.64	212.87
50PZ-19-06	255.54	04/27/2020	47.9	207.64
50PZ-19-07	270.11	04/27/2020	67.52	202.59
G6M-02-01X	262.44	04/27/2020	53.15	209.29
G6M-02-03X	263.03	04/27/2020	56.68	206.35
G6M-02-04X	264.92	04/27/2020	58.62	206.30
G6M-02-06X	209.73	04/27/2020	5.3	204.43
G6M-02-07X	210.72	04/27/2020	6.48	204.24
G6M-02-08X*	224.23	04/27/2020	13.29	210.94
G6M-02-11X	263.93	04/27/2020	58.48	205.45
G6M-02-12X	262.46	04/27/2020	57.11	205.35
G6M-02-13X	263.61	04/27/2020	57.72	205.89
G6M-03-01X	225.09	04/27/2020	12.4	212.69
G6M-03-07X	262.66	04/27/2020	55.48	207.18
G6M-03-08X	258.60	04/27/2020	53.38	205.22
G6M-03-09X	258.89	04/27/2020	53.67	205.22
G6M-03-10X	265.81	04/27/2020	60.53	205.28
G6M-04-01X	261.15	04/27/2020	51.25	209.90
G6M-04-02X	266.55	04/27/2020	58.81	207.74
G6M-04-03X	264.29	04/27/2020	55.5	208.79
G6M-04-04X	262.66	04/27/2020	56.3	206.36
G6M-04-05X	258.13	04/27/2020	52.97	205.16
G6M-04-06X	263.97	04/27/2020	59.54	204.43
G6M-04-07X	263.82	04/27/2020	59.53	204.29
G6M-04-08X	209.55	04/27/2020	4.98	204.57
G6M-04-09X	242.66	04/27/2020	30.51	212.15
G6M-04-10A	224.02	04/27/2020	11.36	212.66
G6M-04-10X	224.22	04/27/2020	12.12	212.10
G6M-04-11X	229.47	04/27/2020	18.43	211.04

Table 2-4
Synoptic Water Level Event Area 3, April 27, 2020
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
G6M-04-13X	225.88	04/27/2020	13.14	212.74
G6M-04-14X*	210.61	04/27/2020	9.01	201.60
G6M-04-15X	253.23	04/27/2020	41.12	212.11
G6M-04-22X	255.89	04/27/2020	45.13	210.76
G6M-04-31X	255.91	04/27/2020	44.66	211.25
G6M-06-01X	264.54	04/27/2020	58.57	205.97
G6M-07-02X	225.10	04/27/2020	13.09	212.01
G6M-13-01X	266.82	04/27/2020	61.17	205.65
G6M-13-02X	263.82	04/27/2020	57.81	206.01
G6M-13-03X	264.37	04/27/2020	56.61	207.76
G6M-13-04X	266.31	04/27/2020	60.76	205.55
G6M-13-05X	225.00	04/27/2020	13.49	211.51
G6M-13-06X	224.37	04/27/2020	12.75	211.62
G6M-18-01	264.24	04/27/2020	58.64	205.60
G6M-18-02	268.33	04/27/2020	63.67	204.66
G6M-95-19X	223.89	04/27/2020	11.09	212.80
G6M-95-20X	224.61	04/27/2020	11.47	213.14
G6M-96-22A	217.59	04/27/2020	3.24	214.35
G6M-96-22B	217.56	04/27/2020	3.85	213.71
G6M-97-05B	268.12	04/27/2020	63.18	204.94
G6M-97-28X	265.69	04/27/2020	59.46	206.23
G6P-97-05X	236.72	04/27/2020	25.18	211.54
MW-01A	221.40	04/27/2020	14.63	206.77
MW-02A	225.30	04/27/2020	18.65	206.65
MW-04	217.30	04/27/2020	9.25	208.05
MW-06	233.90	04/27/2020	11.83	222.07
MW-07	242.50	04/27/2020	22.65	219.85
MW-3	265.75	04/27/2020	60.16	205.59
MW-7	264.97	04/27/2020	59.38	205.59
MW-7 (IT)*	234.00	04/27/2020	25.44	208.56
MW-WC1A	212.50	04/27/2020	5.35	207.15
MW-WC2	217.10	04/27/2020	7.56	209.54
NRSG-01	204.72	04/27/2020	1.98	202.74
PZ-1	274.60	04/27/2020	62.73	211.87
PZ-2	275.10	04/27/2020	Dry	NA
PZ-5	227.20	04/27/2020	19.23	207.97
PZ-6	221.80	04/27/2020	17.94	203.86
XSA-12-95X	269.63	04/27/2020	65.37	204.26
XSA-12-96X	269.99	04/27/2020	65.8	204.19
XSA-12-97X	270.78	04/27/2020	66.38	204.40
XSA-12-98X*	209.61	04/27/2020	2.88	206.73

Table 2-4
Synoptic Water Level Event Area 3, April 27, 2020
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)
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Notes:

* = well not used in contouring due to different vertical head compared to surrounding wells with a similar screen interval.

NA = Not Applicable

MPE = Measuring Point Elevation

NAVD88 = North America Vertical Datum 1988

Table 2-5
Vertical Groundwater Gradients
Water Level Gauging Events - 8/14/2019; 10/7/2019; and 4/27/2020
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	Location	Screen Interval	Bottom of Screen Interval	Top of Screen Interval	Mid-Point of Screen	Difference Between Mid-Screen	Groundwater Elevation	Difference GW Elevation	Downward Gradient (+)	Upward Gradient (-)
		(ft bgs)	(ft NAVD88)	(ft NAVD88)	(ft NAVD88)	(ft)	(ft NAVD88)	(ft)	(unitless)	(unitless)
AOC 31 - Area 3										
AOC 31 - Area 3 - Well Pair 1 (10/7/2019)										
31PZ-19-02S	Shallow Well	8-13	193.29	198.29	195.79	56.98	200.63	-0.25	--	-0.004
31PZ-19-02D	Deep Well	65-70	136.31	141.31	138.81		200.88			
AOC 31 - Area 3 - Well Pair 1 (4/27/2020)										
31PZ-19-02S	Shallow Well	8-13	193.29	198.29	195.79	56.98	203.54	-0.40	--	-0.007
31PZ-19-02D	Deep Well	65-70	136.31	141.31	138.81		203.94			
AOC 50 - North of Rte 2A										
AOC 50 - Area 3 - Well Pair 1 (10/7/2019)										
G6M-96-22A	Shallow Well	40-50	166.30	176.30	171.30	22.90	211.82	0.31	0.014	--
G6M-96-22B	Deep Well	65.5-70.5	150.90	145.90	148.40		211.51			
AOC 50 - Area 3 - Well Pair 1 (4/27/2020)										
G6M-96-22A	Shallow Well	40-50	166.30	176.30	171.30	22.90	214.35	0.64	0.028	--
G6M-96-22B	Deep Well	65.5-70.5	150.90	145.90	148.40		213.71			
AOC 50 - PCE Source Area										
AOC 50 - Area 3 - Well Pair 2 (8/14/2019)										
G6M-96-25A	Shallow Well	9-18.7	204.58	214.28	209.43	38.54	213.30	2.47	0.064	--
G6M-96-25B	Deep Well	48-58	165.89	175.89	170.89		210.83			
AOC 50 - Area 3 - Well Pair 3 (8/14/2019)										
G6M-04-10A	Shallow Well	30-40	182.37	192.37	187.37	21.91	211.23	-0.49	--	-0.022
G6M-04-10X	Deep Well	52-62	160.46	170.46	165.46		211.72			
AOC 50 - Area 3 - Well Pair 3 (10/7/2019)										
G6M-04-10A	Shallow Well	30-40	182.37	192.37	187.37	21.91	210.93	0.29	0.013	--
G6M-04-10X	Deep Well	52-62	160.46	170.46	165.46		210.64			
AOC 50 - Area 3 - Well Pair 3 (4/27/2020)										
G6M-04-10A	Shallow Well	30-40	182.37	192.37	187.37	21.91	212.66	0.56	0.026	--
G6M-04-10X	Deep Well	52-62	160.46	170.46	165.46		212.10			
AOC 50										
AOC 50 - Area 3 - Well Pair 3 (10/7/2019)										
G6M-04-06X	Shallow Well	95-105	157.20	167.20	162.20	25.40	201.29	-0.11	--	-0.004
G6M-04-07X	Deep Well	120-130	131.80	141.80	136.80		201.40			
AOC 50 - Area 3 - Well Pair 3 (4/27/2020)										
G6M-04-06X	Shallow Well	95-105	157.20	167.20	162.20	25.40	204.43	0.14	0.006	--
G6M-04-07X	Deep Well	120-130	131.80	141.80	136.80		204.29			

Notes:

bgs = below ground surface

MPE = Measuring Point Elevation

NAVD88 = North America Vertical Datum 1988

**Table 3-1
AOCs 20 and 21 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Existing Monitoring Well Sampling													
Existing Monitoring Well Sampling	MW-01A	3030902.01	626348.76	UKN	10/19/2012	218.71	UKN	UKN	221.40	18	33	200.71	185.71
	MW-02A	3031750.73	626214.75	UKN	10/19/2012	223.65	UKN	UKN	225.30	18	33	205.65	190.65
	MW-04	3032569.67	625446.44	UKN	10/19/2012	214.72	UKN	UKN	217.30	7	22	207.72	192.72
	MW-06	3033479.80	624410.40	UKN	10/25/2012	231.71	29.50	UKN	233.90	14	29	217.71	202.71
	MW-07	3031439.80	624609.60	UKN	10/25/2012	241.20	35.50	UKN	242.50	20.5	35.5	220.70	205.70
	MW-WC1A	3030133.60	625913.90	UKN	12/4/1997	209.69	18.05	UKN	212.50	6.45	17.95	203.24	191.74
	MW-WC2	3029975.50	625338.20	UKN	12/9/1997	210.40	19.90	UKN	217.10	5.4	19.9	205.00	190.50
	PZ-1	3031669.86	625639.90	UKN	7/10/1995	272.10	75.00	UKN	274.60	70	75	202.10	197.10
	PZ-2	3031668.54	625635.77	UKN	7/10/1995	272.10	100.00	UKN	275.10	95	100	177.10	172.10
PZ-5	3030540.09	625922.33	UKN	7/26/1995	224.30	34.00	UKN	227.20	25	30	199.30	194.30	
PZ-6	3032172.46	625046.89	UKN	7/20/1995	218.90	22.00	UKN	221.80	15	20	203.90	198.90	
Vertical Profiles													
Vertical Profiles	20VP-19-01	3032600.39	624892.23	GP	7/30/2019	218.82	21	refusal	NA	NA	NA	NA	NA
	20VP-19-02	3033357.35	625001.25	GP	9/3/2019	208.25	34	refusal	NA	NA	NA	NA	NA
	20VP-19-03	3030129.29	625936.96	GP	7/31/2019	209.23	58	refusal	NA	NA	NA	NA	NA
	20VP-19-04	3030532.95	625910.05	GP	7/22/2019	225.10	56	refusal	NA	NA	NA	NA	NA
	20VP-19-05	3030678.03	624902.02	GP	7/22/2019	220.17	22.5	refusal	NA	NA	NA	NA	NA
	20VP-19-06	3031415.26	625703.92	GP	8/2/2019	270.07	156	refusal	NA	NA	NA	NA	NA
	20VP-19-07	3031901.54	625532.42	GP	7/25/2019	271.02	157	refusal	NA	NA	NA	NA	NA
	20VP-19-08	3032067.88	624796.52	GP	7/30/2019	239.83	30	refusal	NA	NA	NA	NA	NA
	21VP-19-01	3031387.24	626348.59	GP	7/23/2019	222.08	95	refusal	NA	NA	NA	NA	NA
21VP-19-02	3031603.90	627229.54	GP	7/24/2019	211.99	129	refusal	NA	NA	NA	NA	NA	
Soil Borings													
Soil Borings	20SB-19-01	3032163.77	625588.91	GP	10/18/2019	266.23	15	end of boring	NA	NA	NA	NA	NA
	20SB-19-02	3031936.29	625253.60	GP	10/22/2019	264.13	60	end of boring	NA	NA	NA	NA	NA
	20SB-19-03	3031890.78	625660.44	GP	10/18/2019	267.04	15	end of boring	NA	NA	NA	NA	NA
	20SB-19-04	3031591.67	625804.02	GP	10/18/2019	265.70	15	end of boring	NA	NA	NA	NA	NA
	20SB-19-05	3031455.97	625374.11	GP	10/18/2019	264.13	15	end of boring	NA	NA	NA	NA	NA
	20SB-19-06	3031067.83	625701.51	GP	10/21/2019	260.41	60	end of boring	NA	NA	NA	NA	NA
	20SB-19-07	3030876.63	625992.55	GP	10/22/2019	260.41	15	end of boring	NA	NA	NA	NA	NA
	20SB-19-08	3031425.26	625693.92	GP	10/21/2019	268.86	65	end of boring	NA	NA	NA	NA	NA
	21SB-19-01	3031394.58	626347.71	GP	11/14/2019	222.14	15	end of boring	NA	NA	NA	NA	NA
	21SB-19-02	3031474.38	626324.92	GP	11/14/2019	222.31	15	end of boring	NA	NA	NA	NA	NA
21SB-19-03	3031566.97	626302.48	GP	11/14/2019	222.09	15	end of boring	NA	NA	NA	NA	NA	

**Table 3-1
AOCs 20 and 21 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Surface Water and Sediment Sampling													
Surface Water and Sediment Sampling	US-19-01	3031713.51	626984.25	NA	10/18/2019	210.03	NA	NA	NA	NA	NA	NA	NA
	UP-19-01	3032661.11	625448.97	NA	10/17/2019	205.81	NA	NA	NA	NA	NA	NA	NA

Notes:

BGS = below ground surface

ft = feet

GP = Geoprobe

NA = not applicable

NAD83 = North American Datum 1983

NAVD88 = North American Vertical Datum 1988

UKN = unknown

WWTP = waste water treatment plant

Table 3-2
AOC 20 Summary of PFAS Exceedances from Vertical Profile Samples
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/35	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/35	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3/35	---	---	3.70 J	2.80 J	20VP-19-06-113-117
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/35	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	34/35	---	---	10.0	---	20VP-19-07-93-97
Perfluorodecanoic acid (PFDA)	30/35	---	---	6.50	0.830 J	20VP-19-02-9-13
Perfluorododecanoic acid (PFDoA)	2/35	---	---	4.10	1.90	20VP-19-07-123-127
Perfluoroheptanoic acid (PFHpA)	35/35	---	9	30.0	2.00	20VP-19-07-93-97
Perfluorohexanesulfonic acid (PFHxS)	33/35	---	5	43.0	2.30	20VP-19-04-39-43
Perfluorohexanoic acid (PFHxA)	35/35	---	---	43.0	2.20	20VP-19-03-39-43
Perfluorononanoic acid (PFNA)	32/35	---	---	16.0	0.640 J	20VP-19-07-83-87
Perfluorooctanesulfonic acid (PFOS)	35/35	16	28	160	2.50 J	20VP-19-07-93-97
Perfluorooctanoic acid (PFOA)	35/35	1	29	70.0	4.50	20VP-19-04-29-33
Perfluorotetradecanoic acid (PFTA)	0/35	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	2/35	---	---	2.30 J	---	20VP-19-07-123-127
Perfluoroundecanoic acid (PFUnA)	6/35	---	---	1.60 J	0.690 J	20VP-19-06-83-87
EPA LHA	---	25	---	201	17.5	20VP-19-07-93-97
MassDEP GW-1	---	---	35	264	23.4	20VP-19-04-19-23

Notes:

J = estimated value.

ng/L = nanograms per liter.

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 3-3
AOC 20 Summary of PFAS Exceedances from Monitoring Wells
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/11	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/11	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/11	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/11	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	7/11	---	---	48.0	0.500 J	MW-02A
Perfluorodecanoic acid (PFDA)	6/11	---	---	5.90	0.740 J	PZ-1
Perfluorododecanoic acid (PFDoA)	0/11	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	9/11	---	4	30.0	1.70 J	MW-02A
Perfluorohexanesulfonic acid (PFHxS)	9/11	---	2	360	1.70 J	MW-02A
Perfluorohexanoic acid (PFHxA)	9/11	---	---	200	1.80 J	MW-02A
Perfluorononanoic acid (PFNA)	6/11	---	---	18.0	1.80	PZ-1
Perfluorooctanesulfonic acid (PFOS)	8/11	5	6	150	3.30 J	PZ-1
Perfluorooctanoic acid (PFOA)	9/11	2	6	140 J	6.60	MW-02A
Perfluorotetradecanoic acid (PFTA)	0/11	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/11	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	0/11	---	---	---	---	---
EPA LHA	---	5	---	250	11.5	MW-02A
MassDEP GW-1	---	---	8	649	15.7	MW-02A

Notes:

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

There were no AOC 21 monitoring wells.

Table 3-4
AOC 21 Summary of PFAS Exceedances from Vertical Profile Samples
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/20	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/20	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1/20	---	---	3.20 J	3.20 J	21VP-19-02-123-127
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/20	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	20/20	---	---	14.0	2.00	21VP-19-01-43-47
Perfluorodecanoic acid (PFDA)	19/20	---	---	4.90	1.70 J	21VP-19-01-43-47
Perfluorododecanoic acid (PFDoA)	0/20	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	20/20	---	---	17.0	3.30	21VP-19-01-83-87
Perfluorohexanesulfonic acid (PFHxS)	20/20	---	7	27.0	4.10	21VP-19-02-123-127
Perfluorohexanoic acid (PFHxA)	20/20	---	---	31.0	2.20	21VP-19-01-53-57
Perfluorononanoic acid (PFNA)	19/20	---	---	11.0	3.00	21VP-19-01-33-37
Perfluorooctanesulfonic acid (PFOS)	20/20	16	20	190	38.0	21VP-19-01-43-47
Perfluorooctanoic acid (PFOA)	20/20	1	19	96.0	16.0	21VP-19-01-33-37
Perfluorotetradecanoic acid (PFTA)	0/20	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/20	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	0/20	---	---	---	---	---
EPA LHA	---	19	---	256	54.0	21VP-19-01-33-37
MassDEP GW-1	---	---	20	304	61.4	21VP-19-01-33-37

Notes:

J = estimated value.

ng/L = nanograms per liter.

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 3-5
AOC 20 Summary of PFAS Exceedances from Soil Borings
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/35	---	---		---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/35	---	---		---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	13/35	---	4.50 J	0.330 J	---	---	20SB-19-01
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	22/35	---	8.90	0.300 J	---	---	20SB-19-01
Perfluorobutanesulfonic acid (PFBS)	0/35	---	---		---	---	---
Perfluorodecanoic acid (PFDA)	5/35	2	0.880	0.086 J	S-1/GW-1	0.30	20SB-19-08
Perfluorododecanoic acid (PFDoA)	12/35	---	1.30	0.110 J	---	---	20SB-19-01
Perfluoroheptanoic acid (PFHpA)	1/35	---	0.320 J	0.320 J	S-1/GW-1	0.50	20SB-19-08
Perfluorohexanesulfonic acid (PFHxS)	15/35	2	0.470	0.067 J	S-1/GW-1	0.30	20SB-19-01
Perfluorohexanoic acid (PFHxA)	2/35	---	0.210 J	0.170 J	---	---	20SB-19-08
Perfluorononanoic acid (PFNA)	4/35	---	0.290 J	0.110 J	S-1/GW-1	0.32	20SB-19-08
Perfluorooctane sulfonate (PFOS)	31/35	5	13.0	0.240 J	S-1/GW-1	2.0	20SB-19-08
Perfluorooctanoic acid (PFOA)	8/35	1	1.80	0.100 J	S-1/GW-1	0.72	20SB-19-08
Perfluorotetradecanoic acid (PFTA)	8/35	---	0.700	0.110 J	---	---	20SB-19-01
Perfluorotridecanoic acid (PFTrDA)	3/35	---	0.420	0.130 J	---	---	20SB-19-01
Perfluoroundecanoic acid (PFUnA)	4/35	---	0.420	0.130 J	---	---	20SB-19-01

Notes:

µg/kg denotes micrograms per kilogram

J denotes estimated result

S-1/GW-1 denotes Massachusetts Contingency Plan standards.

Table 3-6
AOC 21 Summary of PFAS Exceedances from Soil Borings
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/13	---	---		---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/13	---	---		---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	6/13	---	8.50	0.490 J	---	---	21SB-19-03
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5/13	---	4.60	0.540 J	---	---	21SB-19-03
Perfluorobutanesulfonic acid (PFBS)	0/13	---	---		---	---	---
Perfluorodecanoic acid (PFDA)	9/13	2	0.460	0.120 J	S-1/GW-1	0.30	21SB-19-03
Perfluorododecanoic acid (PFDoA)	3/13	---	0.290 J	0.200 J	---	---	21SB-19-01
Perfluoroheptanoic acid (PFHpA)	2/13	---	0.230 J	0.150 J	S-1/GW-1	0.50	21SB-19-01
Perfluorohexanesulfonic acid (PFHxS)	9/13	2	0.560	0.084 J	S-1/GW-1	0.30	21SB-19-01
Perfluorohexanoic acid (PFHxA)	1/13	---	0.140 J	0.140 J	---	---	21SB-19-01
Perfluorononanoic acid (PFNA)	4/13	---	0.260 J	0.110 J	S-1/GW-1	0.32	21SB-19-03
Perfluorooctane sulfonate (PFOS)	13/13	7	19.0 J	0.350 J	S-1/GW-1	2.0	21SB-19-01
Perfluorooctanoic acid (PFOA)	9/13	3	2.20	0.130 J	S-1/GW-1	0.72	21SB-19-01
Perfluorotetradecanoic acid (PFTA)	0/13	---	---		---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/13	---	---		---	---	---
Perfluoroundecanoic acid (PFUnA)	3/13	---	0.140 J	0.140 J	---	---	21SB-19-03

Notes:

µg/kg denotes micrograms per kilogram

J denotes estimated result

S-1/GW-1 denotes Massachusetts Contingency Plan standards.

**Table 4-1
AOC 30 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Vertical Profiles													
Vertical Profiles	30VP-19-01	3035432.10	626818.69	GP	7/17/2019	221.30	32.5	refusal	NA	NA	NA	NA	NA
	30VP-19-02	3035422.41	626555.89	GP	7/18/2019	221.88	45	refusal	NA	NA	NA	NA	NA
	30VP-19-03	3035147.30	626449.20	GP	7/8/2019	268.04	119	refusal	NA	NA	NA	NA	NA
	30VP-19-04	3034928.90	626262.80	GP	7/9/2019	266.90	135	refusal	NA	NA	NA	NA	NA
	30VP-19-05	3035471.80	627375.50	GP	7/16/2019	224.10	49	refusal	NA	NA	NA	NA	NA
	30VP-19-06	3035031.44	627007.63	GP	7/12/2019	267.20	89	refusal	NA	NA	NA	NA	NA
Soil Borings													
Soil Borings	30SB-19-01	3034966.81	627049.26	GP	10/14/2019	266.44	65	end of boring	NA	NA	NA	NA	NA
	30SB-19-02	3034996.59	626968.47	GP	10/14/2019	268.04	15	end of boring	NA	NA	NA	NA	NA
	30SB-19-03	3034903.53	626941.19	GP	10/14/2019	267.77	15	end of boring	NA	NA	NA	NA	NA
	30SB-19-04	3035154.75	626456.78	GP	10/15/2019	268.03	70	end of boring	NA	NA	NA	NA	NA
	30SB-19-05	3035097.09	626453.98	GP	10/14/2019	268.46	15	end of boring	NA	NA	NA	NA	NA
	30SB-19-06	3035089.90	626406.54	GP	10/15/2019	268.11	15	end of boring	NA	NA	NA	NA	NA
Piezometer Installation													
Piezometers	30PZ-19-01	3035431.20	626817.10	GP	7/17/2019	221.30	28	end of boring	224.63	18	28	203.30	193.30
	30PZ-19-02	3034956.60	626870.20	GP	7/15/2019	267.45	80	end of boring	267.12	70	80	197.45	187.45
	30PZ-19-03	3035148.10	626448.80	GP	7/10/2019	268.04	80	end of boring	267.90	70	80	198.04	188.04
	30PZ-19-04	3034929.90	626262.80	GP	7/24/2019	266.90	77	end of boring	266.80	67	77	199.90	189.90
	30PZ-19-05	3035471.40	627375.50	GP	7/17/2019	224.10	30	end of boring	223.77	20	30	204.10	194.10

Notes:

BGS = below ground surface

ft = feet

GP = Geoprobe

NA = not applicable

NAD83 = North American Datum 1983

NAVD88 = North American Vertical Datum 1988

UKN = unknown

Table 4-2
AOC 30 Summary of PFAS Exceedances from Vertical Profile Samples
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	2/23	---	---	15.0 J	8.10 J	30VP-19-06-83-87
8:2 Fluorotelomer sulfonate (8:2 FTS)	3/23	---	---	59.0	29.0	30VP-19-06-83-87
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/23	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/23	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	22/23	---	---	49.0	0.450 J	30VP-19-03-73-77
Perfluorodecanoic acid (PFDA)	6/23	---	---	2.30 J	0.810 J	30VP-19-06-83-87
Perfluorododecanoic acid (PFDoA)	0/23	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	21/23	---	7	300	0.580 J	30VP-19-03-73-77
Perfluorohexanesulfonic acid (PFHxS)	22/23	---	17	2,500	5.60	30VP-19-03-73-77
Perfluorohexanoic acid (PFHxA)	22/23	---	---	1,500	3.00	30VP-19-03-73-77
Perfluorononanoic acid (PFNA)	13/23	---	---	9.00	1.20 J	30VP-19-06-83-87
Perfluorooctanesulfonic acid (PFOS)	17/23	10	15	1,800	11.0	30VP-19-06-83-87
Perfluorooctanoic acid (PFOA)	20/23	6	10	3,500	0.730 J	30VP-19-03-73-77
Perfluorotetradecanoic acid (PFTA)	0/23	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/23	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	0/23	---	---	---	---	---
EPA LHA		11		3,530	1.90	30VP-19-03-73-77
MassDEP GW-1			20	6,330	5.60	30VP-19-03-73-77

Notes:

J = estimated value.

ng/L = nanograms per liter.

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

**Table 4-3
AOC 30 Summary of PFAS Exceedances from Soil Borings
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/26	---	---		---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/26	---	---		---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/26	---	---		---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/26	---	---		---	---	---
Perfluorobutanesulfonic acid (PFBS)	2/26	---	0.089 J	0.083 J	---	---	30SB-19-03
Perfluorodecanoic acid (PFDA)	2/26	---	0.230 J	0.140 J	S-1/GW-1	0.30	30SB-19-01
Perfluorododecanoic acid (PFDoA)	1/26	---	0.150 J	0.150 J	---	---	30SB-19-01
Perfluoroheptanoic acid (PFHpA)	1/26	---	0.110 J	0.110 J	S-1/GW-1	0.50	30SB-19-01
Perfluorohexanesulfonic acid (PFHxS)	18/26	10	7.20	0.067 J	S-1/GW-1	0.30	30SB-19-01
Perfluorohexanoic acid (PFHxA)	8/26	---	0.960	0.092 J	---	---	30SB-19-01
Perfluorononanoic acid (PFNA)	2/26	1	0.330	0.200 J	S-1/GW-1	0.32	30SB-19-06
Perfluorooctane sulfonate (PFOS)	11/26	7	100	0.580 J	S-1/GW-1	2.0	30SB-19-06
Perfluorooctanoic acid (PFOA)	16/26	8	5.70	0.100 J	S-1/GW-1	0.72	30SB-19-05
Perfluorotetradecanoic acid (PFTA)	0/26	---	---		---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/26	---	---		---	---	---
Perfluoroundecanoic acid (PFUnA)	1/26	---	0.120 J	0.120 J	---	---	30SB-19-01

Notes:

µg/kg denotes micrograms per kilogram

J denotes estimated result

S-1/GW-1 denotes Massachusetts Contingency Plan standards.

**Table 5-1
AOC 31 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location*	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Vertical Profiles													
Initial Vertical Profiles	31VP-19-01	3033967.58	626254.21	GP	8/29/2019	267.34	195.5	refusal	NA	NA	NA	NA	NA
	31VP-19-04	3034167.00	626075.50	GP	8/5/2019	266.66	132	refusal	NA	NA	NA	NA	NA
	31VP-19-05	3033990.08	624904.81	GP	9/4/2019	206.26	37.5	refusal	NA	NA	NA	NA	NA
Second Set of Vertical Profiles	31VP-19-06	3034307.57	625075.40	GP	9/24/2019	209.20	87	refusal	NA	NA	NA	NA	NA
	31VP-19-07	3033989.86	625375.19	GP	9/26/2019	206.31	97	refusal	NA	NA	NA	NA	NA
	31VP-19-08	3033810.30	625434.74	GP	10/2/2019	206.96	90.5	refusal	NA	NA	NA	NA	NA
Soil Borings													
Soil Borings	31SB-19-01	3033974.05	626248.83	GP	10/16/2019	267.33	70	end of boring	NA	NA	NA	NA	NA
	31SB-19-02	3034008.58	626285.07	GP	10/17/2019	267.64	15	end of boring	NA	NA	NA	NA	NA
	31SB-19-03	3034009.09	626227.51	GP	10/17/2019	267.29	15	end of boring	NA	NA	NA	NA	NA
	31SB-19-04	3033943.09	626225.98	GP	10/16/2019	267.19	15	end of boring	NA	NA	NA	NA	NA
	31SB-19-05	3033925.37	626289.50	GP	10/17/2019	267.21	15	end of boring	NA	NA	NA	NA	NA
	31SB-19-06	3033881.15	626255.73	GP	10/16/2019	266.34	10	end of boring	NA	NA	NA	NA	NA
	31SB-19-07	3033980.73	626178.15	GP	10/16/2019	267.30	10	end of boring	NA	NA	NA	NA	NA
Concrete													
Concrete	31SB-19-07	3033980.73	626178.15	GP	10/16/2019	267.30	0.5	end of boring	NA	NA	NA	NA	NA
Piezometer Installation													
Piezometers	31PZ-19-01	3034166.00	626075.50	GP	8/7/2019	266.66	77	end of boring	269.38	67	77	199.66	189.66
	31PZ-19-02D	3033989.36	625372.87	GP	10/1/2019	206.31	70	end of boring	209.48	65	70	141.31	136.31
	31PZ-19-02S	3033989.86	625374.19	GP	10/1/2019	206.29	13	end of boring	209.44	8	13	198.29	193.29

Notes:

BGS = below ground surface

ft = feet

GP = Geoprobe

NA = not applicable

NAD83 = North American Datum 1983

NAVD88 = North American Vertical Datum 1988

*31VP-19-02/03 were not drilled.

Table 5-2
AOC 31 Summary of PFAS Exceedances from Vertical Profile Samples
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	17/50	---	---	780 J	10.0 J	31VP-19-01-63-67
8:2 Fluorotelomer sulfonate (8:2 FTS)	10/50	---	---	500 J	3.00 J	31VP-19-01-63-67
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	7/50	---	---	4.40 J	2.80 J	31VP-19-08-63-67
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1/50	---	---	8.60 J	8.60 J	31VP-19-01-63-67
Perfluorobutanesulfonic acid (PFBS)	46/50	---	---	190	0.510 J	31VP-19-01-123-127
Perfluorodecanoic acid (PFDA)	15/50	---	---	6.90	0.550 J	31VP-19-07-88-92
Perfluorododecanoic acid (PFDoA)	0/50	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	45/50	---	20	240	0.590 J	31VP-19-04-109-113
Perfluorohexanesulfonic acid (PFHxS)	47/50	---	42	4,800	3.70	31VP-19-01-123-127
Perfluorohexanoic acid (PFHxA)	48/50	---	---	2,400	0.500J	31VP-19-01-123-127
Perfluorononanoic acid (PFNA)	26/50	---	---	9.90	0.660 J	31VP-19-07-88-92
Perfluorooctanesulfonic acid (PFOS)	46/50	23	36	5,100	1.20 J	31VP-19-01-63-67
Perfluorooctanoic acid (PFOA)	48/50	26	40	4,100	1.20J	31VP-19-01-123-127
Perfluorotetradecanoic acid (PFTA)	0/50	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/50	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	1/50	---	---	0.700 J	0.700 J	31VP-19-01-183-187
EPA LHA		38		5,830	2.70	31VP-19-01-63-67
MassDEP GW-1			43	10,200	2.70	31VP-19-01-123-127

Notes:

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 5-3
AOC 31 Summary of PFAS Exceedances from Soil Borings
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	15/25	---	56.0	0.730 J	---	---	31SB-19-05
8:2 Fluorotelomer sulfonate (8:2 FTS)	22/25	---	84.0	0.320 J	---	---	31SB-19-04
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2/25	---	0.680 J	0.600 J	---	---	31SB-19-05
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	16/25	---	3.60	0.300 J	---	---	31SB-19-02
Perfluorobutanesulfonic acid (PFBS)	15/25	---	2.50	0.069 J	---	---	31SB-19-07
Perfluorodecanoic acid (PFDA)	16/25	7	0.960	0.120 J	Proposed S-1/GW-1	0.30	31SB-19-01
Perfluorododecanoic acid (PFDoA)	5/25	---	0.190 J	0.100 J	---	---	31SB-19-05
Perfluoroheptanoic acid (PFHpA)	23/25	2	0.510	0.094 J	Proposed S-1/GW-1	0.50	31SB-19-01
Perfluorohexanesulfonic acid (PFHxS)	25/25	25	67.0	0.330	Proposed S-1/GW-1	0.30	31SB-19-05
Perfluorohexanoic acid (PFHxA)	22/25	---	1.60	0.098 J	---	---	31SB-19-01
Perfluorononanoic acid (PFNA)	20/25	3	0.450	0.090 J	Proposed S-1/GW-1	0.32	31SB-19-05
Perfluorooctane sulfonate (PFOS)	25/25	25	530	7.10	Proposed S-1/GW-1	2.0	31SB-19-01
Perfluorooctanoic acid (PFOA)	25/25	18	53.0	0.110 J	Proposed S-1/GW-1	0.72	31SB-19-05
Perfluorotetradecanoic acid (PFTA)	0/25	---	---		---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/25	---	---		---	---	---
Perfluoroundecanoic acid (PFUnA)	6/25	---	0.230 J	0.130 J	---	---	31SB-19-05

Notes:

µg/kg denotes micrograms per kilogram

J denotes estimated result

S-1/GW-1 denotes Massachusetts Contingency Plan standards.

**Table 6-1
AOC 50 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Existing Monitoring Well Sampling													
Existing Monitoring Wells	G6M-18-01	3034124.29	626508.04	RD	1/10/2019	264.58	127	well depth	264.24	116	126	148.58	138.58
	G6M-18-02	3033809.06	626102.24	RD	1/9/2019	266.64	137	well depth	268.33	123.95	133.95	142.69	132.69
	G6M-01-01X	3033351.05	626357.87	UKN	UKN	263.62	152	well depth	265.67	130	150	133.62	113.62
	G6M-02-01X	3034746.23	627859.19	UKN	UKN	263.12	95	well depth	262.44	80	95	183.12	168.12
	G6M-02-02X	3034667.64	627949.01	UKN	UKN	263.25	97	well depth	262.98	80	95	183.25	168.25
	G6M-02-03X	3034149.41	627143.45	UKN	UKN	263.69	105	well depth	263.03	90	105	173.69	158.69
	G6M-02-04X	3034065.54	627229.70	UKN	UKN	262.99	105	well depth	264.92	90	105	172.99	157.99
	G6M-02-05X	3033741.43	626646.05	UKN	2/13/2002	264.33	135	well depth	266.50	120	135	144.33	129.33
	G6M-02-06X	3033118.06	626093.28	UKN	UKN	204.72	65	well depth	209.73	55	65	149.72	139.72
	G6M-02-07X	3033654.52	625702.35	UKN	UKN	207.74	40	well depth	210.72	30	40	177.74	167.74
	G6M-02-08X	3035050.83	628301.68	UKN	UKN	222.72	70	well depth	224.23	60	70	162.72	152.72
	G6M-02-09X	3033980.14	627285.59	UKN	UKN	262.66	105	well depth	264.10	90	105	172.66	157.66
	G6M-02-10X	3033677.48	626713.99	UKN	UKN	264.30	135	well depth	266.57	125	135	139.30	129.30
	G6M-02-11X	3033609.08	626634.25	UKN	UKN	261.89	135	well depth	263.93	125	135	136.89	126.89
	G6M-02-12X	3033555.91	626546.36	UKN	UKN	258.85	135	well depth	262.46	125	135	133.85	123.85
	G6M-02-13X	3033970.06	627017.90	UKN	UKN	263.81	120	well depth	263.61	110	120	153.81	143.81
	G6M-02-31BR	3034878.77	628213.01	UKN	UKN	254.29	95	well depth	255.71	85	95	169.29	159.29
	G6M-03-01X	3035060.06	628308.92	UKN	UKN	222.92	70	well depth	225.09	50	70	172.92	152.92
	G6M-03-02X	3035040.96	628302.67	UKN	UKN	222.72	43	well depth	224.31	28	43	194.72	179.72
	G6M-03-04X	3035001.44	628431.56	UKN	UKN	UKN	30	well depth	225.20	15	30	UKN	UKN
	G6M-03-07X	3034422.68	627560.62	UKN	UKN	262.84	90	well depth	262.66	80	90	182.84	172.84
	G6M-03-08X	3033490.46	626483.17	UKN	UKN	259.35	140	well depth	258.60	125	140	134.35	119.35
	G6M-03-09X	3033541.80	626480.17	UKN	UKN	257.85	140	well depth	258.89	125	140	132.85	117.85
	G6M-03-10X	3033630.78	626447.62	UKN	UKN	264.52	135	well depth	265.81	120	135	144.52	129.52
	G6M-03-11X	3033366.15	626365.16	UKN	UKN	260*	130	well depth	UKN	115	130	145*	130*
	G6M-04-01X	3034762.37	627999.88	UKN	UKN	261.69	92	well depth	261.15	82	92	179.69	169.69
	G6M-04-02X	3034493.28	627651.58	UKN	UKN	264.48	90	well depth	266.55	80	90	184.48	174.48
	G6M-04-03X	3034595.27	627791.55	UKN	UKN	264.78	95	well depth	264.29	85	95	179.78	169.78
G6M-04-04X	3034333.77	627448.67	UKN	UKN	263.70	104	well depth	262.66	94	104	169.70	159.70	
G6M-04-05X	3033496.62	626482.47	UKN	UKN	258.60	110	well depth	258.13	100	110	158.60	148.60	
G6M-04-06X	3033359.03	626248.36	UKN	UKN	262.20	105	well depth	263.97	95	105	167.20	157.20	
G6M-04-07X	3033349.18	626248.44	UKN	UKN	261.80	130	well depth	263.82	120	130	141.80	131.80	
G6M-04-08X	3033449.92	625617.35	UKN	UKN	203.20	90	well depth	209.55	80	90	123.20	113.20	
G6M-04-09X	3034944.49	628303.76	UKN	UKN	242.38	65	well depth	242.66	55	65	187.38	177.38	

**Table 6-1
AOC 50 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Existing Monitoring Wells	G6M-04-10A	3034996.14	628385.40	UKN	UKN	222.37	40	well depth	224.02	30	40	192.37	182.37
	G6M-04-10X	3034998.86	628380.01	UKN	UKN	222.46	62	well depth	224.22	52	62	170.46	160.46
	G6M-04-11X	3034988.58	628110.58	UKN	UKN	228.27	45	well depth	229.47	35	45	193.27	183.27
	G6M-04-12X	3035032.24	628232.51	UKN	UKN	UKN	64	well depth	225.61	54	64	UKN	UKN
	G6M-04-13X	3034974.08	628410.98	UKN	UKN	224.17	40	well depth	225.88	30	40	194.17	184.17
	G6M-04-14X	3033358.95	625817.67	UKN	UKN	208.51	90	well depth	210.61	80	90	128.51	118.51
	G6M-04-15X	3034916.27	628330.94	UKN	UKN	251.74	80	well depth	253.23	70	80	181.74	171.74
	G6M-04-22X	3034895.26	628167.87	UKN	UKN	254.20	84	well depth	255.89	74	84	180.20	170.20
	G6M-04-31X	3034869.22	628209.97	UKN	UKN	254.31	78	well depth	255.91	68	78	186.31	176.31
	G6M-06-01X	3034144.06	626954.60	UKN	3/22/2006	264.48	126	well depth	264.54	106	126	158.48	138.48
	G6M-07-01X	3034805.01	627885.20	UKN	UKN	262.18	89	well depth	262.10	78	89	184.18	173.18
	G6M-07-02X	3034987.40	628407.40	UKN	UKN	222.88	28	well depth	225.10	22.5	27.5	200.38	195.38
	G6M-13-01X	3033736.90	626402.10	UKN	UKN	265.20	135	well depth	266.82	125	135	140.20	130.20
	G6M-13-02X	3034076.71	626820.10	UKN	UKN	264.03	125	well depth	263.82	115	125	149.03	139.03
	G6M-13-03X	3034543.73	627535.38	UKN	UKN	264.78	90	well depth	264.37	80	90	184.78	174.78
	G6M-13-04X	3033706.70	626602.65	UKN	UKN	264.96	135	well depth	266.31	125	135	139.96	129.96
	G6M-13-05X	3035037.31	628219.4	UKN	UKN	223.86	55	well depth	225.00	45	55	178.86	168.86
	G6M-13-06X	3034982.10	628269.75	UKN	UKN	225.42	60	well depth	224.37	50	60	175.42	165.42
	G6M-92-10X	3035008.28	628503.4	UKN	UKN	222.40	19	well depth	225.08	9	19	213.40	203.40
	G6M-93-13X	3034988.40	628274.25	UKN	UKN	222.90	19	well depth	224.83	9	19	213.90	203.90
	G6M-94-15A	3034924.42	628328.64	UKN	UKN	250.70	43	well depth	252.88	33	43	217.70	207.70
	G6M-95-19X	3035057.71	628384.33	UKN	UKN	222.35	58	well depth	223.89	48	58	174.35	164.35
	G6M-95-20X	3035005.87	628485.81	UKN	UKN	222.51	23	well depth	224.61	18	23	204.51	199.51
	G6M-96-22A	3035142.80	628391.08	UKN	UKN	216.30	50	well depth	217.59	40	50	176.30	166.30
	G6M-96-22B	3035149.16	628384.37	UKN	UKN	216.40	70.5	well depth	217.56	65.5	70.5	150.90	145.90
	G6M-96-25A	3035060.98	628065.35	UKN	UKN	223.28	18.7	well depth	225.52	9	18.7	214.28	204.58
	G6M-96-25B	3035060.98	628065.35	UKN	UKN	223.89	58	well depth	225.64	48	58	175.89	165.89
	G6M-96-26A	3034950.67	628547.74	UKN	UKN	222.83	18	well depth	224.56	8	18	214.83	204.83
	G6M-96-26B	3034947.59	628554.41	UKN	UKN	222.89	78	well depth	224.40	68	78	154.89	144.89
	G6M-97-09B	3034545.25	628271.92	UKN	UKN	257.30	82.50	end of boring	260.05	71.5	81.5	185.80	175.80
G6M-97-05B	3033730.40	626265.10	UKN	UKN	265.94	135	well depth	268.12	130	135	135.94	130.94	
G6M-97-09B	3034545.25	628271.92	UKN	UKN	257.30	82	well depth	260.05	71.5	81.5	185.80	175.80	
G6M-97-27X	3035019.74	628384.64	UKN	UKN	222.31	UNK	well depth	224.50	UNK	UNK	UNK	UNK	
G6M-97-28X	3034102.75	627185.77	UKN	UKN	263.13	105	well depth	265.69	100	105	163.13	158.13	
G6M-97-29X	3033672.09	626733.84	UKN	UKN	264.00	189	well depth	266.15	179	189	85.00	75.00	

Table 6-1
AOC 50 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Existing Monitoring Wells	G6M-98-32X	3033673.14	626756.31	UKN	UKN	264.17	135	well depth	266.41	130	135	134.17	129.17
	G6P-97-05X	3035151.10	627296.40	UKN	UKN	234.59	44.20	end of boring	236.72	33	43	201.59	191.59
	MW-3	3033717.29	626756.63	UKN	UKN	263.38	137	well depth	265.75	126	137	137.38	126.38
	MW-6	3033733.38	626818.97	UKN	UKN	263.59	135	well depth	265.20	125	135	138.59	128.59
	MW-7	3033767.80	626806.09	UKN	UKN	263.74	135	well depth	264.97	125	135	138.74	128.74
	MW-7 (IT)	3035121.81	627288.73	UKN	UKN	238.20	32.50	end of boring	234.00	22	32	216.20	206.20
	XSA-12-95X	3033422.57	626165.52	UKN	UKN	264.91	130	well depth	269.63	120	130	144.91	134.91
	XSA-12-96X	3033529.35	626043.13	UKN	UKN	266.56	130	well depth	269.99	120	130	146.56	136.56
	XSA-12-97X	3033633.51	625909.01	UKN	UKN	259.38	130	well depth	270.78	120	130	139.38	129.38
XSA-12-98X	3033711.64	625683.75	UKN	UKN	204.14	70	well depth	209.61	60	70	144.14	134.14	
Vertical Profiles													
Initial Vertical Profiles	50VP-19-01	3035340.65	628439.14	GP	8/28/2019	218.90	72	refusal	NA	NA	NA	NA	NA
	50VP-19-02	3035185.21	628536.37	GP	8/26/2019	215.91	58	refusal	NA	NA	NA	NA	NA
	50VP-19-03	3035071.22	628588.60	GP	8/23/2019	220.54	56	refusal	NA	NA	NA	NA	NA
	50VP-19-04	3034979.40	627822.10	GP	7/17/2019	249.78	94	refusal	NA	NA	NA	NA	NA
	50VP-19-05	3034810.35	627560.82	GP	10/18/2019	263.89	107	refusal	NA	NA	NA	NA	NA
	50VP-19-06	3034649.60	627345.50	GP	7/1/2019	265.21	96	refusal	NA	NA	NA	NA	NA
	50VP-19-07	3033667.76	626493.31	GP	10/7/2019	264.55	164	refusal	NA	NA	NA	NA	NA
	50VP-19-08	3033351.49	625812.29	GP	9/6/2019	208.50	80	refusal	NA	NA	NA	NA	NA
	50VP-19-09	3033897.90	628849.20	GP	8/16/2019	255.61	107.5	refusal	NA	NA	NA	NA	NA
	50VP-19-10	3033509.90	628182.90	GP	8/14/2019	256.99	79	refusal	NA	NA	NA	NA	NA
	50VP-19-11	3032501.90	629266.60	GP	8/23/2019	256.16	115	refusal	NA	NA	NA	NA	NA
	50VP-19-12	3031601.90	628575.60	GP	8/9/2019	256.03	97.5	refusal	NA	NA	NA	NA	NA
	50VP-19-13	3034626.90	625891.90	GP	8/12/2019	267.03	181	refusal	NA	NA	NA	NA	NA
G6M-18-01	3034124.29	626508.04	GP	10/24/2018	264.58	104	end of boring	NA	NA	NA	NA	NA	
G6M-18-02	3033809.06	626102.24	GP	10/22/2018	266.64	128	end of boring	NA	NA	NA	NA	NA	
Soil Borings													
Initial Soil Borings	50SB-19-01	3034928.63	627680.08	GP	10/24/2019	263.89	50	end of boring	NA	NA	NA	NA	NA
	50SB-19-02	3034742.78	627663.14	GP	10/24/2019	262.73	15	end of boring	NA	NA	NA	NA	NA
	50SB-19-03	3034690.07	627272.18	GP	10/23/2019	265.61	15	end of boring	NA	NA	NA	NA	NA
	50SB-19-04	3034556.61	627735.87	GP	10/23/2019	264.78	15	end of boring	NA	NA	NA	NA	NA
	50SB-19-05	3034805.91	627559.40	GP	10/23/2019	263.90	60	end of boring	NA	NA	NA	NA	NA

**Table 6-1
AOC 50 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Initial Soil Borings	50SB-19-06	3034340.37	626159.88	GP	10/28/2019	265.13	65	end of boring	NA	NA	NA	NA	NA
	50SB-19-07	3033706.65	627107.31	GP	10/25/2019	262.14	15	end of boring	NA	NA	NA	NA	NA
	50SB-19-08	3032857.70	628150.54	GP	10/25/2019	257.84	15	end of boring	NA	NA	NA	NA	NA
Second set of Soil Borings	50SB-19-09	3035336.91	628434.29	GP	10/31/2019	218.92	10	end of boring	NA	NA	NA	NA	NA
	50SB-19-10	3035370.51	628373.27	GP	10/31/2019	218.48	10	end of boring	NA	NA	NA	NA	NA
Initial Soil Borings**	50SB-19-11	3031916.34	628808.90	GP	11/25/2019	255.82	15	end of boring	NA	NA	NA	NA	NA
	50SB-19-12	3033511.41	628185.87	GP	11/18/2019	256.98	15	end of boring	NA	NA	NA	NA	NA
Surface Water and Sediment Sampling													
Surface Water and Sediment Sampling	AFW-19-01	3032884.81	627407.38	NA	10/18/2019	206.01	NA	NA	NA	NA	NA	NA	NA
	AFW-19-02	3033377.97	627071.04	NA	10/18/2019	206.66	NA	NA	NA	NA	NA	NA	NA
	NR-19-01	3026246.78	623892.16	NA	10/17/2019	217.44	NA	NA	NA	NA	NA	NA	NA
	NR-19-02	3030203.05	626397.04	NA	10/16/2019	207.78	NA	NA	NA	NA	NA	NA	NA
	NR-19-03	3030504.89	626714.00	NA	10/16/2019	208.25	NA	NA	NA	NA	NA	NA	NA
	NR-19-04	3031119.00	626885.39	NA	10/16/2019	210.44	NA	NA	NA	NA	NA	NA	NA
	NR-19-05	3031742.45	627055.80	NA	10/16/2019	203.83	NA	NA	NA	NA	NA	NA	NA
	NR-19-06	3032206.28	626137.19	NA	10/15/2019	202.45	NA	NA	NA	NA	NA	NA	NA
	NR-19-07	3032825.91	625987.27	NA	10/15/2019	209.89	NA	NA	NA	NA	NA	NA	NA
	NR-19-08	3033477.82	625860.28	NA	10/15/2019	206.96	NA	NA	NA	NA	NA	NA	NA
	NR-19-09	3033764.23	625317.90	NA	10/15/2019	208.87	NA	NA	NA	NA	NA	NA	NA
	NR-19-10	3034610.48	625453.41	NA	10/15/2019	206.09	NA	NA	NA	NA	NA	NA	NA
	NR-19-11	3035357.56	625890.56	NA	10/14/2019	203.93	NA	NA	NA	NA	NA	NA	NA
	NR-19-12	3035593.37	626568.36	NA	10/14/2019	203.84	NA	NA	NA	NA	NA	NA	NA
NR-19-13	3035858.61	626698.30	NA	10/14/2019	203.27	NA	NA	NA	NA	NA	NA	NA	
NR-19-14	3037117.24	628697.12	NA	12/18/2019	200.24	NA	NA	NA	NA	NA	NA	NA	
Piezometer Installation													
Initial Piezometers	50PZ-19-01	3034978.40	627821.10	GP	7/22/2019	249.78	53	end of boring	252.02	43	53	206.78	196.78
	50PZ-19-02	3034648.60	627345.50	GP	7/3/2019	265.21	67	end of boring	264.94	57	67	208.21	198.21
	50PZ-19-03	3033897.40	628849.20	GP	8/23/2019	255.61	50	end of boring	258.40	40	50	215.61	205.61
	50PZ-19-04	3033509.90	628182.70	GP	7/24/2019	256.99	55	end of boring	260.37	45	55	211.99	201.99
	50PZ-19-05	3032501.40	629266.50	GP	8/24/2019	256.16	49	end of boring	256.51	39	49	217.16	207.16
	50PZ-19-06	3031601.90	628574.60	GP	7/31/2019	256.03	63	end of boring	255.54	53	63	203.03	193.03
	50PZ-19-07	3034626.90	625891.40	GP	8/22/2019	267.03	74	end of boring	270.11	64	74	203.03	193.03

**Table 6-1
AOC 50 Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Staff Gauge													
Staff Gauge	NRSG-01	3033874.98	625375.44	V	4/20/2020	NA	53	NA	204.72***	NA	NA	NA	NA

Notes:

Blue highlighting indicates the monitoring well was sampled for the PFAS RI.

* = Ground surface at G6M-03-11X is estimated based on Google Earth. Therefore well screen elevations are estimated.

** = Soil borings 50VP-19-11 and 50VP-19-12 were initially identified in WP as 50SB-19-09 and 50SB-19-10, respectively but were renumbered.

*** = staff gauge elevation is at the 4-ft mark on the gauge.

BGS = below ground surface

NA = not applicable

ft = feet

UKN = unknown

GP = Geoprobe

NAD83 = North American Datum 1983

RD = Rotosonic

NAVD88 = North American Vertical Datum 1988

V = hand driven

Table 6-2
AOC 50 Summary of PFAS Exceedances from Vertical Profile Samples
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	16/98	---	---	1,720 J	7.30 J	G6M-18-02-84-88
8:2 Fluorotelomer sulfonate (8:2 FTS)	2/98	---	---	3.93 J	3.70 J	G6M-18-02-114-118
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3/98	---	---	3.70 J	2.70 J	50VP-19-08-49-53
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/98	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	82/98	---	---	244	0.460 J	G6M-18-02-84-88
Perfluorodecanoic acid (PFDA)	16/98	---	---	3.50	0.490 J	50VP-19-08-19-23
Perfluorododecanoic acid (PFDoA)	1/98	---	---	1.30 J	1.30 J	50VP-19-03-24-28
Perfluoroheptanoic acid (PFHpA)	80/98	---	19	579	0.730 J	G6M-18-02-84-88
Perfluorohexanesulfonic acid (PFHxS)	91/98	---	64	6,690	1.60 J	G6M-18-02-84-88
Perfluorohexanoic acid (PFHxA)	84/98	---	---	4,010	0.620 J	G6M-18-02-84-88
Perfluorononanoic acid (PFNA)	42/98	---	---	9.50	0.450 J	50VP-19-08-79-83
Perfluorooctanesulfonic acid (PFOS)	80/98	39	50	1,600	1.00 J	50VP-19-06-73-77
Perfluorooctanoic acid (PFOA)	93/98	33	55	9,310	0.550 J	G6M-18-02-84-88
Perfluorotetradecanoic acid (PFTA)	1/98	---	---	0.890 J	0.890 J	50VP-19-12-53-57
Perfluorotridecanoic acid (PFTTrDA)	1/98	---	---	1.10 J	1.10 J	50VP-19-03-24-28
Perfluoroundecanoic acid (PFUnA)	2/98	---	---	1.50 J	0.930 J	50VP-19-13-109-113
EPA LHA		55		10,500	1.76	G6M-18-02-84-88
MassDEP GW-1			77	17,800	3.6	G6M-18-02-84-88

Notes:

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 6-3
AOC 50 Summary of PFAS Exceedances from Monitoring Wells
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	4/45	---	---	18.0 J	7.70 J	G6M-18-01
8:2 Fluorotelomer sulfonate (8:2 FTS)	2/45	---	---	8.20 J	7.10 J	G6M-18-01
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2/45	---	---	3.00 J	2.60 J	G6P-97-05X
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/45	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	40/45	---	---	160	1.30 J	G6M-18-01
Perfluorodecanoic acid (PFDA)	11/45	---	---	3.20	0.450 J	G6M-04-08X
Perfluorododecanoic acid (PFDoA)	3/45	---	---	11.0	0.600 J	G6M-04-14X
Perfluoroheptanoic acid (PFHpA)	42/45	---	9	170	2.00	G6M-18-01
Perfluorohexanesulfonic acid (PFHxS)	45/45	---	38	5,600	2.70	G6M-18-01
Perfluorohexanoic acid (PFHxA)	42/45	---	---	2,700	3.50	G6M-18-01
Perfluorononanoic acid (PFNA)	35/45	---	---	8.70	0.510 J	G6M-18-01
Perfluorooctanesulfonic acid (PFOS)	42/45	24	35	1,500	0.970 J	G6M-18-01
Perfluorooctanoic acid (PFOA)	44/45	16	30	4,000	1.00 J	G6M-18-01
Perfluorotetradecanoic acid (PFTA)	1/45	---	---	1.30 J	1.30 J	G6M-04-14X
Perfluorotridecanoic acid (PFTrDA)	3/45	---	---	4.90	0.8 J	G6M-04-14X
Perfluoroundecanoic acid (PFUnA)	4/45	---	---	1.60 J	0.660 J	G6M-04-14X
EPA LHA		29		5,200	3.90	G6M-18-01
MassDEP GW-1			43	10,900	2.70	G6M-18-01

Notes:

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 6-4
AOC 50 Summary of PFAS Exceedances from Soil Borings
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	1/51	---	2.80 J	2.80 J	---	---	50SB-19-05
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/51	---	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1/51	---	1.20 J	1.20 J	---	---	50SB-19-01
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/51	---	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	1/51	---	0.076 J	0.076 J	---	---	50SB-19-09
Perfluorodecanoic acid (PFDA)	8/51	1	0.410	0.110 J	S-1/GW-1	0.30	50SB-19-01
Perfluorododecanoic acid (PFDoA)	1/51	---	0.690	0.690	---	---	50SB-19-01
Perfluoroheptanoic acid (PFHpA)	9/51	---	0.480	0.100 J	S-1/GW-1	0.50	50SB-19-03
Perfluorohexanesulfonic acid (PFHxS)	25/51	17	19.0	0.080 J	S-1/GW-1	0.30	50SB-19-03
Perfluorohexanoic acid (PFHxA)	17/51	---	0.610	0.079 J	---	---	50SB-19-10
Perfluorononanoic acid (PFNA)	8/51	---	0.210 J	0.091 J	S-1/GW-1	0.32	50SB-19-08
Perfluorooctane sulfonate (PFOS)	29/51	12	45.0 J	0.260 J	S-1/GW-1	2.0	50SB-19-03
Perfluorooctanoic acid (PFOA)	25/51	10	26.0	0.110 J	S-1/GW-1	0.72	50SB-19-03
Perfluorotetradecanoic acid (PFTA)	1/51	---	0.270 J	0.270 J	---	---	50SB-19-01
Perfluorotridecanoic acid (PFTrDA)	1/51	---	0.220 J	0.220 J	---	---	50SB-19-01
Perfluoroundecanoic acid (PFUnA)	2/51	---	0.610	0.160 J	---	---	50SB-19-01

Notes:

µg/kg denotes micrograms per kilogram

J denotes estimated result

S-1/GW-1 denotes Massachusetts Contingency Plan standards.

**Table 7-1
Background Surface Water and Sediment Field Activities
Area 3 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation**

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Surface Water and Sediment Sampling													
Surface Water and Sediment Sampling	BB-20-01	3012180.35	637337.39	NA	5/20/2020	249.73	NA	NA	NA	NA	NA	NA	NA
	FP-20-01	3029865.61	638676.29	NA	5/20/2020	226.29	NA	NA	NA	NA	NA	NA	NA
	FP-20-02	3027996.68	637631.46	NA	5/20/2020	225.75	NA	NA	NA	NA	NA	NA	NA
	NRBK-19-01	3015566.95	620344.49	NA	12/20/2019	216.93	NA	NA	NA	NA	NA	NA	NA
	NRBK-19-02	2993222.69	613953.86	NA	12/20/2019	226.13	NA	NA	NA	NA	NA	NA	NA
	SR-19-01	3036780.59	626283.93	NA	12/18/2019	202.65	NA	NA	NA	NA	NA	NA	NA
	WAB-19-01	3029217.48	624842.12	NA	12/18/2019	212.87	NA	NA	NA	NA	NA	NA	NA

Notes:

BGS = below ground surface

ft = feet

GP = Geoprobe

NA = not applicable

NAD83 = North American Datum 1983

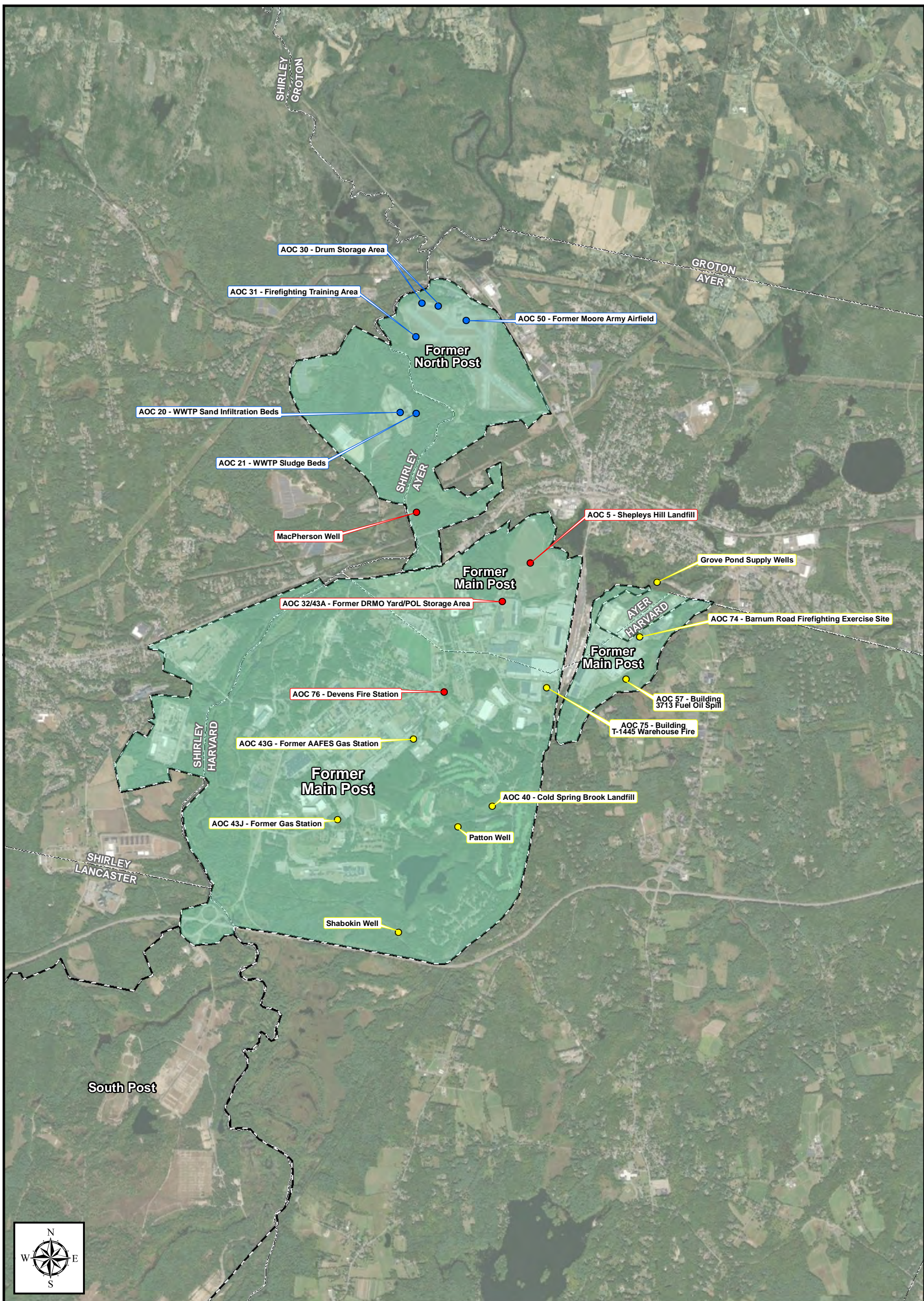
NAVD88 = North American Vertical Datum 1988

RD = Rotosonic

UKN = unknown

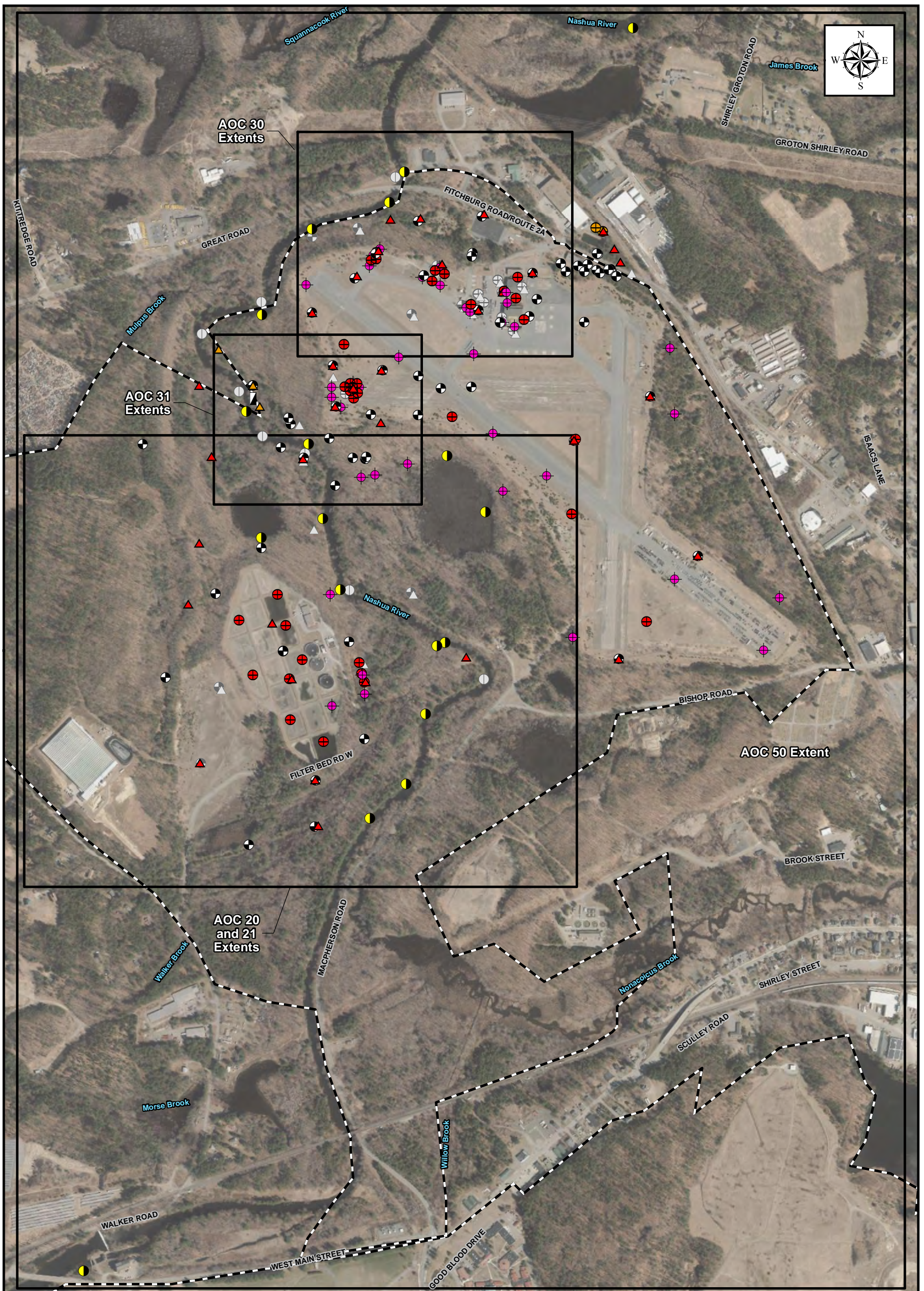
V = hand driven





Legend	
●	Area 1 - Grove Pond, Patton and Shabokin Supply Wells, AOCs 40, 43G, 43J, 57, 74, and 75
●	Area 2 - MacPherson Water Supply Wells, SHL, AOCs 32/43A, and 76
●	Area 3 - AOCs 20, 21, 30, 31, and 50
	Devens Regional Enterprise Zone
	City/Town Boundary
	Former Fort Devens Boundary

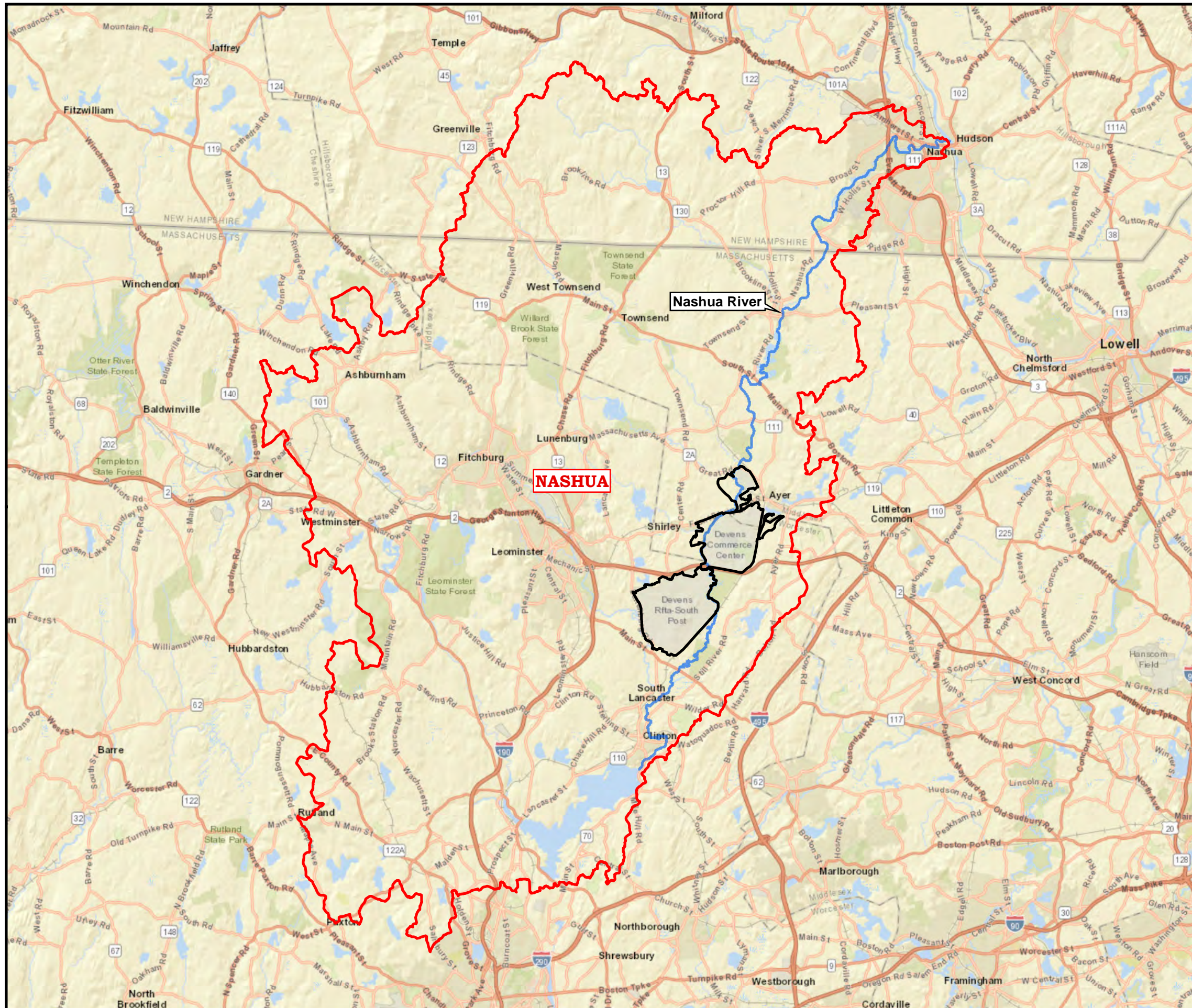
Devens PFAS Remedial Investigation Areas Devens PFAS RI - Area 3 PSCS		
Former Army Installation Devens Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
0 1,500 3,000 Feet	Date: 11/18/2020	Figure 1-1






- Legend**
- Monitoring Well/Piezometer
 - Vertical Profiling Location Installation Phase 1
 - Vertical Profiling Location Installation Phase 2
 - Surface Water and Sediment Sampling Location
 - Staff Gauge
 - Temporary Well Location from SI
 - Monitoring Well/Piezometer Not Completed
 - Soil Boring Location Not Completed
 - Vertical Profiling Location Not Completed
 - Surface Water and Sediment Sampling Location Not Completed
 - Former Fort Devens Boundary

Area 3 Field Activities Devens PFAS RI - Area 3 PSCS		
Former Fort Devens Army Installation Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
0 400 800 Feet	Date: 01/11/2021	Figure 1-2

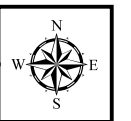
Aerial Source: USGS, MassGIS Orthoimagery 2019



Legend

-  River
-  Watershed Boundary
-  Former Fort Devens Boundary

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Nashua River Basin
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

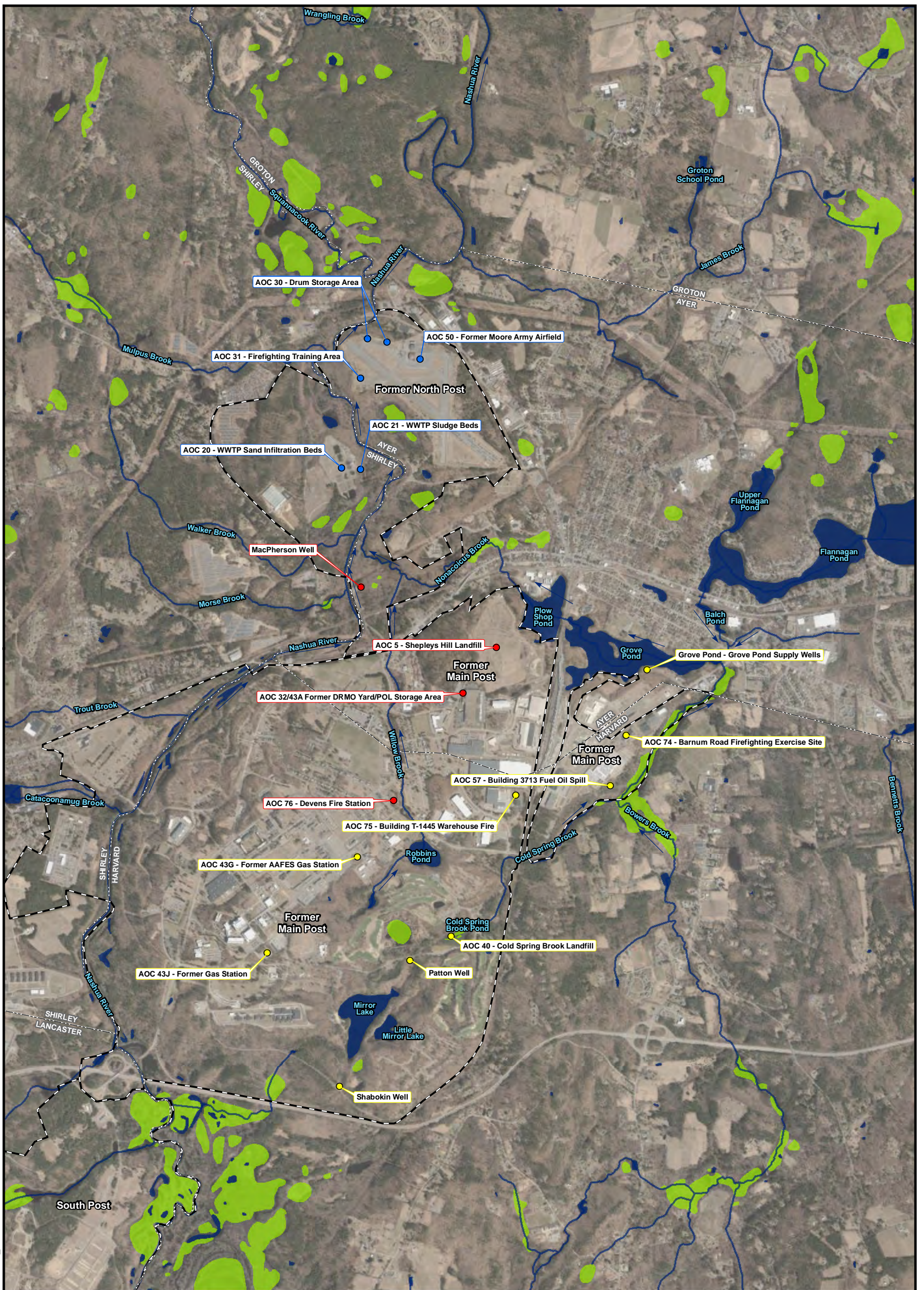
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
07/30/2020

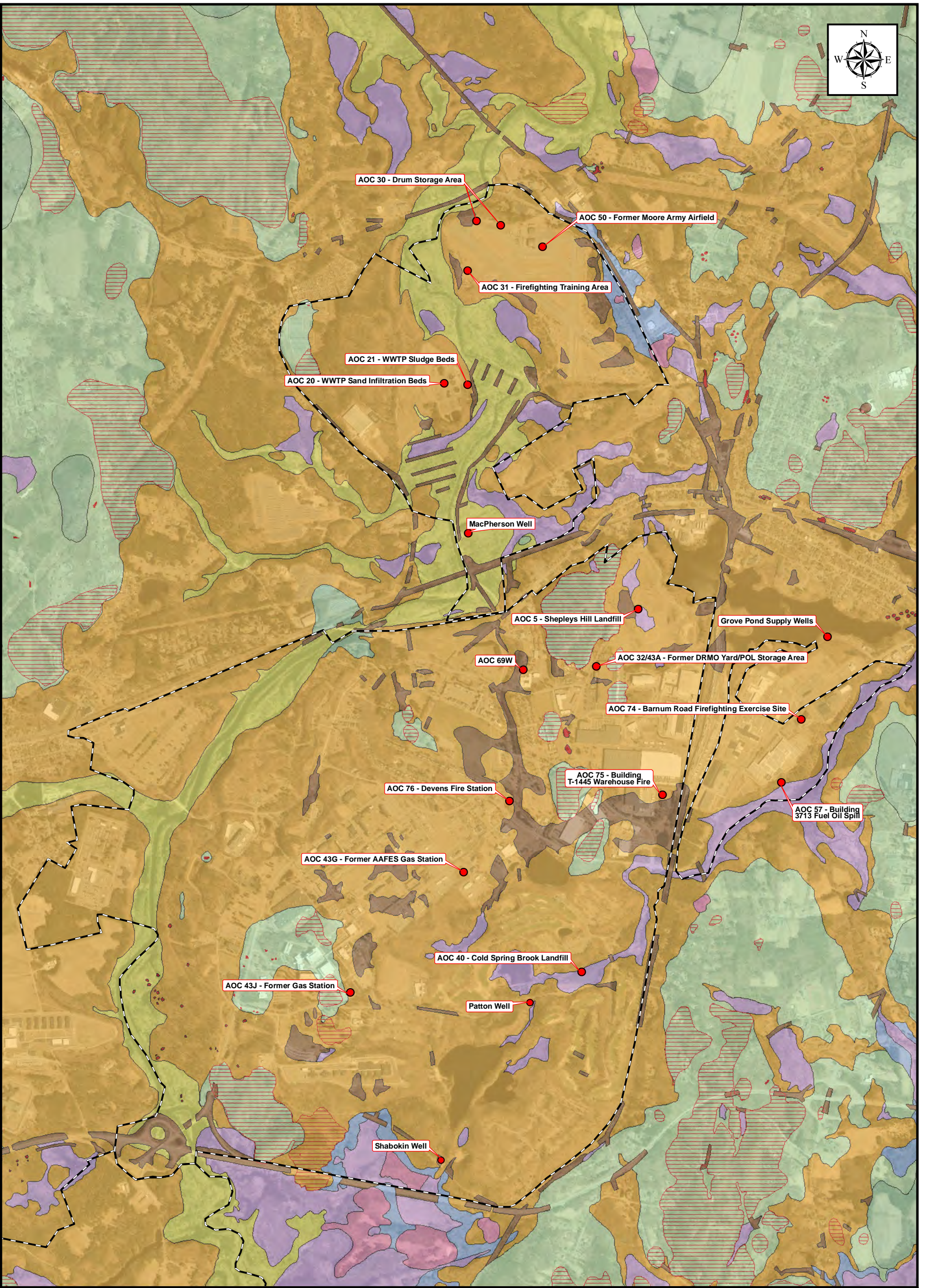
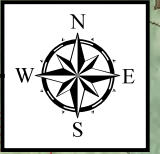
Figure
2-1





File: PFAS_RI_A3_PSCS_F2-2_SurfaceWaterBodies_NHD.mxd

<p>Legend</p> <ul style="list-style-type: none"> ● Area 1 - Grove Pond, Patton and Shabokin Supply Wells, AOCs 40, 43G, 43J, 57, 74, and 75 ● Area 2 - MacPherson Water Supply Wells, SHL, AOCs 32/43A, and 76 ● Area 3 - AOCs 20, 21, 30, 31, and 50 Surface Water Flow Direction City/Town Boundary Former Fort Devens Boundary 	<p>National Hydrography Dataset</p> <ul style="list-style-type: none"> Stream/River Lake/Pond Swamp/Marsh 	<p>Surface Water Bodies Devens PFAS RI - Area 3 PSCS</p> <p>Former Army Installation Devens Devens, Massachusetts</p> <p>KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752</p>
		<p>Date: 02/03/2021</p>
		<p>Figure 2-2</p>



Legend
 ● AOC Location
 [Dashed Line] Former Fort Devens Boundary

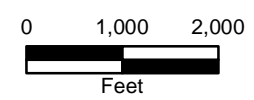
Surficial Geology (1:24,000)

- [Red Hatched Box] Abundant Outcrop and Shallow Bedrock
- [Brown Box] Artificial Fill
- [Purple Box] Swamp and Marsh Deposits
- [Yellow Box] Alluvium
- [Pink Box] Inland Dune
- [Orange Box] Coarse
- [Light Blue Box] Glaciolacustrine Fine
- [Light Green Box] Thick Till
- [Red Box] Bedrock Outcrop
- [Light Green Box] Thin Till

USGS Overburden Geology
 Devens PFAS RI Area 3 PSCS

Former Army Installation Devens
 Devens, Massachusetts

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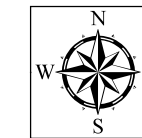
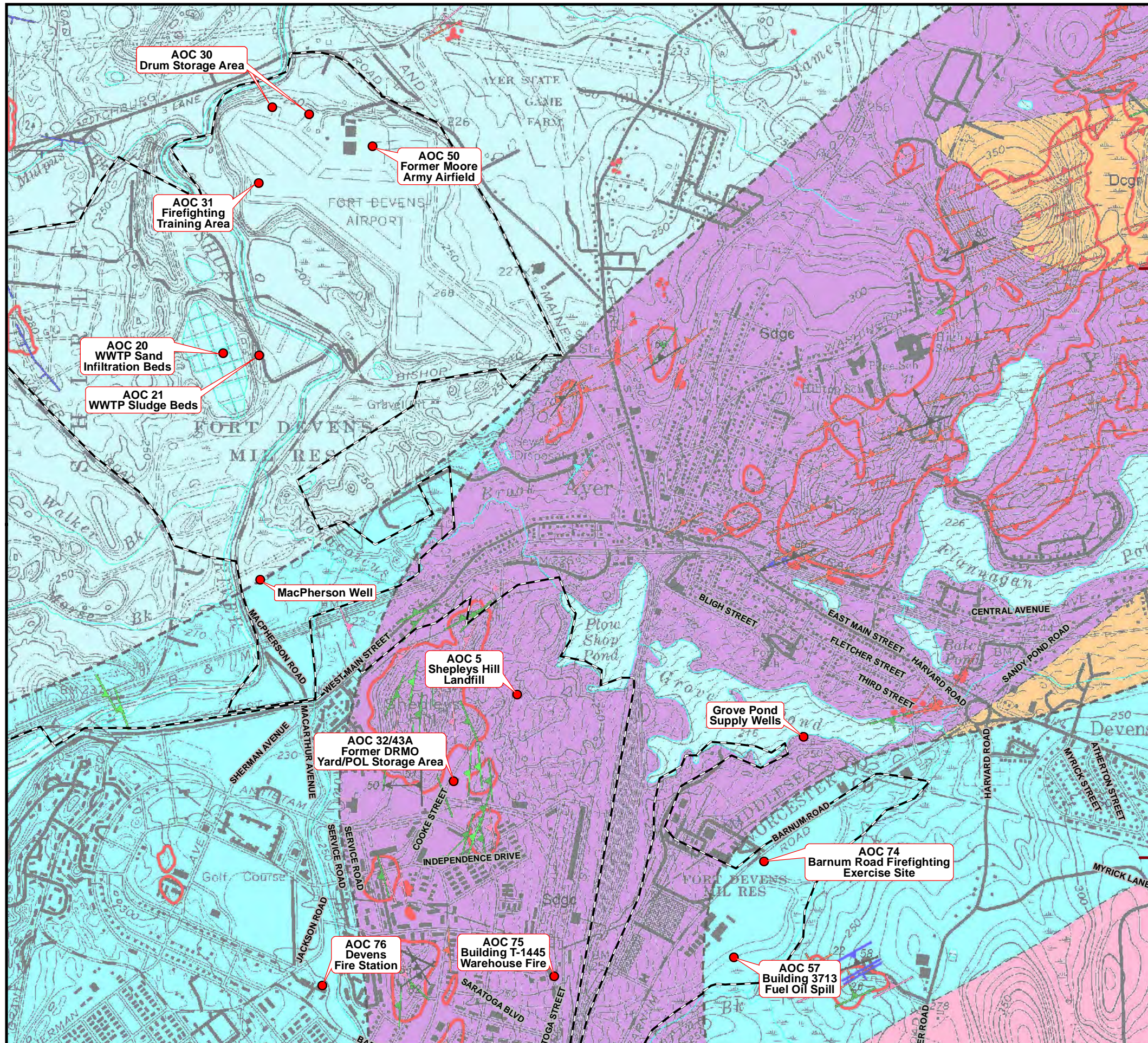


Date:
 10/06/2020

Figure
 2-3



File: PFAS_RI_A3_PSCS_F2-3_USGS_OverburdenGeol.mxd



Legend

- AOC Location
- Former Fort Devens Boundary

Lithologic Units

- Berwick Formation (Silurian)
- Oakdale Formation (Silurian)
- Chelmsford Granite (Devonian)
- Ayer Granite (Silurian)
- Devens gneiss complex (Silurian(?))

- Bedrock outcrop
- Area where bedrock is shallow (<3 meters below surface) and/or outcrop is extensive
- Fault, approximately located (within approximately 50 meters)
- Fault, inferred
- Contact, approximately located (within approximately 50 meters)
- Contact, location inferred
- Gradational contact in Ayer granite

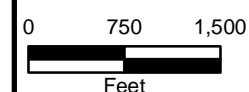
Clinton-Newbury Fault Zone

Map Reference: Preliminary Fracture Characterization Map of the Ayer Quadrangle Massachusetts Hydrostructural Domain Map Sheet 1

Bedrock Geology
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

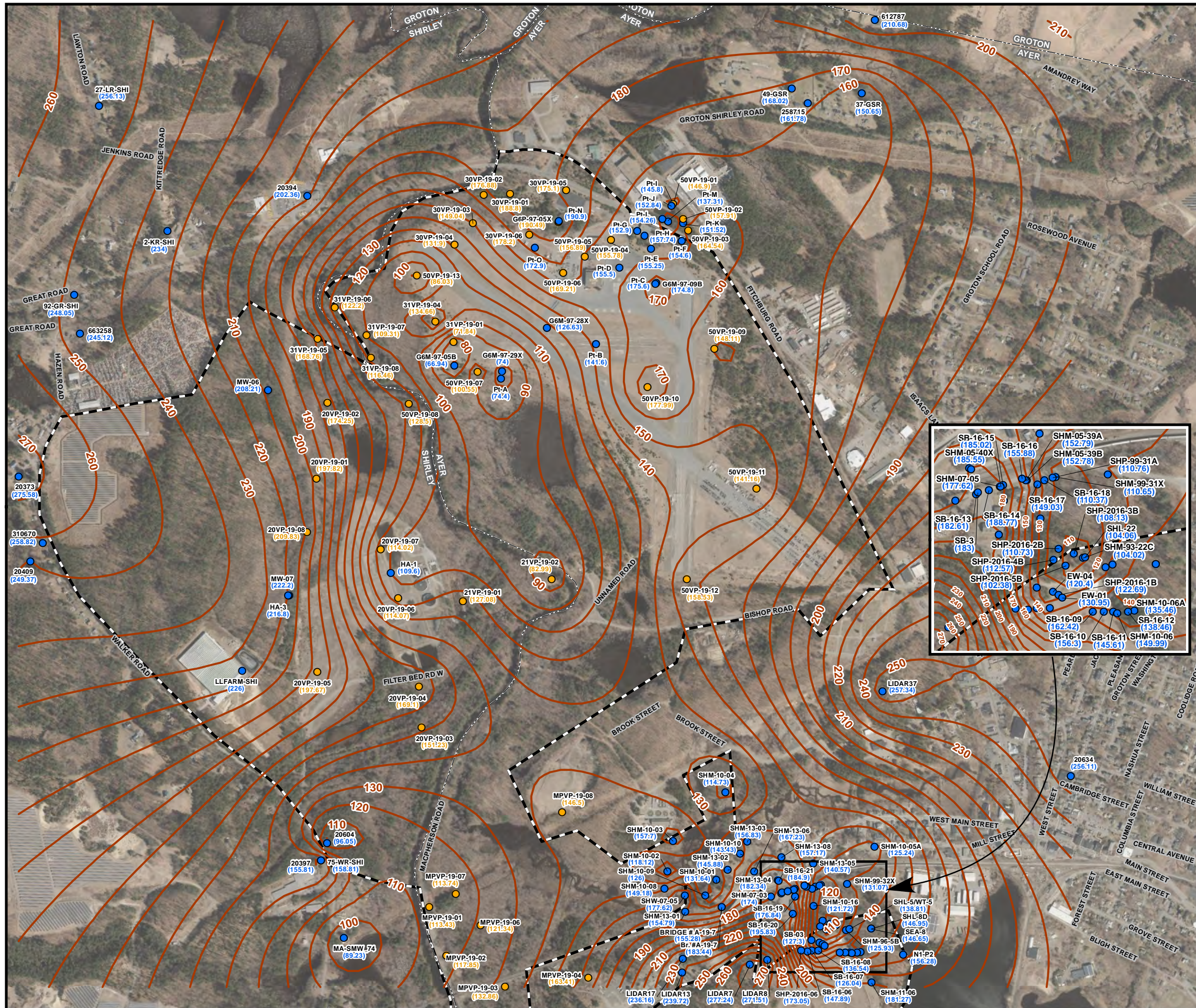
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
09/14/2020

Figure
2-4





- Legend**
- Bedrock confirmed
 - Refusal
 - Bedrock Elevation Contour
(Contour Interval = 10 Feet) (ft NAVD88)
 - Former Fort Devens Boundary

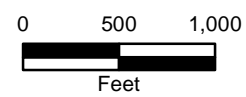


Aerial Source: USGS, MassGIS Orthoimagery 2019

Bedrock Contours
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

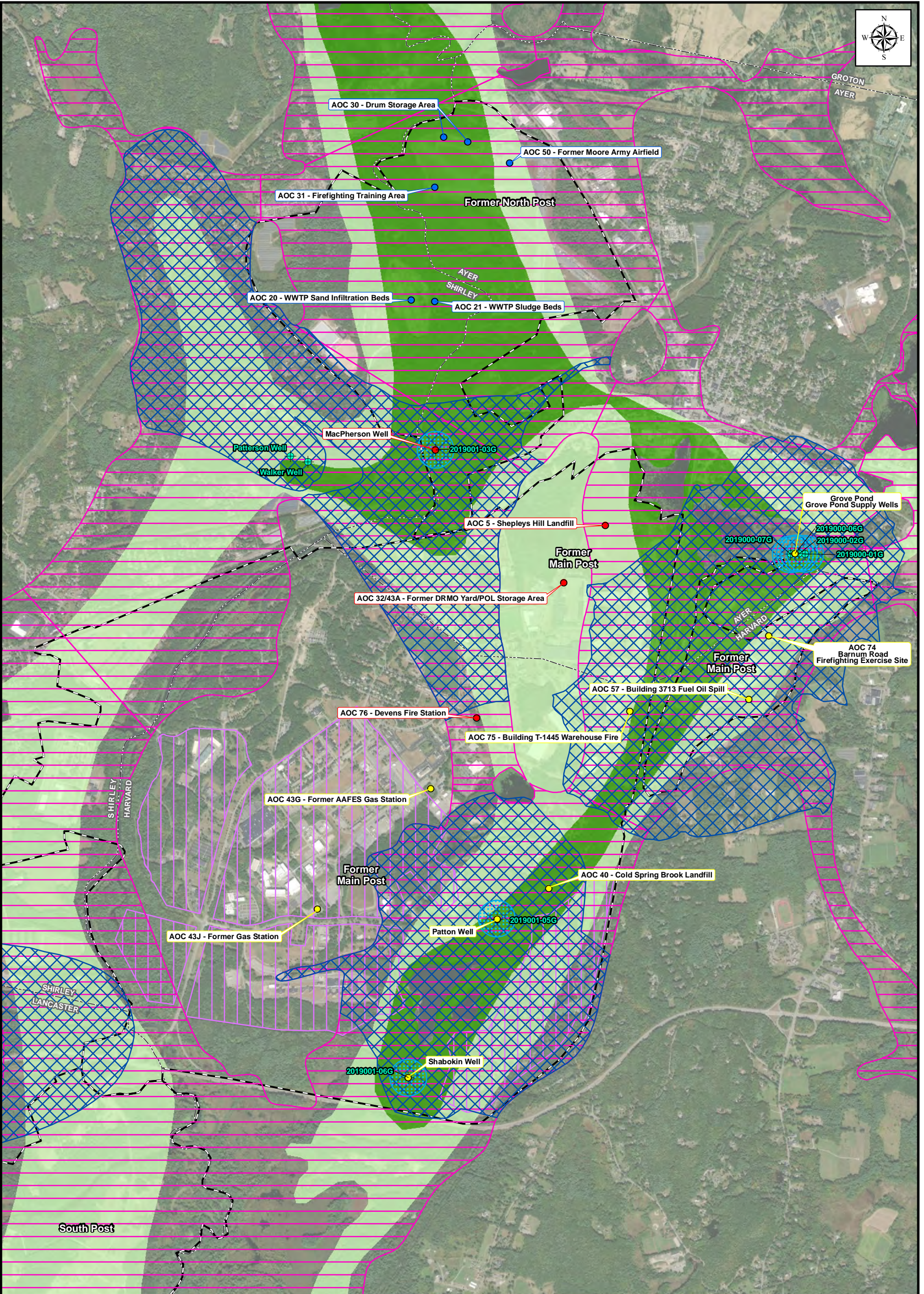
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
01/13/2021

Figure
2-5

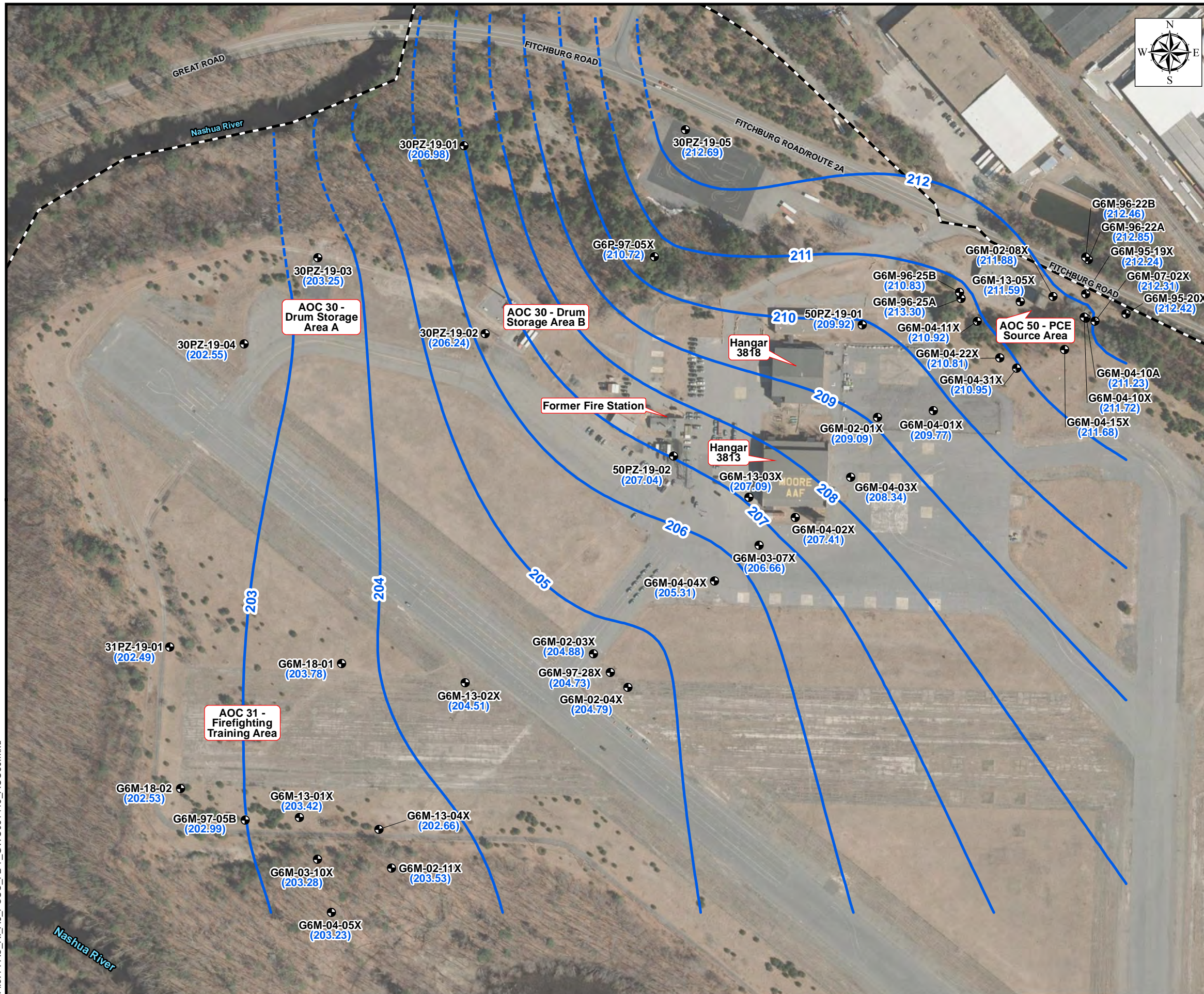




File: PFAS_RI_A3_PSCS_F2-6_Aquifer.mxd

	Public Water Supply Well		MassDEP Approved Zone I
	Area 1 - Grove Pond, Patton and Shabokin Supply Wells, AOCs 40, 43G, 43J, 57, 74, and 75		MassDEP Approved Zone II
	Area 2 - MacPherson Water Supply Wells, SHL, AOCs 32/43A, and 76		Devens Watershed Protection District
	Area 3 - AOCs 20, 21, 30, 31, and 50		Devens Aquifer Protection District
	City/Town Boundary	Potentially Productive Aquifers	
	Former Fort Devens Boundary		High Yield
			Medium Yield

Devens Groundwater Devens PFAS RI - Area 3 PSCS		
Former Army Installation Devens Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
0 1,000 2,000 Feet	Date: 02/03/2021	Figure 2-6

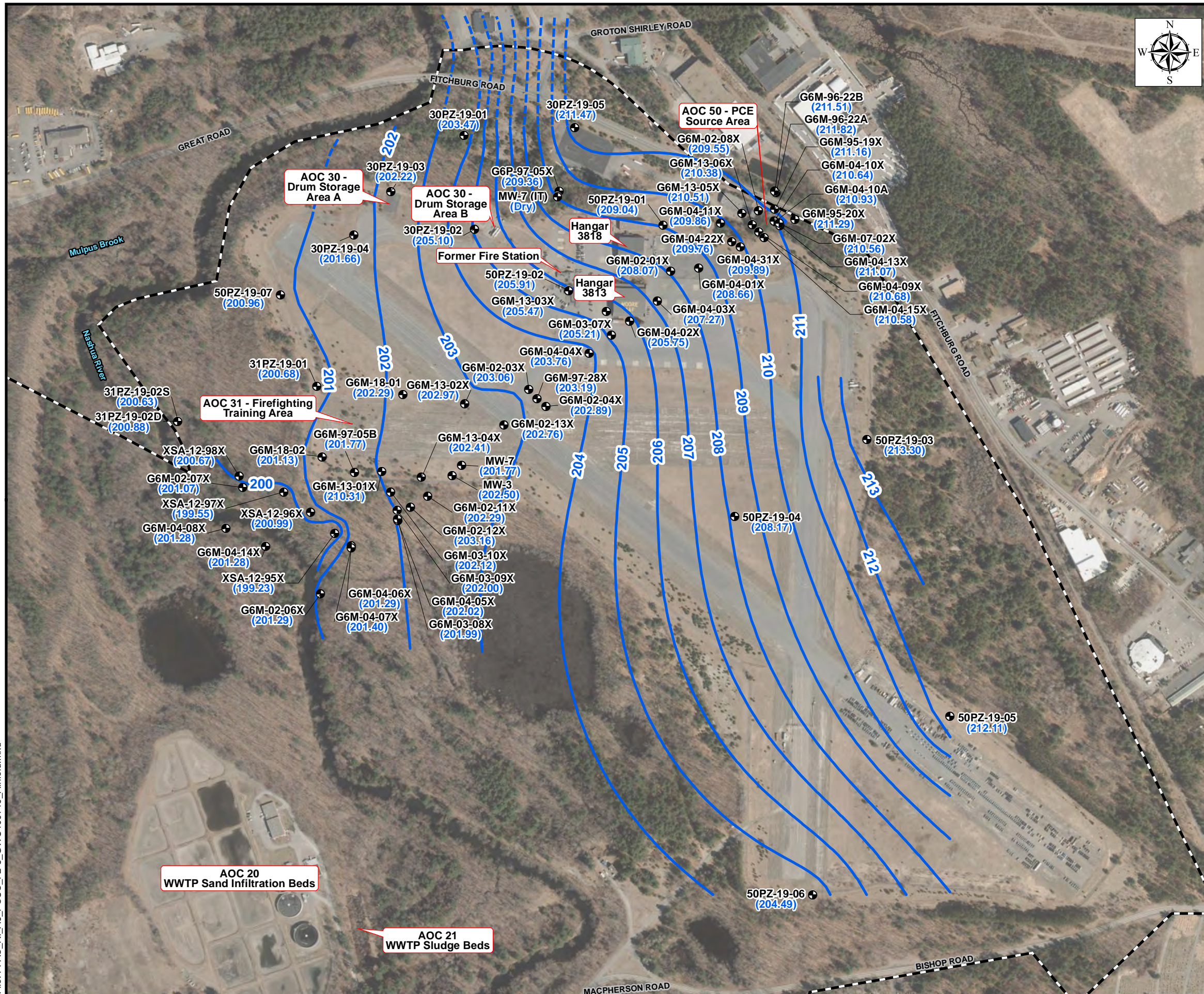


- Legend**
- Monitoring Well/Piezometer
 - (207.04) Groundwater Elevation (ft NAVD 88)
 - Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
 - Inferred Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
 - Former Fort Devens Boundary

Note:
G6M-96-25A and G6M-13-04X were not used in generating the ground water contours.

Aerial Source: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours Airfield Overburden, August 14, 2019 Devens PFAS RI – Area 3 PSCS		
Former Fort Devens Army Installation Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
 0 125 250 Feet	Date: 01/15/2021	Figure 2-7



- Legend**
- Monitoring Well/Piezometer
 - (205.10) Groundwater Elevation (ft NAVD 88)
 - Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
 - Inferred Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
 - Former Fort Devens Boundary

Notes:

MW-7, G6M-02-04X, G6M-02-07X, G6M-02-08X, and G6M-13-01X were not used in generating the ground water contours.

MW-7(IT) was Dry during the synoptic event and was not used in generating the ground water contours.

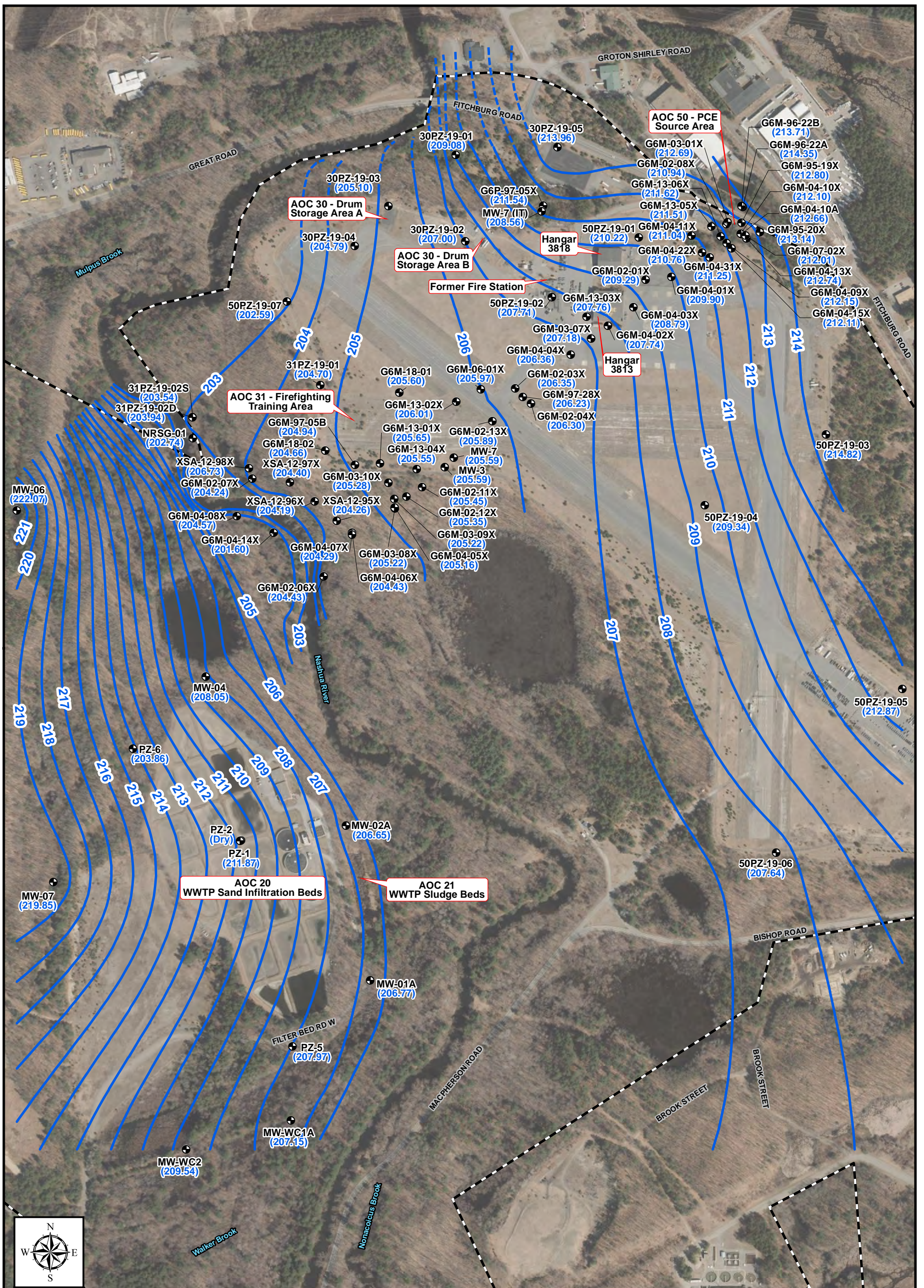
Aerial Source: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours
Airfield Overburden, October 7, 2019
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

	Date: 01/15/2021	Figure 2-8	
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Legend

- Monitoring Well/Piezometer
- (205.22) Groundwater Elevation (ft NAVD 88)
- ~ Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
- - - Inferred Groundwater Contour (Contour Interval = 1 Foot) (ft NAVD88)
- ▭ Former Fort Devens Boundary

Notes:

G6M-02-08X, G6M-04-14X, MW-7(IT), PZ-6 and XSA-12-98X were not used in generating the ground water contours.

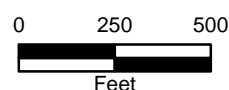
PZ-2 was dry during the synoptic event and was not used in generating the ground water contours.

Aerial Source: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours
Area 3, April 27, 2020
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752





Date:
01/15/2021

Figure
2-9





Legend

-  Current Road
-  Former Fort Devens Boundary

AOC 20
WWTP Sand Infiltration Beds

AOC 21
WWTP Sludge Beds

Nashua River

BISHOP ROAD

FILTER BED RD W

MACPHERSON ROAD

BROOK STREET

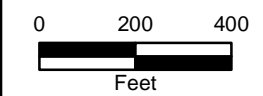
WALKER ROAD

Aerial Source: MassGIS - 1:5,000 Black and White Digital Orthophoto Images - 1992

AOCs 20 and 21 1992 Aerial Imagery
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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Date:
01/11/2021

Figure
3-1





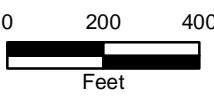
- Legend**
- Historic Subsurface Features**
- Communication
 - Communication Line
 - Electric
 - Electric Line
 - Storm
 - Storm Line
 - ▨ Storm Feature
 - Sanitary
 - Sanitary Line
 - ▨ Sanitary Feature
 - Water
 - Water Line
 - ▨ Water Feature
 - Abandoned Feature
 - Abandoned Line
 - Gas
 - Gas Line
 - ⊙ Irrigation Well
 - ▭ Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOCs 20 and AOC 21 Historic Subsurface Features
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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Date:
01/11/2021

Figure
3-2





Legend

Water 01/06/2020

- Hydrant
- Main Fitting
- Service Fitting
- Main Valve
- Service Valve
- Wellhead
- Main Line
- Service Line
- Tie

Sewer 01/06/2020

- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie
- DBox, Grease Trap, Lift Station, Oil/Water

Electric 01/07/2020

- Connection Box, Handhole, Junction Box, Manhole, Meter, Switch, or Transformer
- Inservice/Abandoned
- Vault

Gas 01/06/2020

- Main Fitting, Main Valve, Meter, Rectifier, Service Fitting, Service Regulator, Service Valve, Test Station, Anode
- Main, Service, Tie, Cathodic Loop

Stormwater 12/11/2019

- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Irrigation Well
- Former Fort Devens Boundary

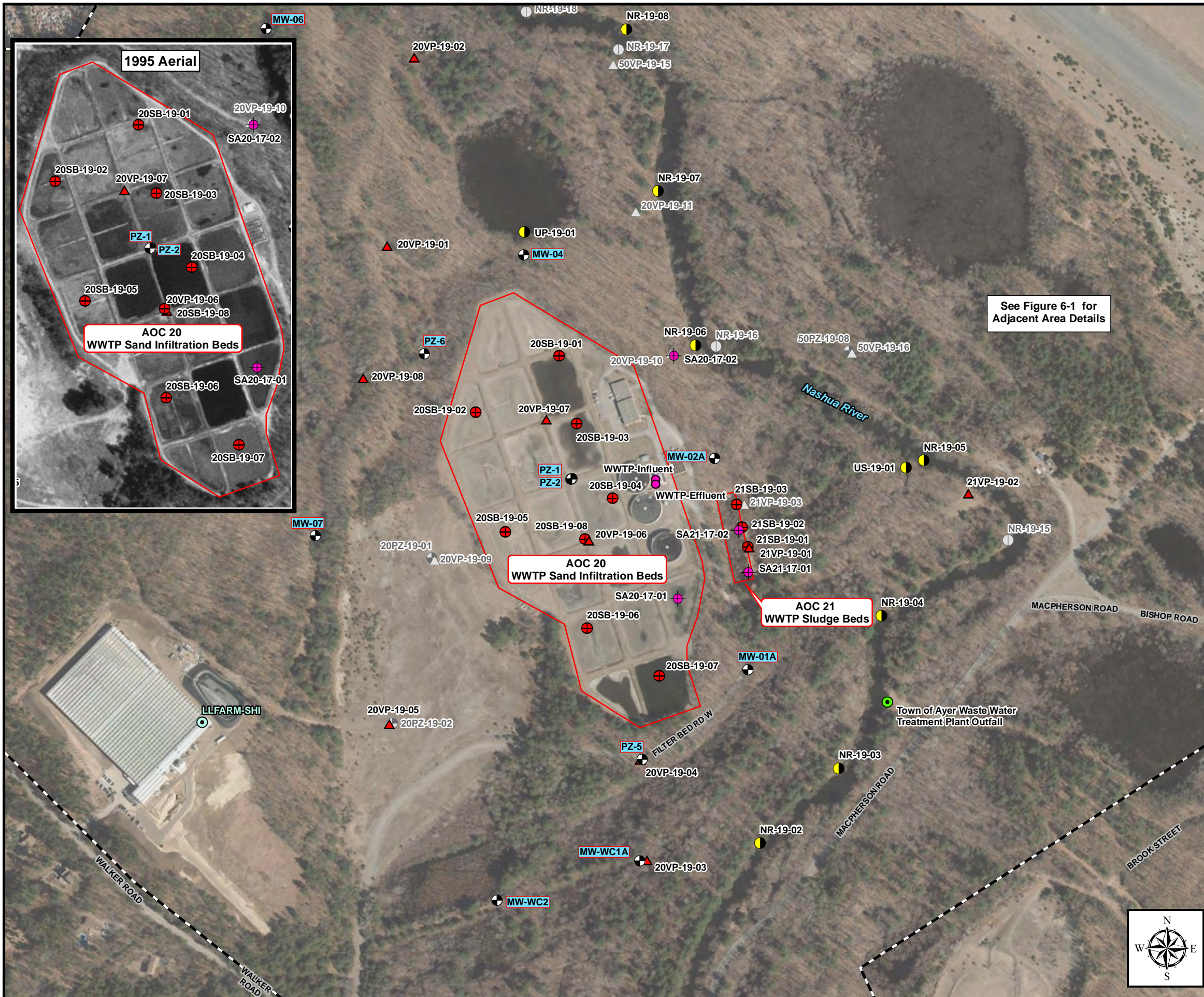
Aerial Source: USGS, MassGIS Orthoimagery 2019

AOCs 20 and 21 Current Subsurface Features
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

	Date: 01/11/2021	Figure 3-3	
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Legend

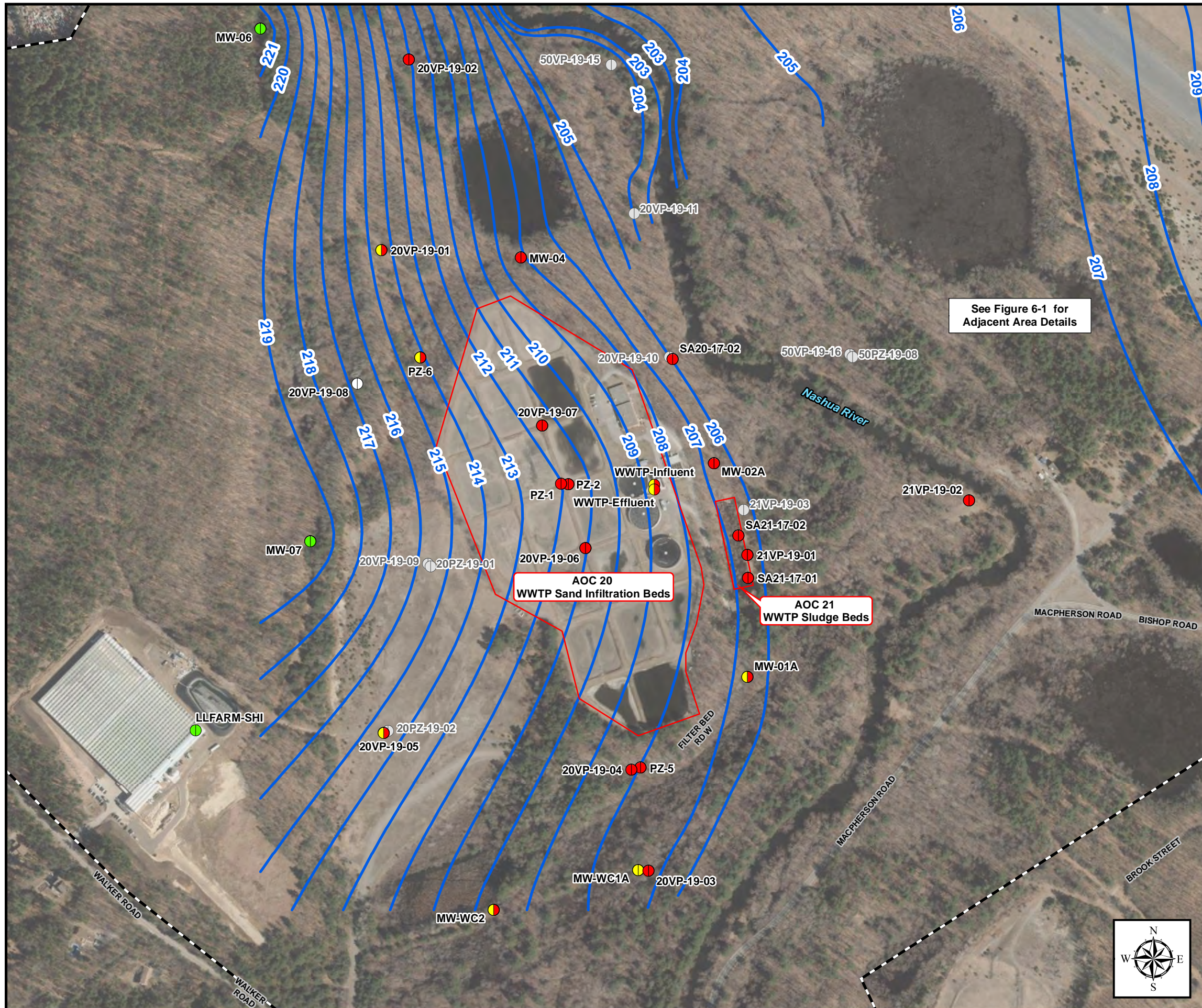
- Monitoring Well/Piezometer
- Vertical Profiling Location Installation Phase 1
- Soil Boring Location Installation Phase 1
- Surface Water and Sediment Sampling Location
- Temporary Well Location from SI
- Monitoring Well/Piezometer Not Completed
- Soil Boring Location Not Completed
- Vertical Profiling Location Not Completed
- Surface Water and Sediment Sampling Location Not Completed
- Irrigation Well
- MW-04 Wells Sampled as Part of PFAS RI
- Area of Contamination
- Former Fort Devens Boundary

Notes:

Locations shown on current and 1995 Aerial Imagery.
 Nashua River Sample (NR-XX) addressed as part of AOC 50.
 Aerial Source: USGS, MassGIS Orthoimagery 1995 and 2019

AOCs 20 and 21 Field Activities Devens PFAS RI – Area 3 PSCS		
Former Fort Devens Army Installation Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
0 200 400 Feet	Date: 02/03/2021	Figure 3-4





Legend

- Monitoring Well/Vertical Profiling Location
- Piezometer/Vertical Profiling Locations Not Completed

**EPA LHA
(sum of PFOA and PFOS) (ng/L)**

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA No detection

MassDEP

(sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

Groundwater Contour (April 27, 2020)
(Contour Interval = 1 Foot) (ft NAVD88)

- Area of Contamination
- Former Fort Devens Boundary

See Figure 6-1 for
Adjacent Area Details

Notes:

Vertical Profile 20VP-19-08 was attempted but no saturated overburden was encountered.

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

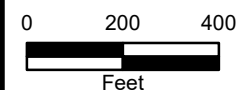
Refer to Figure 2-9 for Groundwater Elevation Data

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOCs 20 and 21 Groundwater Results
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
01/14/2021

Figure
3-5





Legend

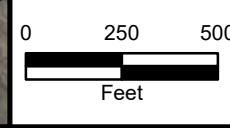
- Monitoring Well/Piezometer
- Vertical Profiling Location Installation Phase 1
- Soil Boring Location Installation Phase 1
- Surface Water and Sediment Sampling Location
- Temporary Well Location from SI
- Irrigation Well
- Cross Section Location
- Area of Contamination
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOCs 20 and 21 Cross Section Locations
 Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
 Devens, Massachusetts

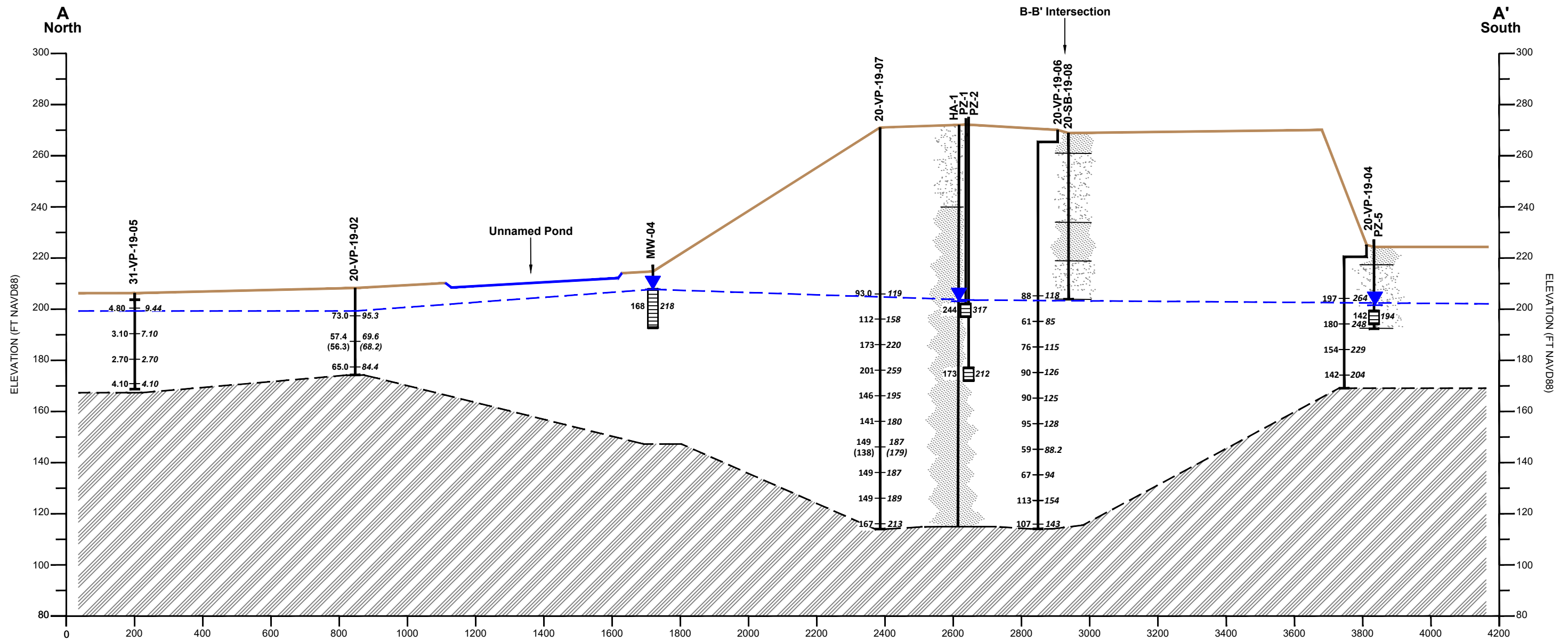
KOMAN Government Solutions, LLC
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Date:
01/11/2021

Figure
3-6





Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened Interval

Medium to Coarse Sand

Fine Sand

Bedrock

Unknown

Water Table

Inferred Top of Bedrock

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

AOCs 20 and 21 Cross Section A-A'
Devens PFAS RI - Area 3 PSCS

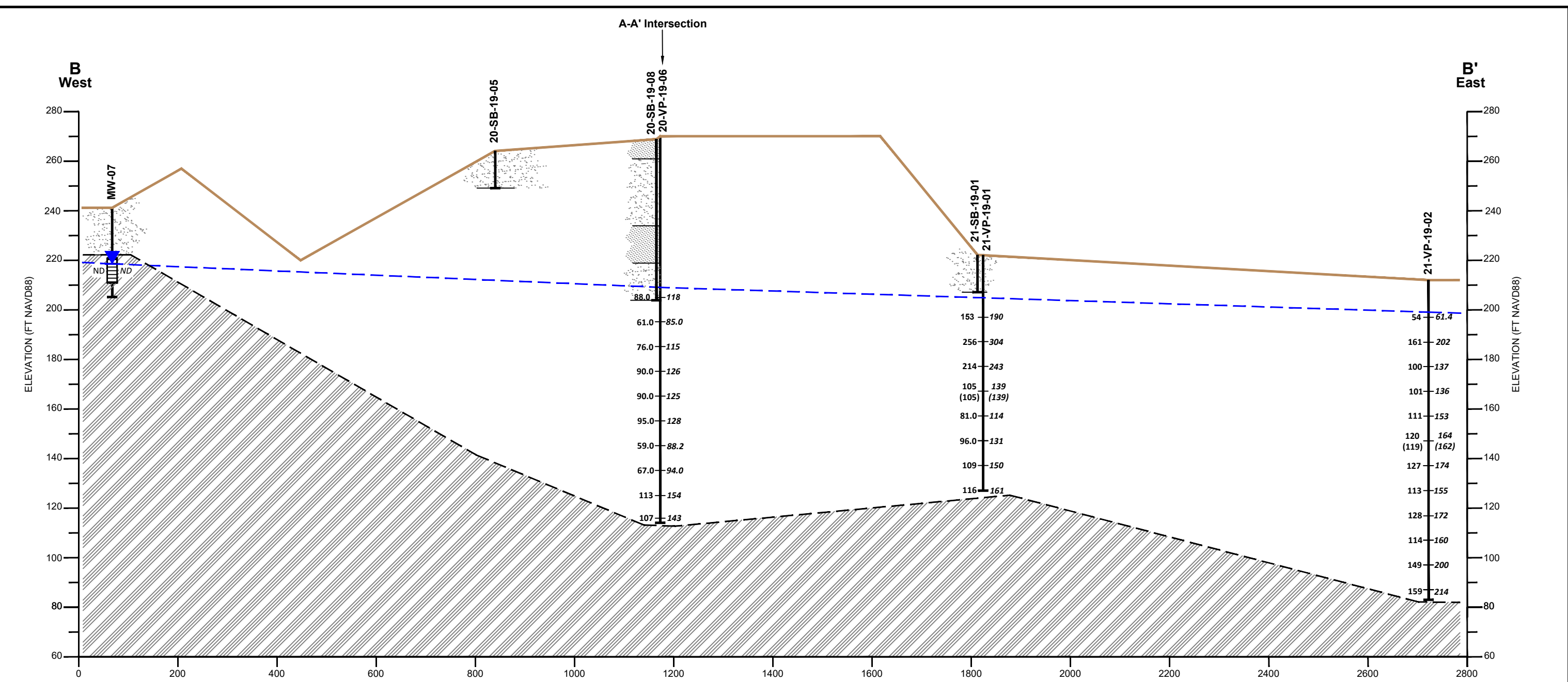
Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown

Date: 10/09/2020

Figure 3-7



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened Interval

Medium - Coarse Sand

Silt

Bedrock

Unknown

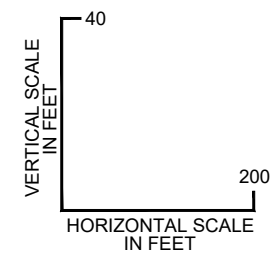
Water Table

Inferred Top of Bedrock

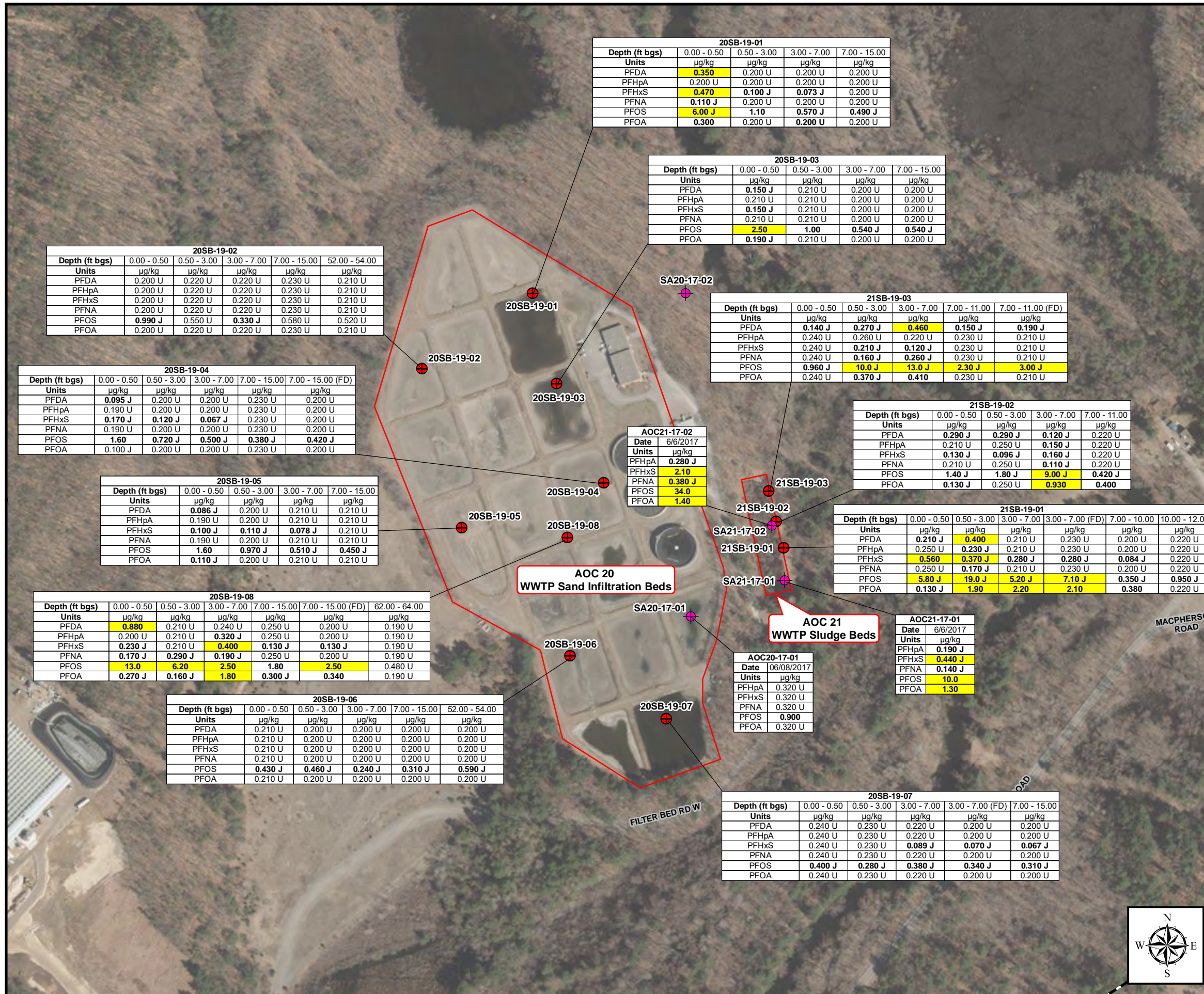
Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOCs 20 and 21 Cross Section B-B'			
Devens PFAS RI - Area 3 PSCS			
Former Fort Devens Army Installation Devens, Massachusetts			
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752			
Scale as Shown	Date: 10/09/2020	Figure 3-8	



Legend

- Soil Boring Location Installation Phase 1
- Temporary Well Location from SI
- Area of Contamination
- Former Fort Devens Boundary

Notes:
 Criteria = S-1/GW-1, Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

2.00 = detection of PFAS
2.00 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
 U = non-detect
 J = estimated result

AST = Above ground storage tank
 UST = Underground storage Tank
 DRMO = Defense Reutilization and Marketing Office
 TPHC = Total petroleum hydrocarbons

SI Sample locations were not analyzed for PFDA

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOCs 20 and 21 Soil Sampling Results

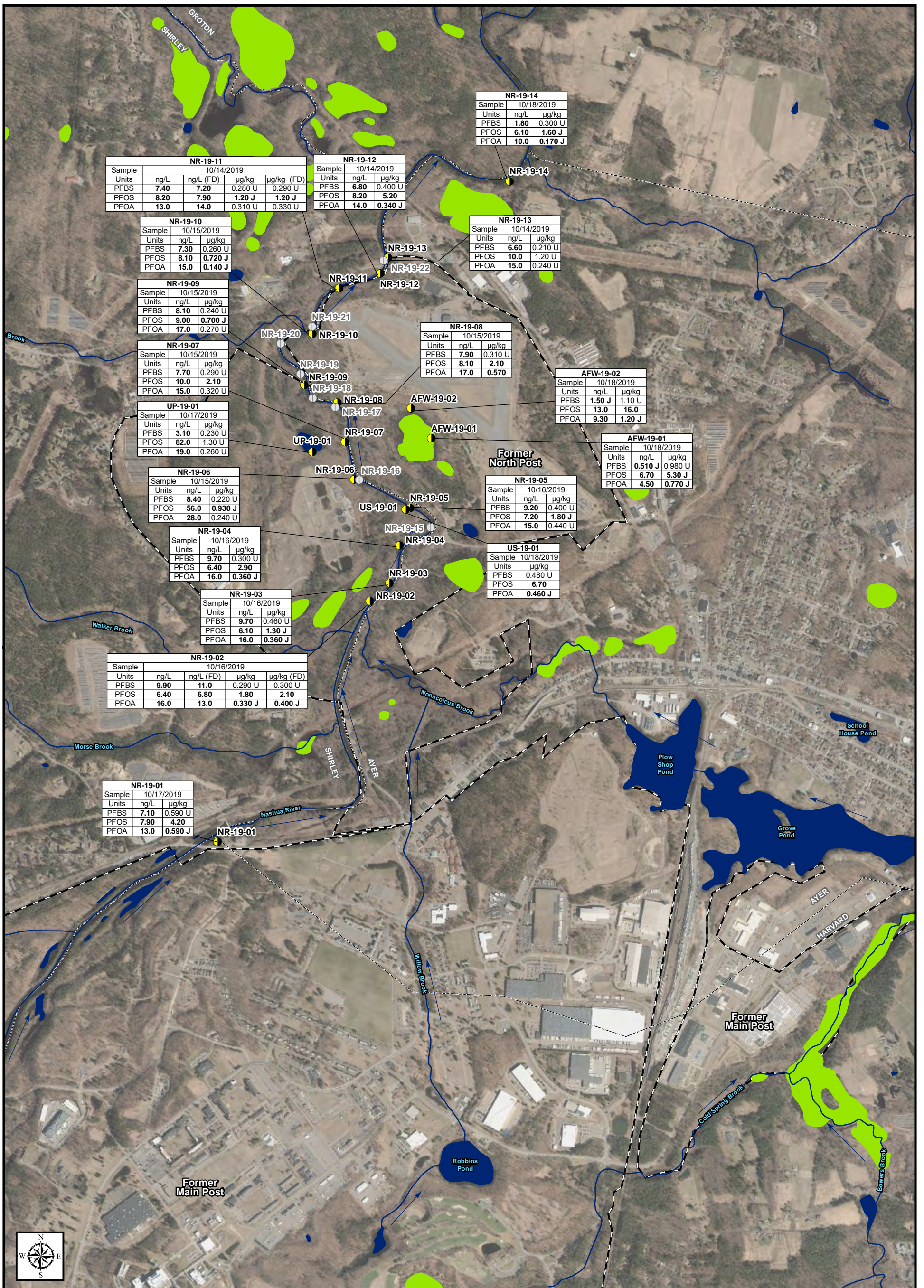
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
 Devens, Massachusetts

KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Date: 10/12/2020

Figure 3-9



NR-19-11				
Sample	10/14/2019			
Units	ng/L	ng/L (FD)	µg/kg	µg/kg (FD)
PFBS	7.40	7.20	0.280 U	0.290 U
PFOS	8.20	7.90	1.20 J	1.20 J
PFOA	13.0	14.0	0.310 U	0.330 U

NR-19-12		
Sample	10/14/2019	
Units	ng/L	µg/kg
PFBS	6.80	0.400 U
PFOS	8.20	5.20
PFOA	14.0	0.340 J

NR-19-14		
Sample	10/18/2019	
Units	ng/L	µg/kg
PFBS	1.80	0.300 U
PFOS	6.10	1.60 J
PFOA	10.0	0.170 J

NR-19-10		
Sample	10/15/2019	
Units	ng/L	µg/kg
PFBS	7.30	0.260 U
PFOS	8.10	0.720 J
PFOA	15.0	0.140 J

NR-19-13		
Sample	10/14/2019	
Units	ng/L	µg/kg
PFBS	6.60	0.210 U
PFOS	10.0	1.20 U
PFOA	15.0	0.240 U

NR-19-09		
Sample	10/15/2019	
Units	ng/L	µg/kg
PFBS	8.10	0.240 U
PFOS	9.00	0.700 J
PFOA	17.0	0.270 U

NR-19-08		
Sample	10/15/2019	
Units	ng/L	µg/kg
PFBS	7.90	0.310 U
PFOS	8.10	2.10
PFOA	17.0	0.570

NR-19-07		
Sample	10/15/2019	
Units	ng/L	µg/kg
PFBS	7.70	0.290 U
PFOS	10.0	2.10
PFOA	15.0	0.320 U

AFW-19-02		
Sample	10/18/2019	
Units	ng/L	µg/kg
PFBS	1.50 J	1.10 U
PFOS	13.0	16.0
PFOA	9.30	1.20 J

UP-19-01		
Sample	10/17/2019	
Units	ng/L	µg/kg
PFBS	3.10	0.230 U
PFOS	82.0	1.30 U
PFOA	19.0	0.260 U

AFW-19-01		
Sample	10/18/2019	
Units	ng/L	µg/kg
PFBS	0.510 J	0.980 U
PFOS	6.70	5.30 J
PFOA	4.50	0.770 J

NR-19-06		
Sample	10/15/2019	
Units	ng/L	µg/kg
PFBS	8.40	0.220 U
PFOS	56.0	0.930 J
PFOA	28.0	0.240 U

NR-19-05		
Sample	10/16/2019	
Units	ng/L	µg/kg
PFBS	9.20	0.400 U
PFOS	7.20	1.80 J
PFOA	15.0	0.440 U

NR-19-04		
Sample	10/16/2019	
Units	ng/L	µg/kg
PFBS	9.70	0.300 U
PFOS	6.40	2.90
PFOA	16.0	0.360 J

US-19-01		
Sample	10/18/2019	
Units	ng/L	µg/kg
PFBS	0.480 U	
PFOS	6.70	
PFOA	0.460 J	

NR-19-03		
Sample	10/16/2019	
Units	ng/L	µg/kg
PFBS	9.70	0.460 U
PFOS	6.10	1.30 J
PFOA	16.0	0.360 J

NR-19-02				
Sample	10/16/2019			
Units	ng/L	ng/L (FD)	µg/kg	µg/kg (FD)
PFBS	9.90	11.0	0.290 U	0.300 U
PFOS	6.40	6.80	1.80	2.10
PFOA	16.0	13.0	0.330 J	0.400 J

NR-19-01		
Sample	10/17/2019	
Units	ng/L	µg/kg
PFBS	7.10	0.590 U
PFOS	7.90	4.20
PFOA	13.0	0.590 J



- Legend**
- Surface Water and Sediment Sampling Location
 - Surface Water and Sediment Sampling Location Not Completed
 - Surface Water Flow Direction
 - City/Town Boundary
 - Former Fort Devens Boundary
- National Hydrography Dataset**
- Stream/River
 - Lake/Pond
 - Swamp/Marsh

Aerial Source:
USGS, MassGIS Orthoimagery 2019

EPA PFAS Site Specific Screening Levels for Former Fort Devens			
Surface Water		Sediment	
Units:	ng/L	Units:	µg/kg
PFOA	2,030	PFOA	609
PFOS	2,030	PFOS	609
PFBS	2,030,000	PFBS	609,000

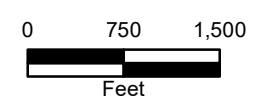
Notes:
Perfluorooctane Sulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
ng/L = nanograms per liter (Surface Water Result Value)
µg/kg = microgram per kilogram (Sediment Result Value)

J = estimated result
U = not detected above the reported sample quantitation limit
Bold = detection

Area 3 Surface Water and Sediment Sampling Results
Devens PFAS RI - Area 3 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
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Date:
02/03/2021

Figure
3-10





Legend

-  Current Road
-  Approximate Areas of Sludge Application
-  Former Fort Devens Boundary

Aerial Source: MassGIS - 1:5,000 Black and White Digital Orthophoto Images - 1992

Airfield 1992 Aerial Imagery
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

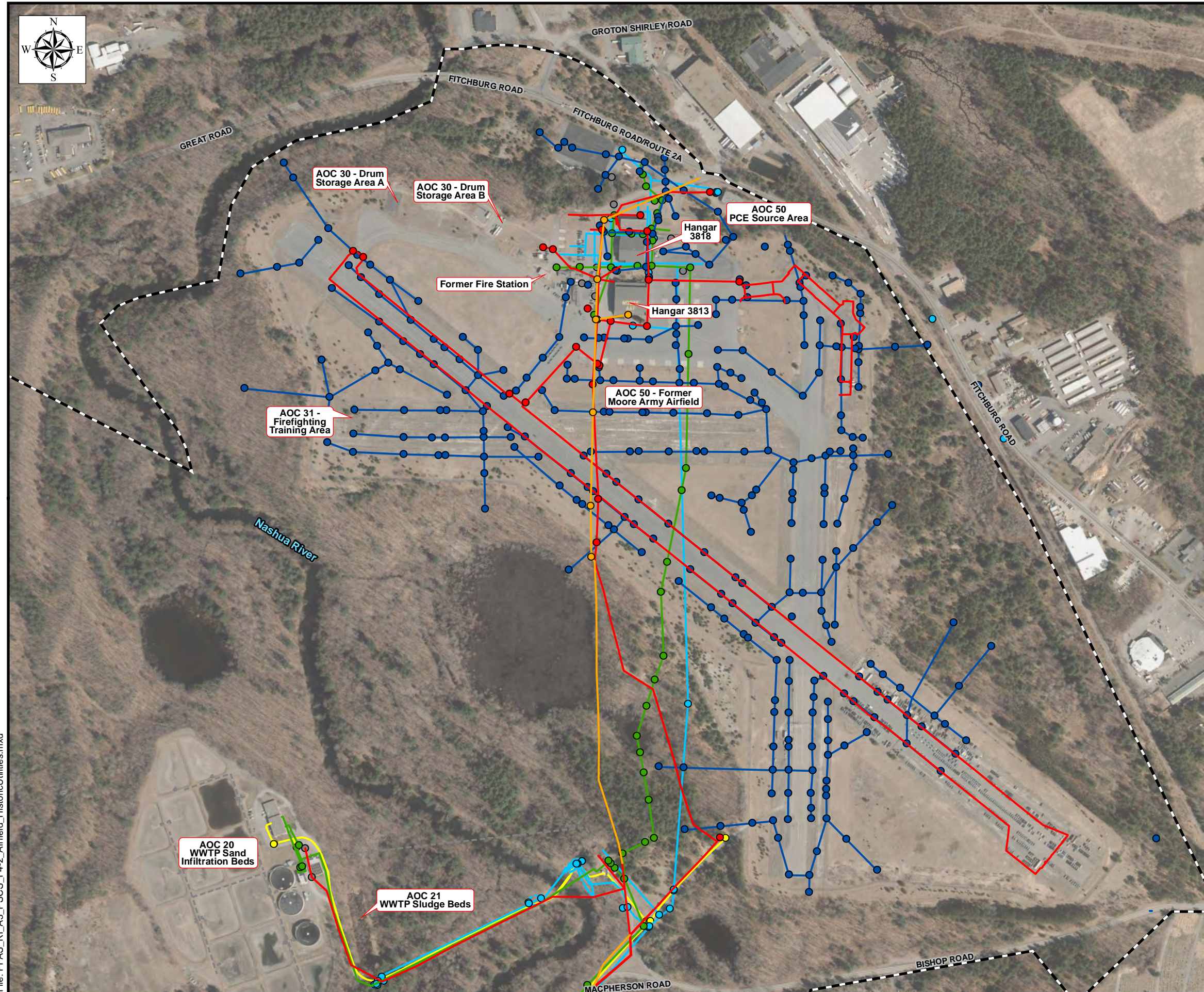
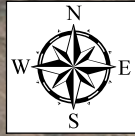
KOMAN Government Solutions, LLC
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Date:
10/12/2020

Figure
4-1





Legend

Historic Subsurface Features

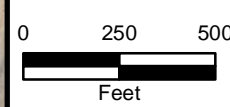
- Communication
- Communication Line
- Electric
- Electric Line
- Storm
- Storm Line
- Storm Feature
- Sanitary
- Sanitary Line
- Sanitary Feature
- Water
- Water Line
- Water Feature
- Abandoned Feature
- Abandoned Line
- Gas
- Gas Line
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

**Airfield Historic Subsurface Features
Devens PFAS RI - Area 3 PSCS**

Former Fort Devens Army Installation
Devens, Massachusetts

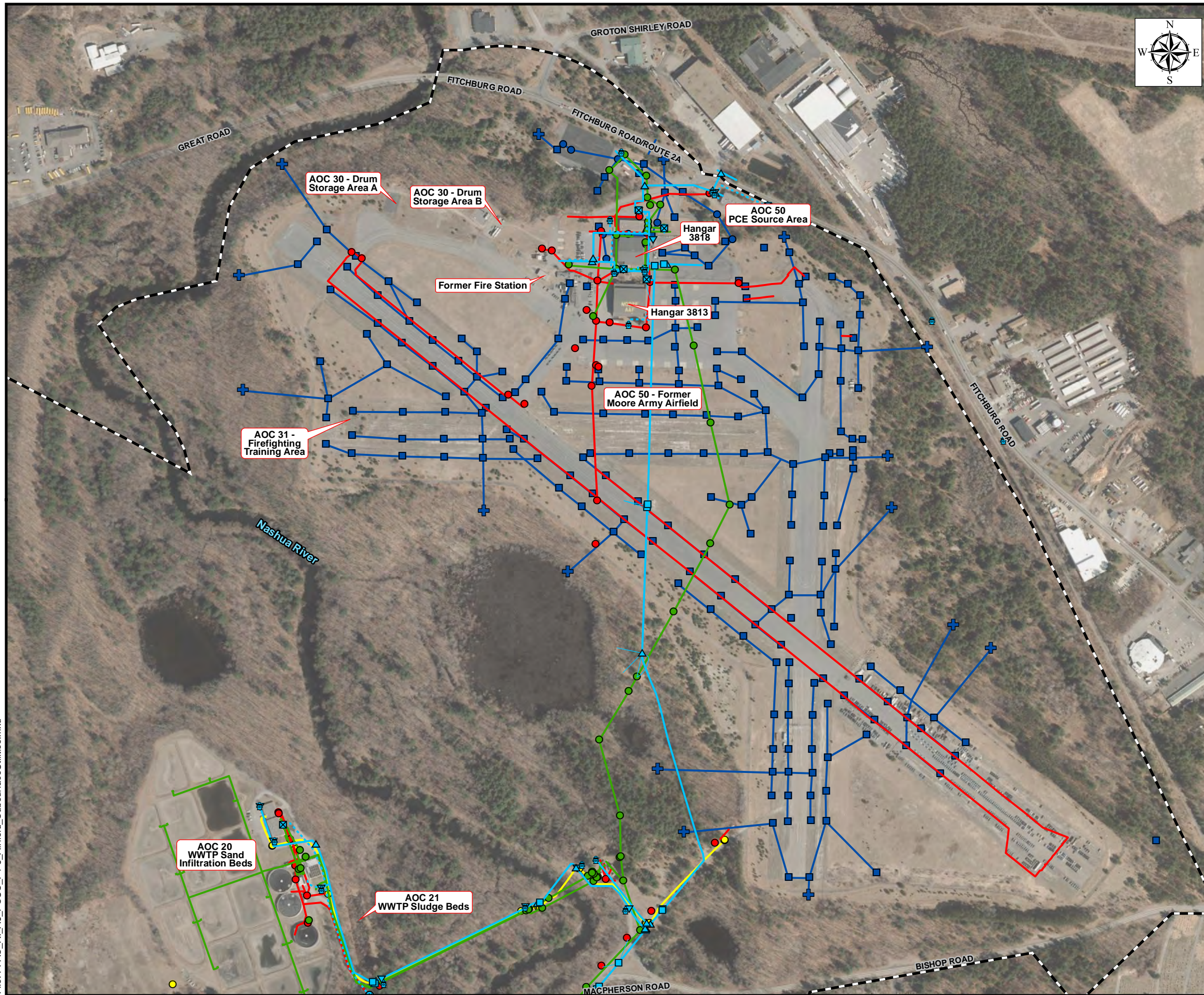
KOMAN Government Solutions, LLC
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Date:
02/03/2021

Figure
4-2





Legend

Water 01/06/2020

- Hydrant
- Main Fitting
- Service Fitting
- Main Valve
- Service Valve
- Wellhead
- Main Line
- Service Line
- Tie

Sewer 01/06/2020

- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie
- DBox, Grease Trap, Lift Station, Oil/Water

Electric 01/07/2020

- Connection Box, Handhole, Junction Box, Manhole, Meter, Switch, or Transformer
- Inservice/Abandoned
- Vault

Gas 01/06/2020

- Main Fitting, Main Valve, Meter, Rectifier, Service Fitting, Service Regulator, Service Valve, Test Station, Anode
- Main, Service, Tie, Cathodic Loop

Stormwater 12/11/2019

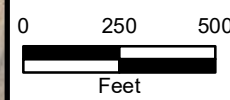
- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

**Airfield Current Subsurface Features
Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
Devens, Massachusetts

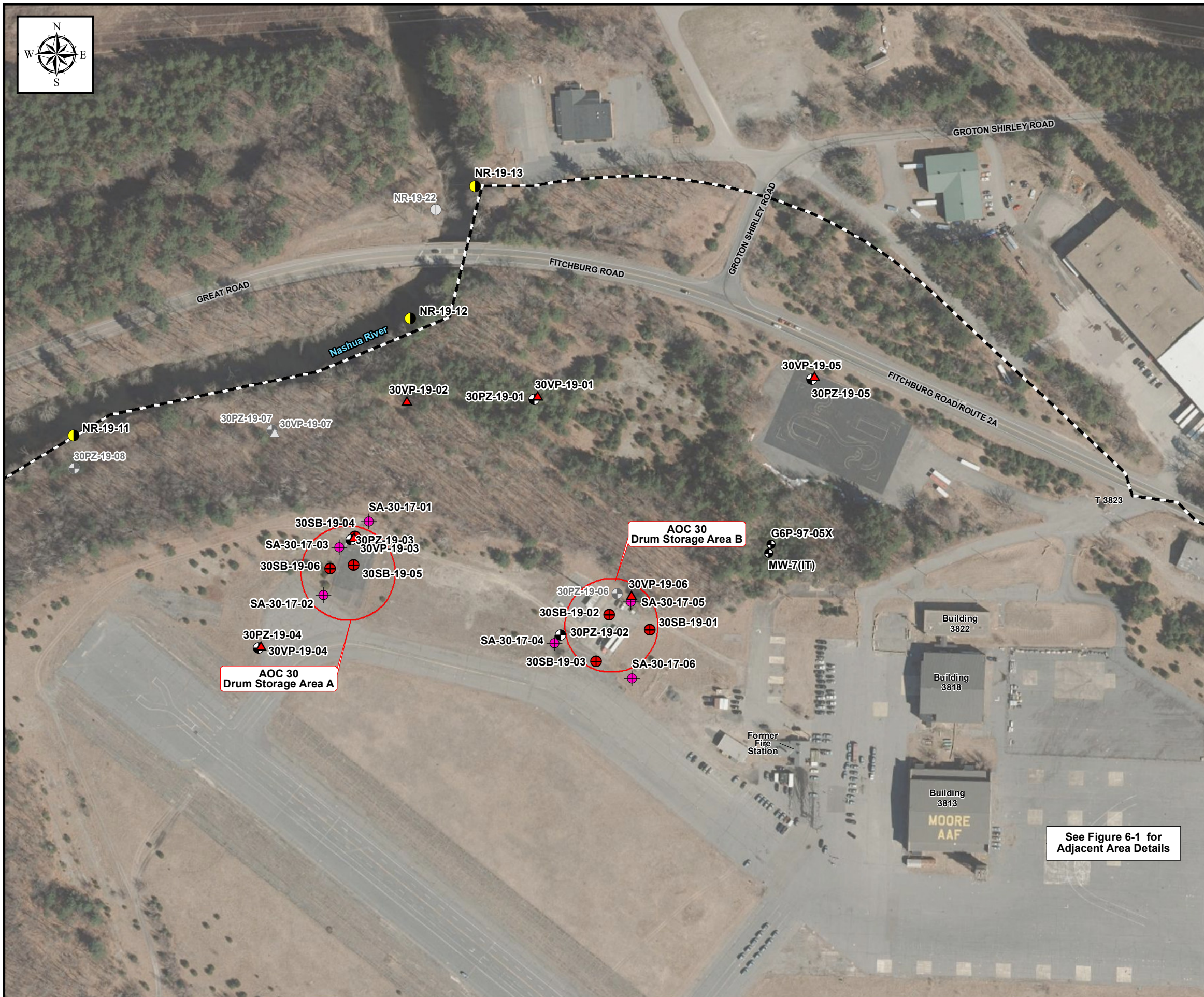
KOMAN Government Solutions, LLC
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Date:
02/04/2021

Figure
4-3





Legend

- Monitoring Well/Piezometer
- Vertical Profiling Location Installation Phase 1
- Soil Boring Location Installation Phase 1
- Surface Water and Sediment Sampling
- Temporary Well Location from SI
- Monitoring Well/Piezometer Not Completed
- Soil Boring Location Not Completed
- Vertical Profiling Location Not Completed
- Surface Water and Sediment Sampling Location Not Completed
- Area of Contamination (AOC)
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC30 Field Activities
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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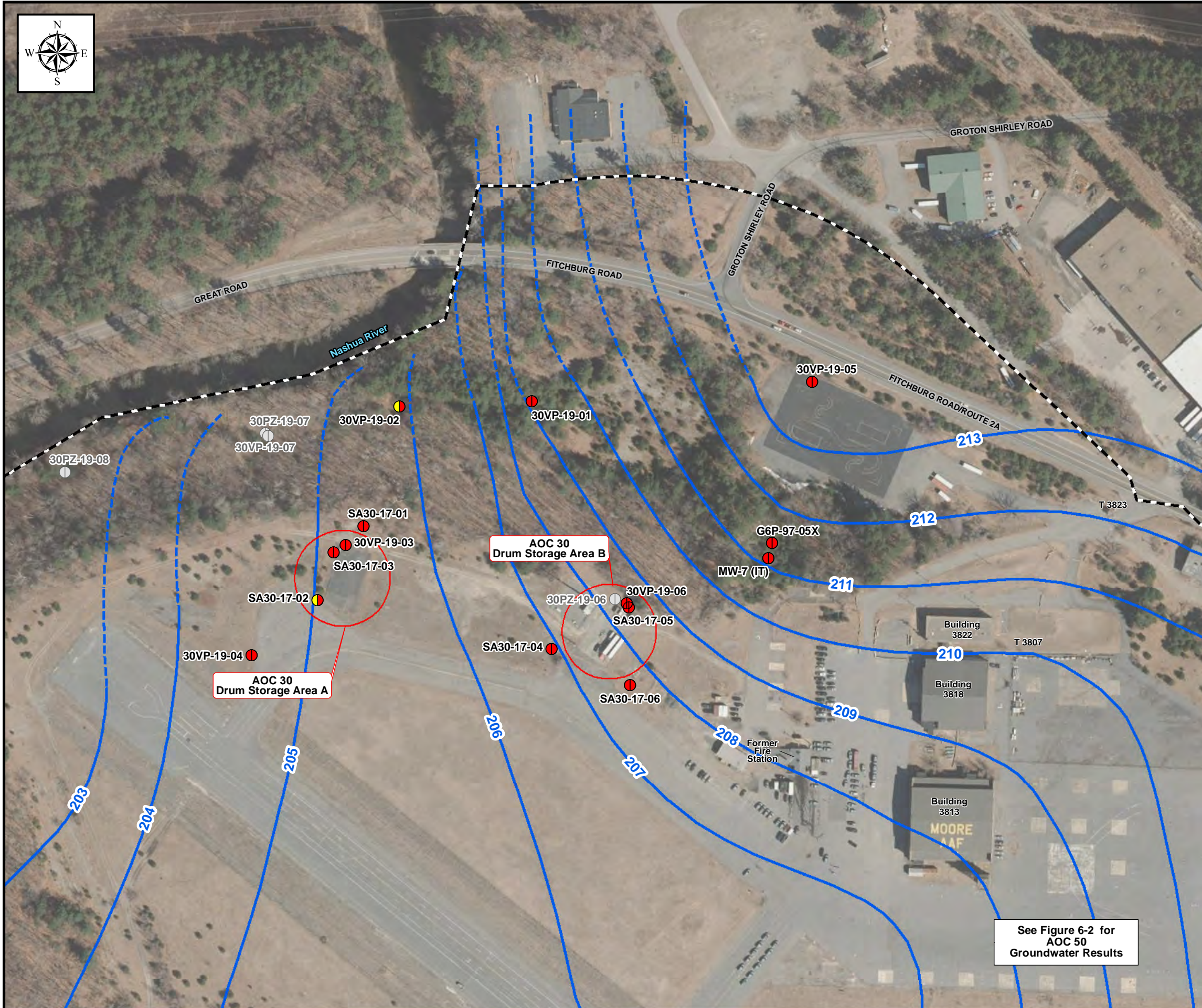


Date:
01/12/2021

Figure
4-4



See Figure 6-1 for
Adjacent Area Details



Legend

- Monitoring Well/Vertical Profiling Location
- Piezometer/Vertical Profiling Locations Not Completed

EPA LHA (sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA No detection

MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

- Groundwater Contour (April 27, 2020) (Contour Interval = 1 Foot) (ft NAVD88)
- - - Inferred Groundwater Contour (April 27, 2020) (Contour Interval = 1 Foot) (ft NAVD88)

- Area of Contamination (AOC)
- Former Fort Devens Boundary

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
 MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
 EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

Refer to Figure 2-9 for Groundwater Elevation Data

Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC30 Groundwater Results
 Devens PFAS RI – Area 3 PSCS**

**Former Fort Devens Army Installation
 Devens, Massachusetts**

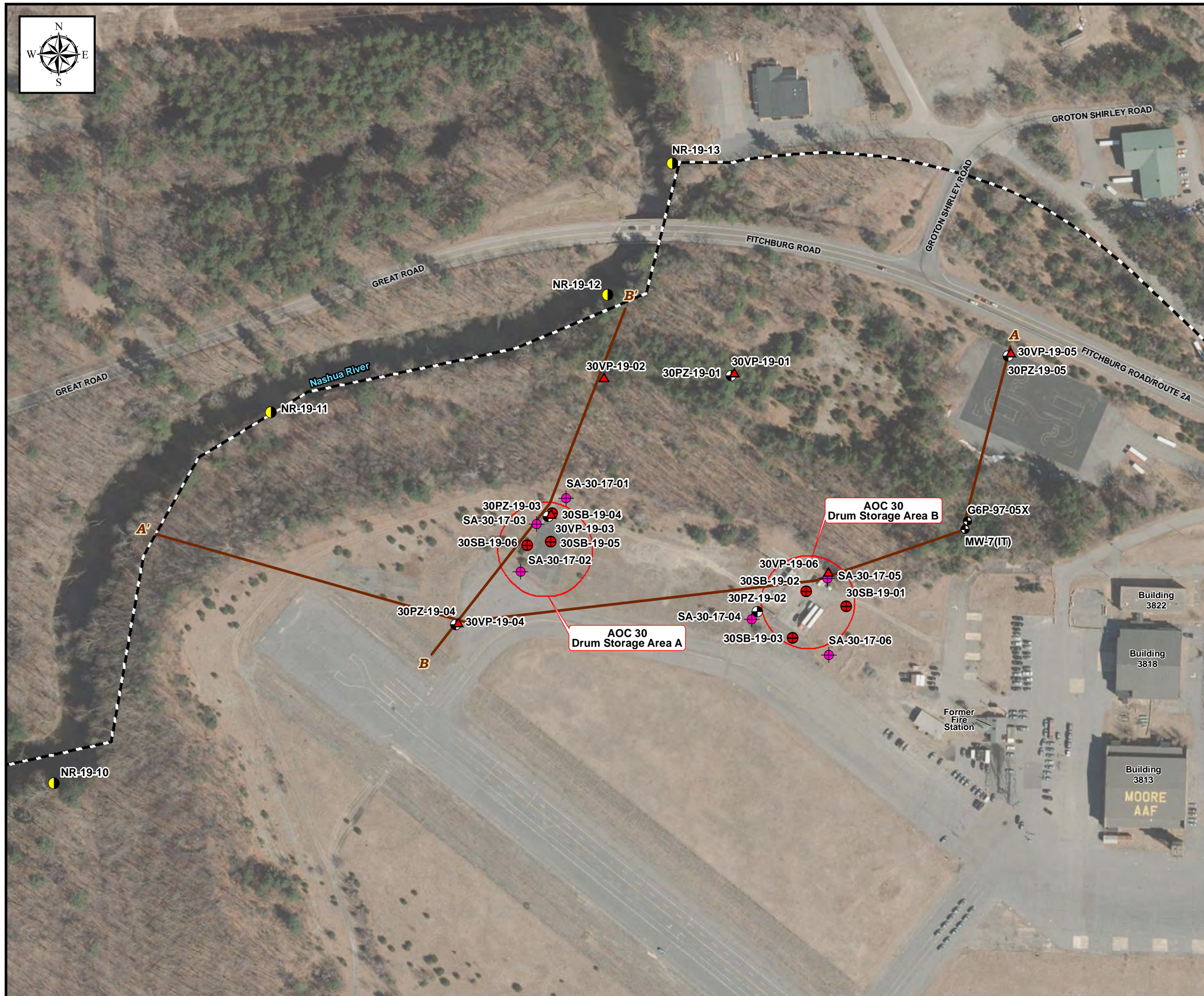
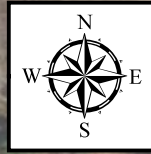
KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 100 200
Feet

Date:
01/14/2021

Figure
4-5

See Figure 6-2 for AOC 50 Groundwater Results



Legend

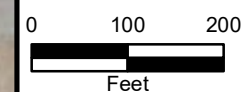
- Monitoring Well/Piezometer
- Vertical Profiling Location Installation Phase 1
- Soil Boring Location Installation Phase 1
- Surface Water and Sediment Sampling
- Temporary Well Location from SI
- Cross Section Location
- Area of Contamination (AOC)
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC30 Cross Section Locations
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

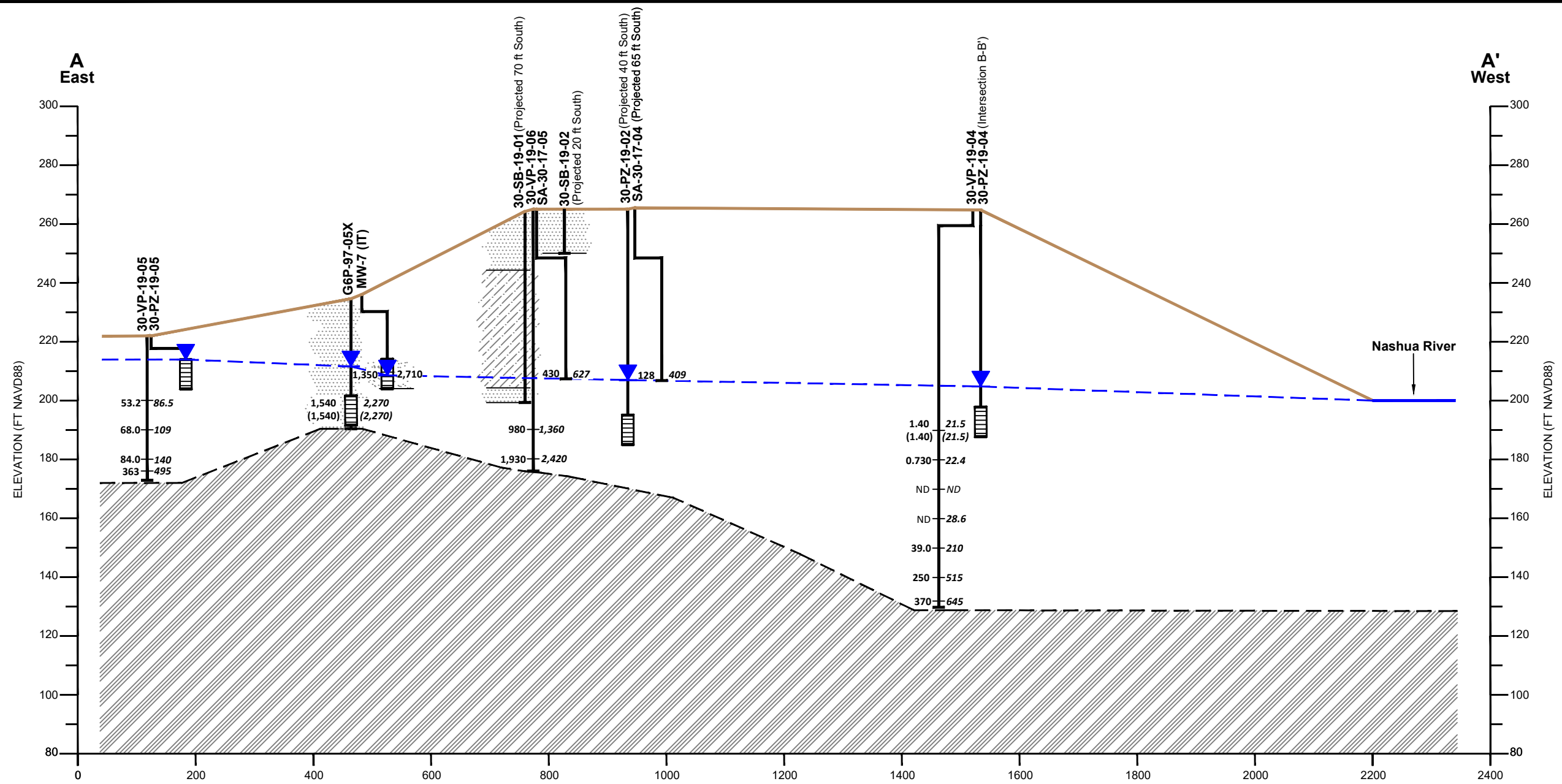
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
08/28/2020

Figure
4-6





Legend

Vertical Profile

1.39 U EPA LHA Concentration (sum of PFOA and PFOS)
2.59 U MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

Screened Interval

Geology:

- Medium - Coarse Sand
- Silty Sand
- Fine Sand
- Bedrock
- Unknown

Water Table

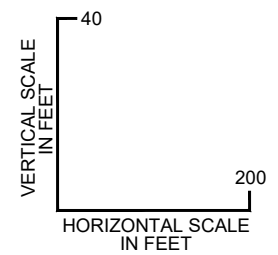
Inferred Top of Bedrock

Notes:

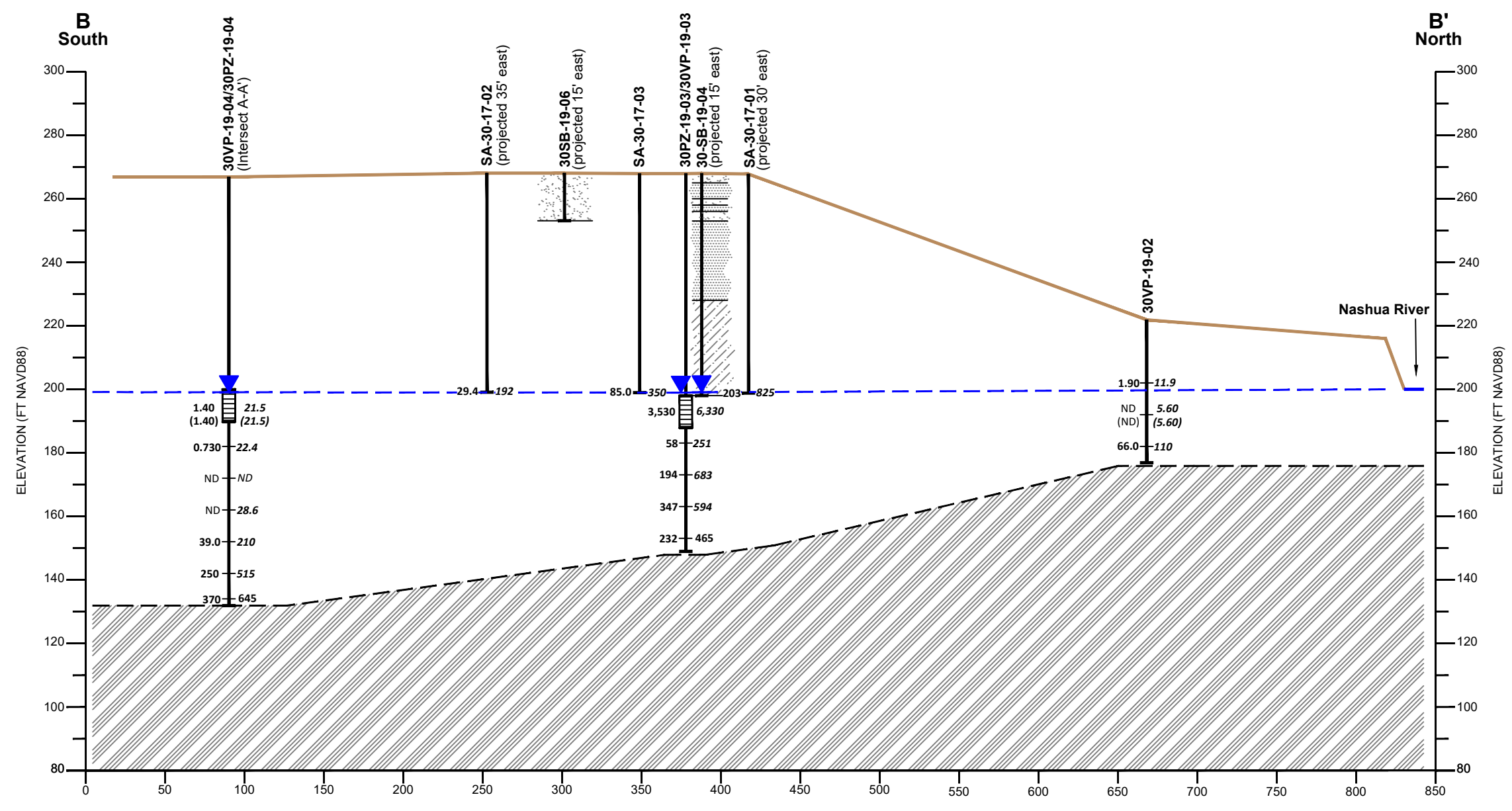
SI results were not analyzed for PFDA

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOC 30 Cross Section A-A' Devens PFAS RI - Area 3 PSCS		
Former Fort Devens Army Installation Devens, Massachusetts		
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752		
Scale as Shown	Date: 10/09/2020	Figure 4-7



Legend

Vertical Profile

1.39 U EPA LHA Concentration (sum of PFOA and PFOS)
 2.59 U MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

Screened Interval

Soil Types:

- Fine Sand
- Medium - Coarse Sand
- Sand with Silt/Silty Sand
- Bedrock
- Unknown

Water Table

Water Table (blue triangle)

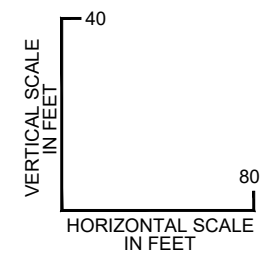
Inferred Top of Bedrock (dashed line)

Notes:

SI results were not analyzed for PFDA

All results in ng/L
 ng/L = nanograms per liter
 ND = non-detect
 NS = no sample
 () = field duplicate

Perfluorooctanesulfonic acid (PFOS)
 Perfluorooctanoic acid (PFOA)
 Perfluorodecanoic acid (PFDA)
 Perfluoroheptanoic acid (PFHpA)
 Perfluorohexanesulfonic acid (PFHxS)
 Perfluorononanoic acid (PFNA)



AOC 30 Cross Section B-B'
 Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
 Devens, Massachusetts

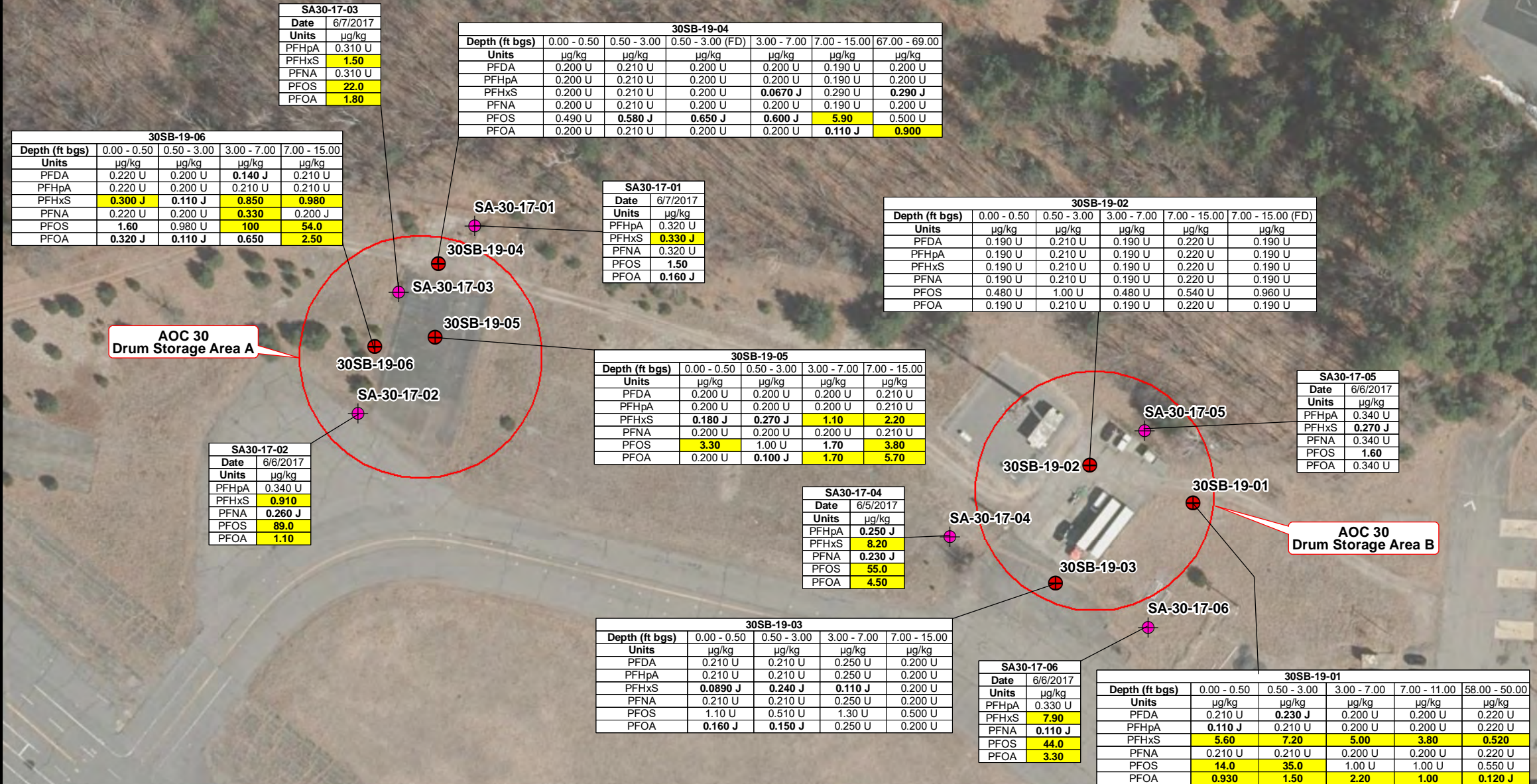
KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 10/15/2020	Figure 4-8	
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Nashua River

- Legend**
- Soil Boring Location Installation Phase 1
 - Temporary Well Location from SI
 - Area of Contamination (AOC)
 - Former Fort Devens Boundary



Notes:
Criteria = S-1/GW-1, Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

2.00 = detection of PFAS
2.00 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
 U = non-detect
 J = estimated result

AST = Above ground storage tank
 UST = Underground storage Tank
 DRMO = Defense Reutilization and Marketing Office
 TPHC = Total petroleum hydrocarbons

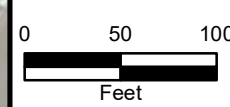
SI Sample locations were not analyzed for PFDA

Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC30 Soil Sampling Results
 Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
 Devens, Massachusetts

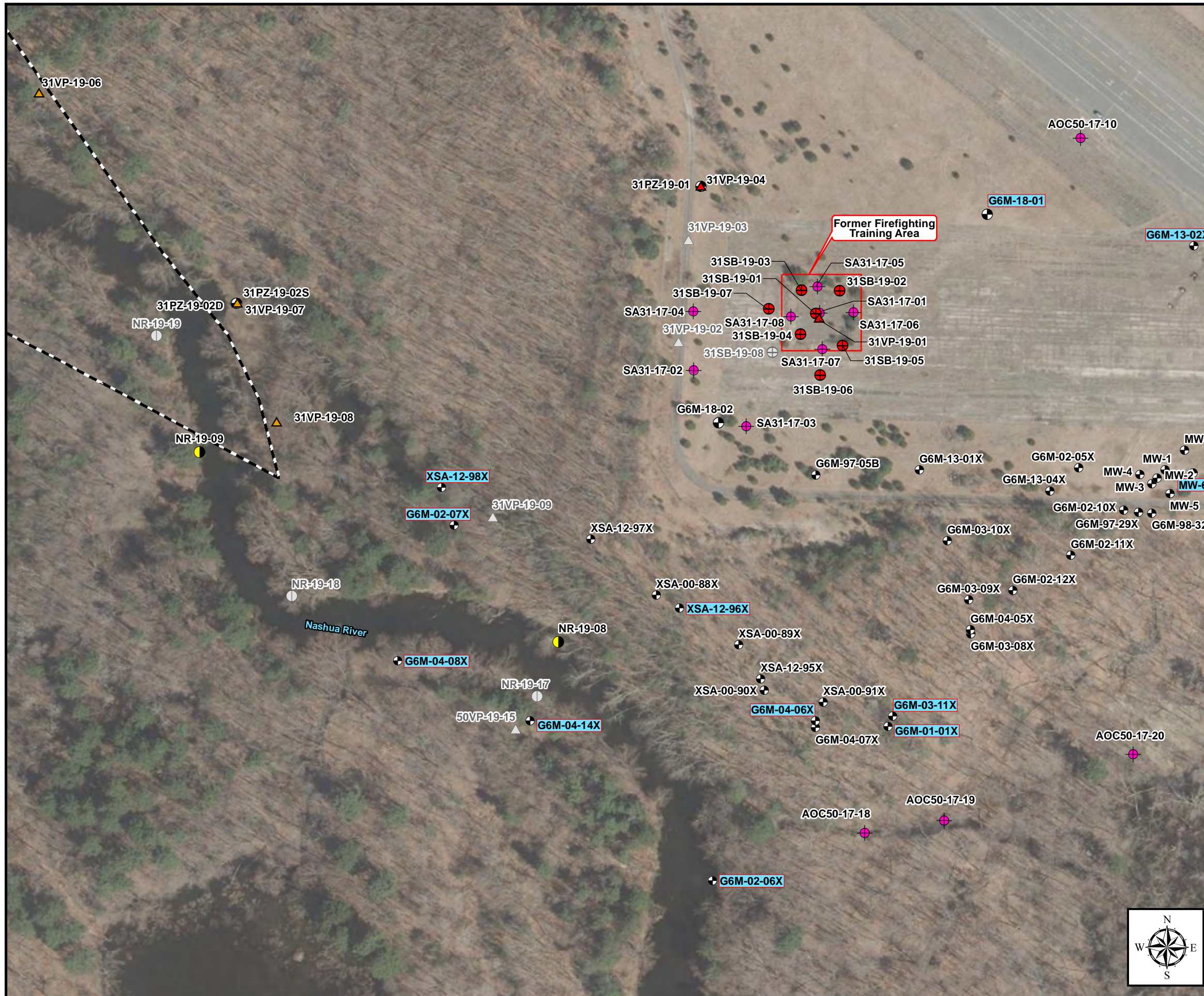
KOMAN Government Solutions, LLC
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Date:
09/02/2020

Figure
4-9





Legend

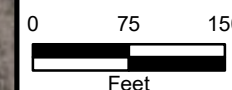
- ⊕ Monitoring Well/Piezometer
- ▲ Vertical Profiling Location Installation Phase 1
- ▲ Vertical Profiling Location Installation Phase 2
- ⊕ Soil Boring Location Installation Phase 1
- Surface Water and Sediment Sampling
- ⊕ Monitoring Well
- ⊕ Temporary Well Location from SI
- ⊕ Monitoring Well/Piezometer Not Completed
- ⊕ Soil Boring Location Not Completed
- ▲ Vertical Profiling Location Not Completed
- ⊕ Surface Water and Sediment Sampling Location Not Completed
- MW-6 Wells Sampled as Part of PFAS RI
- Area of Contamination (AOC)
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 31 Field Activities
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

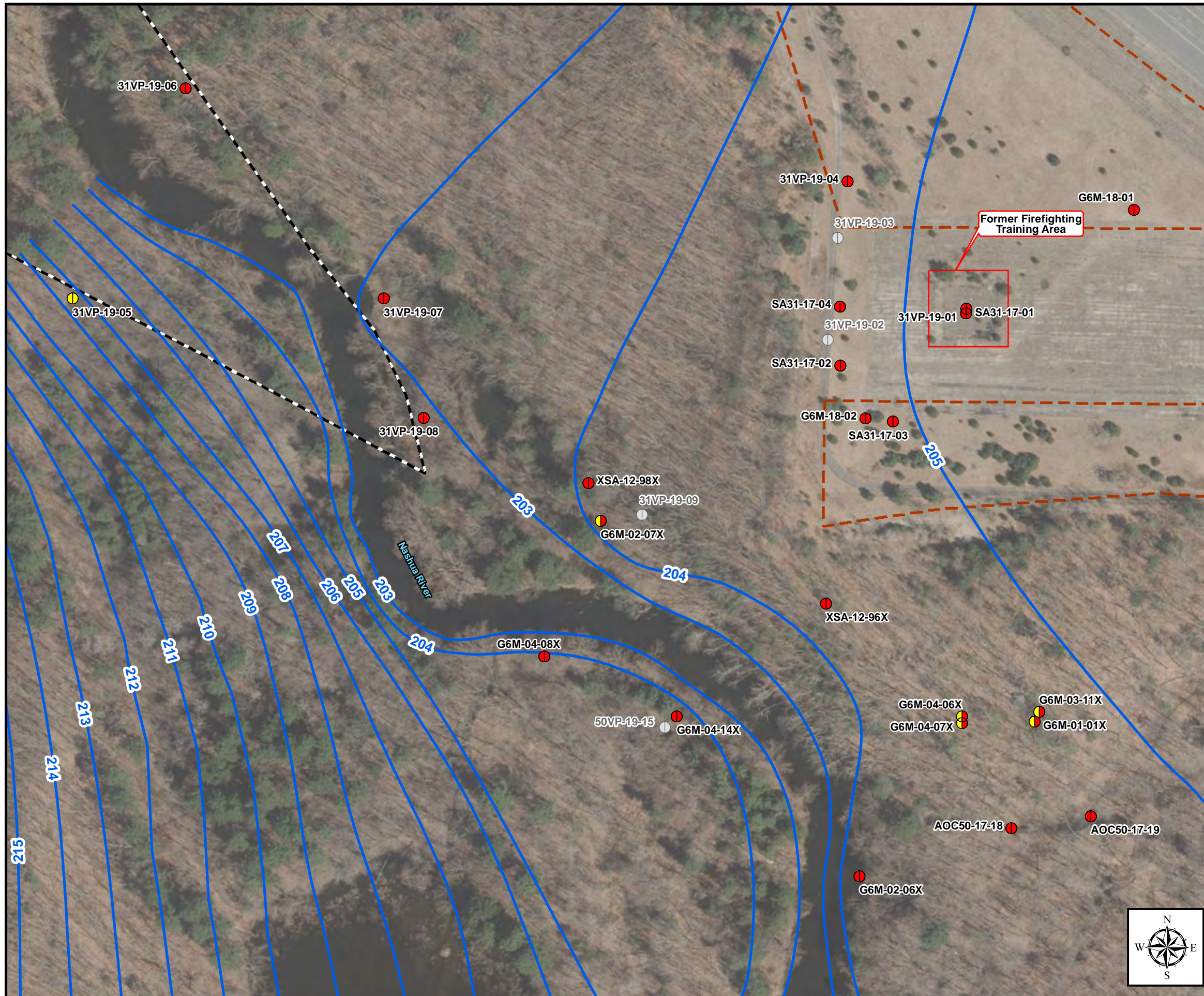
KOMAN Government Solutions, LLC
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Date:
01/12/2021

Figure
5-1





Legend

- Monitoring Well/Vertical Profiling Location
- Monitoring Well/Vertical Profiling Locations Not Completed

**EPA LHA
(sum of PFOA and PFOS) (ng/L)**

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70ng/L
- EPA LHA no detection

**MassDEP
(sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)**

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

- ~ Groundwater Contour (April 27, 2020)
(Contour Interval = 1 Foot) (ft NAVD88)
- ~ Inferred Groundwater Contour (April 27, 2020)
(Contour Interval = 1 Foot) (ft NAVD88)

- Area of Contamination (AOC)
- Former Fort Devens Boundary

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
 MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
 EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

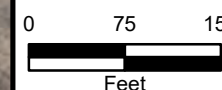
Refer to Figure 2-9 for Groundwater Elevation Data

Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC 31 Groundwater Results
 Devens PFAS RI – Area 3 PSCS**

**Former Fort Devens Army Installation
 Devens, Massachusetts**

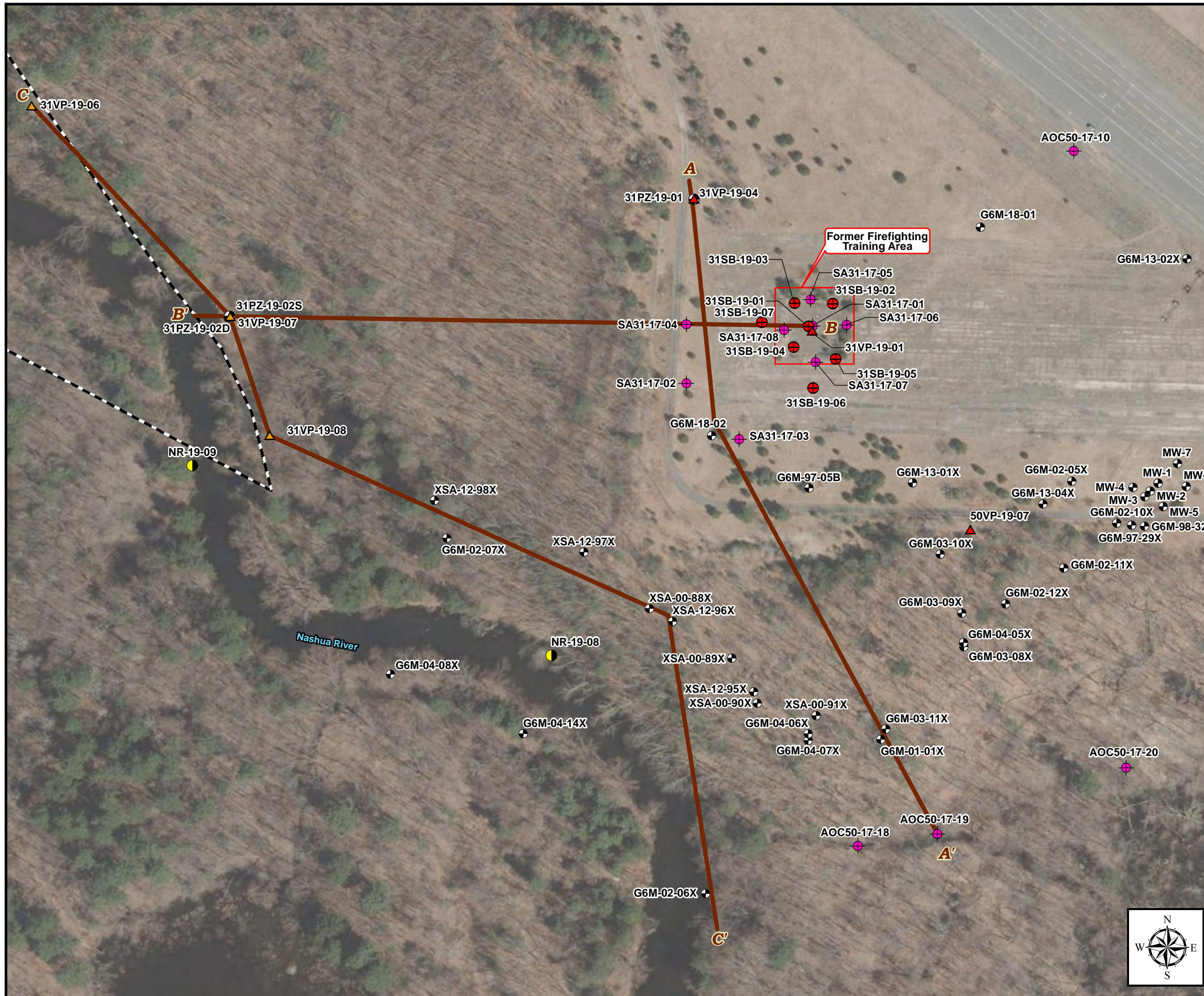
KOMAN Government Solutions, LLC
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Date:
01/14/2021

Figure
5-2





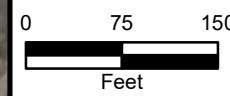
- Legend**
- Monitoring Well/Piezometer
 - Vertical Profiling Location Installation Phase 1
 - Vertical Profiling Location Installation Phase 2
 - Soil Boring Location Installation Phase 1
 - Surface Water and Sediment Sampling
 - Temporary Well Location from SI
 - Cross Section Location
 - Area of Contamination (AOC)
 - Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 31 Cross Section Locations
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

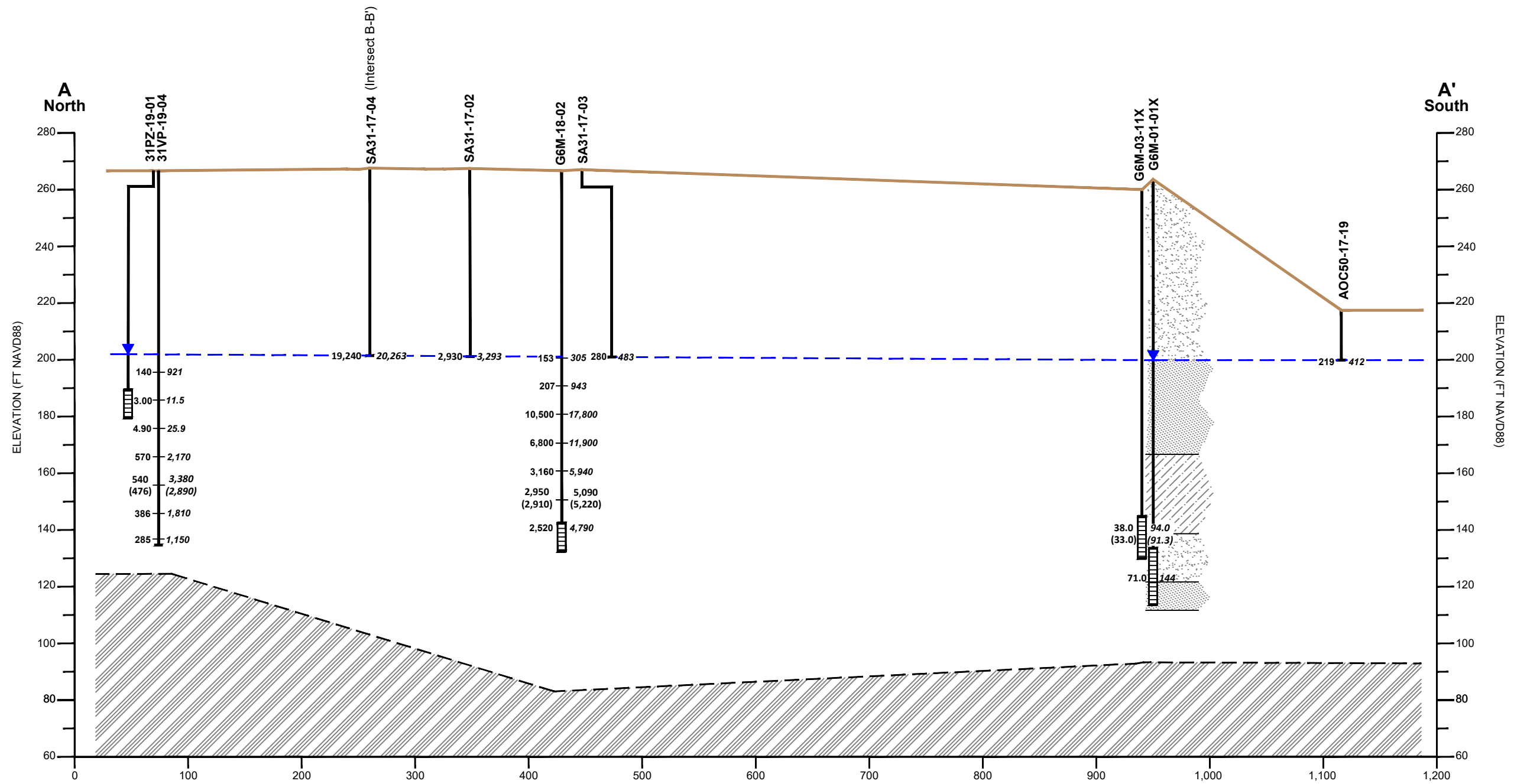
KOMAN Government Solutions, LLC
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Date:
10/15/2020

Figure
5-3



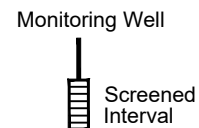


Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

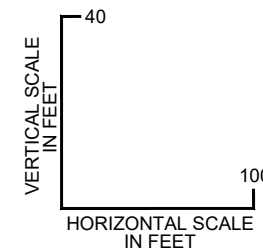


- Medium to Coarse Sand
- Fine Sand
- Sand with Silt/Silty Sand
- Till
- Bedrock
- Unknown
- Water Table
- Inferred Top of Bedrock

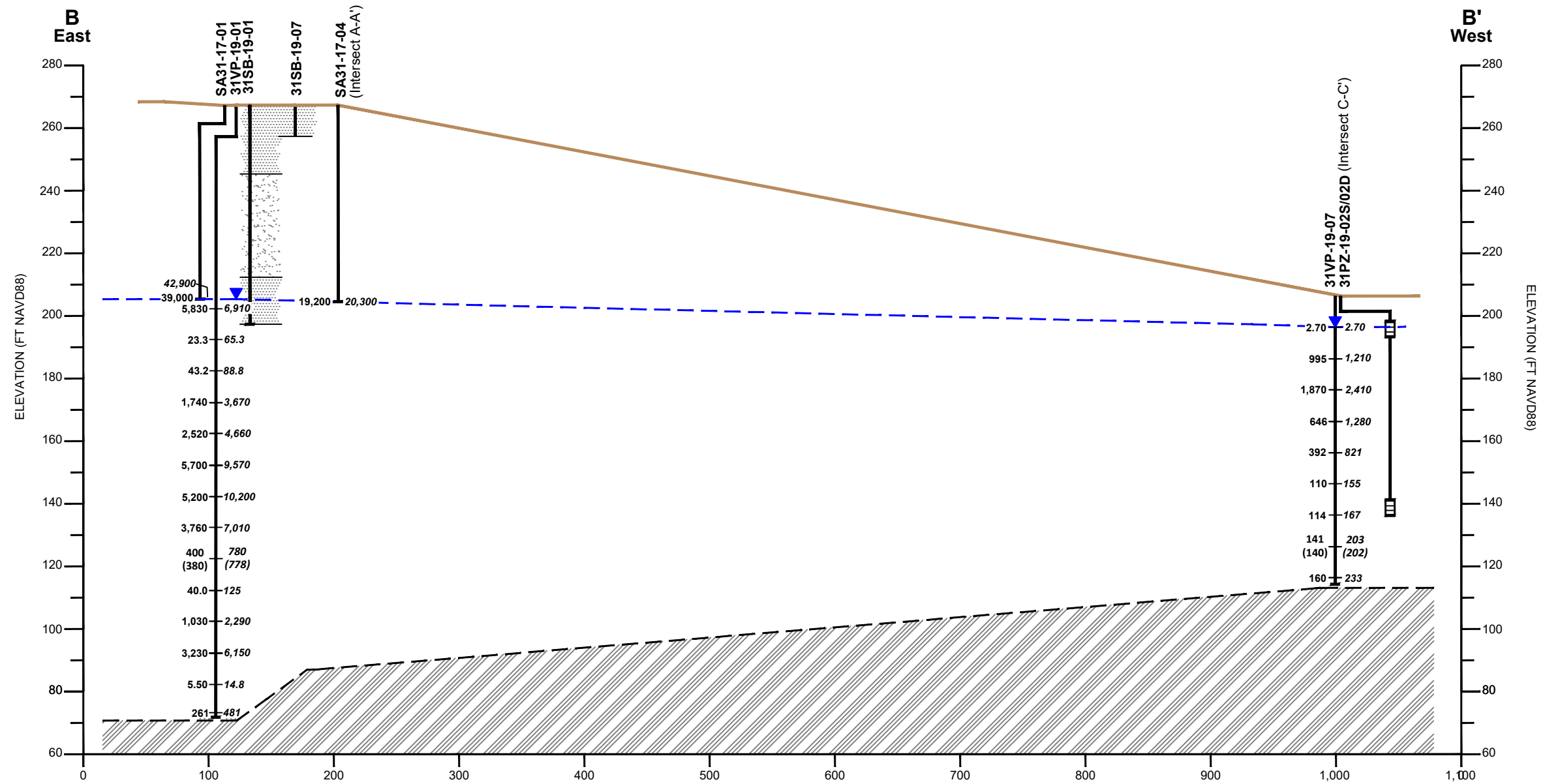
Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOC 31 Cross Section A-A'			
Devens PFAS RI - Area 3 PSCS			
Former Fort Devens Army Installation Devens, Massachusetts			
KOMAN Government Solutions, LLC			
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Scale as Shown	Date: 10/14/2020	Figure 5-4	

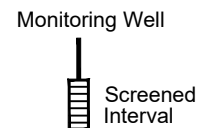


Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

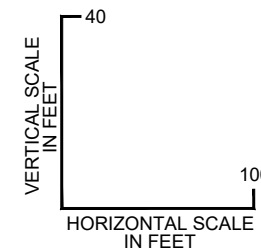


- Medium to Coarse Sand
- Fine Sand
- Sand with Silt/Silty Sand
- Till
- Bedrock
- Unknown
- Water Table
- Inferred Top of Bedrock

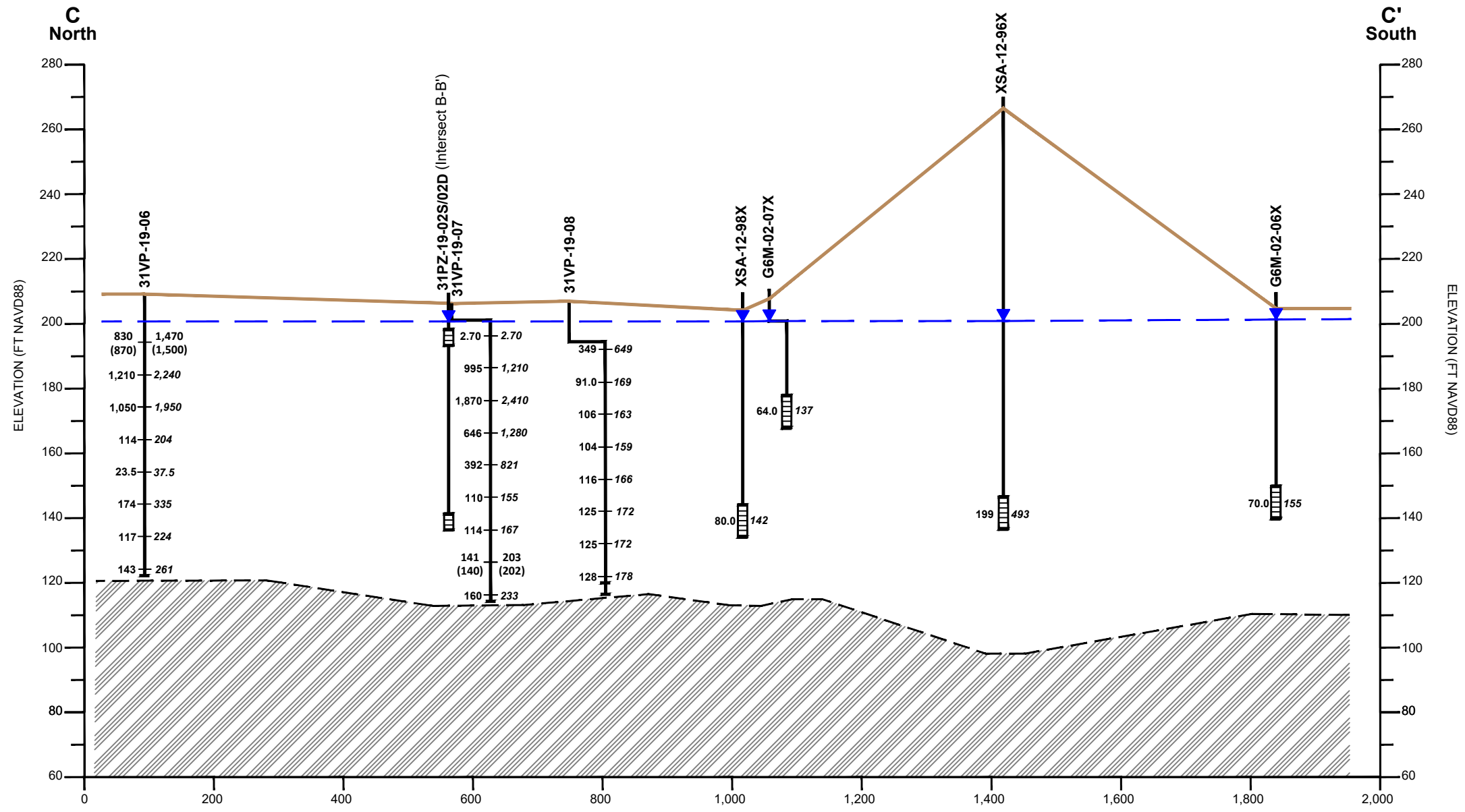
Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOC 31 Cross Section B-B' Devens PFAS RI - Area 3 PSCS			
Former Fort Devens Army Installation Devens, Massachusetts			
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752			
Scale as Shown	Date: 10/14/2020	Figure 5-5	



Legend

Vertical Profile

1.39 U EPA LHA Concentration (sum of PFOA and PFOS) | 2.59 U MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

Screened Interval

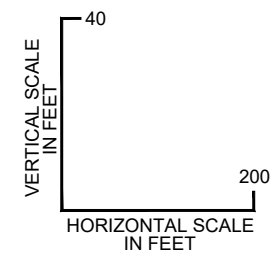
Medium to Coarse Sand
 Fine Sand
 Sand with Silt/Silty Sand
 Till
 Bedrock
 Unknown

Water Table
 Inferred Top of Bedrock

Notes:

All results in ng/L
 ng/L = nanograms per liter
 ND = non-detect
 () = field duplicate

Perfluorooctanesulfonic acid (PFOS)
 Perfluorooctanoic acid (PFOA)
 Perfluorodecanoic acid (PFDA)
 Perfluoroheptanoic acid (PFHpA)
 Perfluorohexanesulfonic acid (PFHxS)
 Perfluorononanoic acid (PFNA)

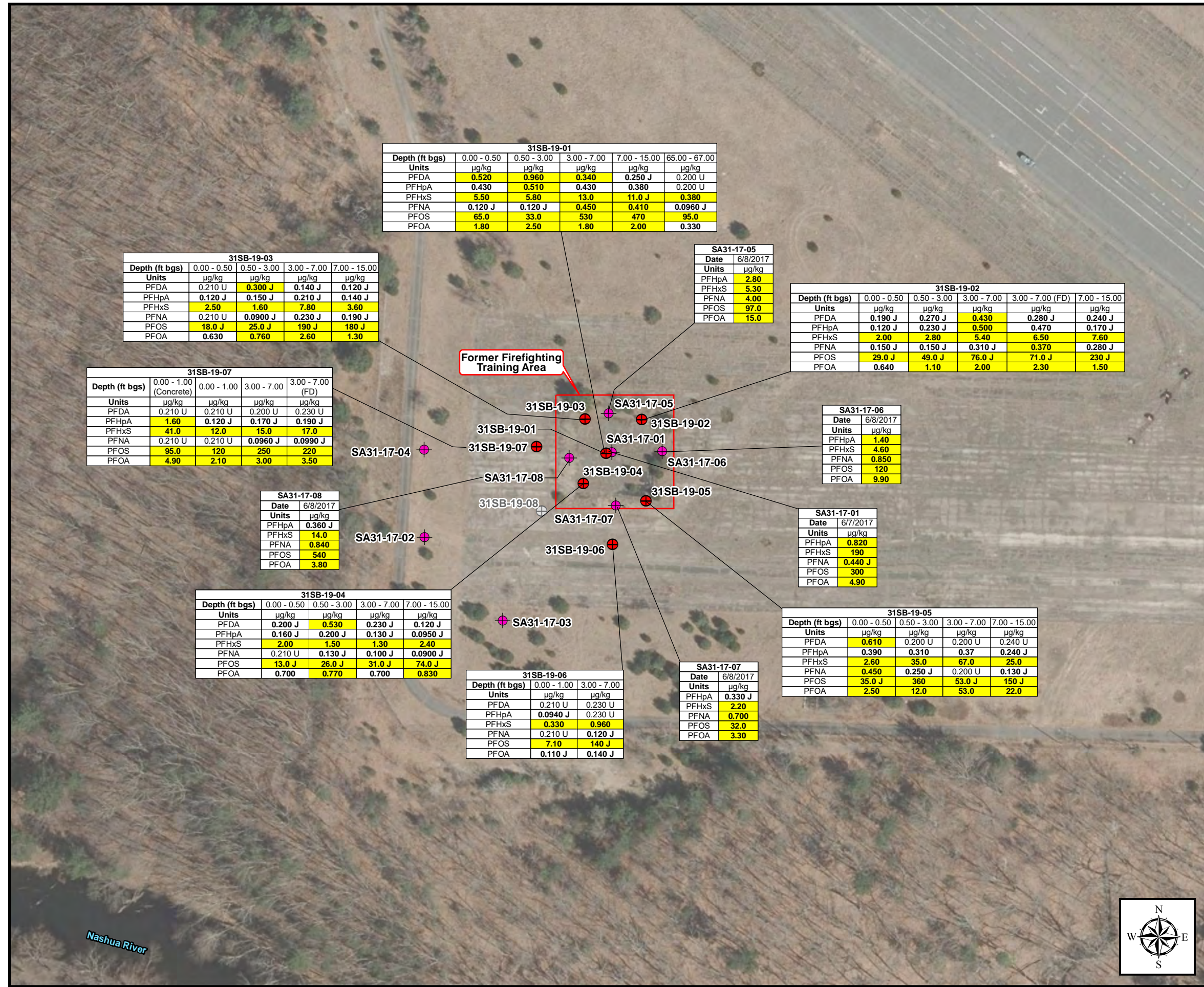


AOC 31 Cross Section C-C'
 Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
 Devens, Massachusetts

KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown | Date: 10/14/2020 | Figure 5-6



31SB-19-01					
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	165.00 - 67.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.520	0.960	0.340	0.250 J	0.200 U
PFHpA	0.430	0.510	0.430	0.380	0.200 U
PFHxS	5.50	5.80	13.0	11.0 J	0.380
PFNA	0.120 J	0.120 J	0.450	0.410	0.0960 J
PFOS	65.0	33.0	530	470	95.0
PFOA	1.80	2.50	1.80	2.00	0.330

31SB-19-03				
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.210 U	0.300 J	0.140 J	0.120 J
PFHpA	0.120 J	0.150 J	0.210 J	0.140 J
PFHxS	2.50	1.60	7.80	3.60
PFNA	0.210 U	0.0900 J	0.230 J	0.190 J
PFOS	18.0 J	25.0 J	190 J	180 J
PFOA	0.630	0.760	2.60	1.30

SA31-17-05	
Date	6/8/2017
Units	µg/kg
PFHpA	2.80
PFHxS	5.30
PFNA	4.00
PFOS	97.0
PFOA	15.0

31SB-19-02					
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00 (FD)	7.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.190 J	0.270 J	0.430	0.280 J	0.240 J
PFHpA	0.120 J	0.230 J	0.500	0.470	0.170 J
PFHxS	2.00	2.80	5.40	6.50	7.60
PFNA	0.150 J	0.150 J	0.310 J	0.370	0.280 J
PFOS	29.0 J	49.0 J	76.0 J	71.0 J	230 J
PFOA	0.640	1.10	2.00	2.30	1.50

31SB-19-07				
Depth (ft bgs)	0.00 - 1.00 (Concrete)	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.210 U	0.210 U	0.200 U	0.230 U
PFHpA	1.60	0.120 J	0.170 J	0.190 J
PFHxS	41.0	12.0	15.0	17.0
PFNA	0.210 U	0.210 U	0.0960 J	0.0990 J
PFOS	95.0	120	250	220
PFOA	4.90	2.10	3.00	3.50

SA31-17-06	
Date	6/8/2017
Units	µg/kg
PFHpA	1.40
PFHxS	4.60
PFNA	0.850
PFOS	120
PFOA	9.90

SA31-17-08	
Date	6/8/2017
Units	µg/kg
PFHpA	0.360 J
PFHxS	14.0
PFNA	0.840
PFOS	540
PFOA	3.80

SA31-17-01	
Date	6/7/2017
Units	µg/kg
PFHpA	0.820
PFHxS	190
PFNA	0.440 J
PFOS	300
PFOA	4.90

31SB-19-04				
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 J	0.530	0.230 J	0.120 J
PFHpA	0.160 J	0.200 J	0.130 J	0.0950 J
PFHxS	2.00	1.50	1.30	2.40
PFNA	0.210 U	0.130 J	0.100 J	0.0900 J
PFOS	13.0 J	26.0 J	31.0 J	74.0 J
PFOA	0.700	0.770	0.700	0.830

31SB-19-05				
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.610	0.200 U	0.200 U	0.240 U
PFHpA	0.390	0.310	0.37	0.240 J
PFHxS	2.60	35.0	67.0	25.0
PFNA	0.450	0.250 J	0.200 U	0.130 J
PFOS	35.0 J	360	53.0 J	150 J
PFOA	2.50	12.0	53.0	22.0

31SB-19-06		
Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00
Units	µg/kg	µg/kg
PFDA	0.210 U	0.230 U
PFHpA	0.0940 J	0.230 U
PFHxS	0.330	0.960
PFNA	0.210 U	0.120 J
PFOS	7.10	140 J
PFOA	0.110 J	0.140 J

SA31-17-07	
Date	6/8/2017
Units	µg/kg
PFHpA	0.330 J
PFHxS	2.20
PFNA	0.700
PFOS	32.0
PFOA	3.30

- Legend**
- Soil Boring Location Installation Phase 1
 - Temporary Well Location from SI
 - Soil Boring Location Not Completed
 - Area of Contamination (AOC)
 - Former Fort Devens Boundary

Notes:
 Criteria = S-1/GW-1, Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

= detection of PFAS
 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
 U = non-detect
 J = estimated result

AST = Above ground storage tank
 UST = Underground storage Tank
 DRMO = Defense Reutilization and Marketing Office
 TPHC = Total petroleum hydrocarbons

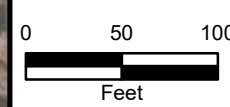
SI Sample locations were not analyzed for PFDA

Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC 31 Soil Sampling Results
 Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
 Devens, Massachusetts

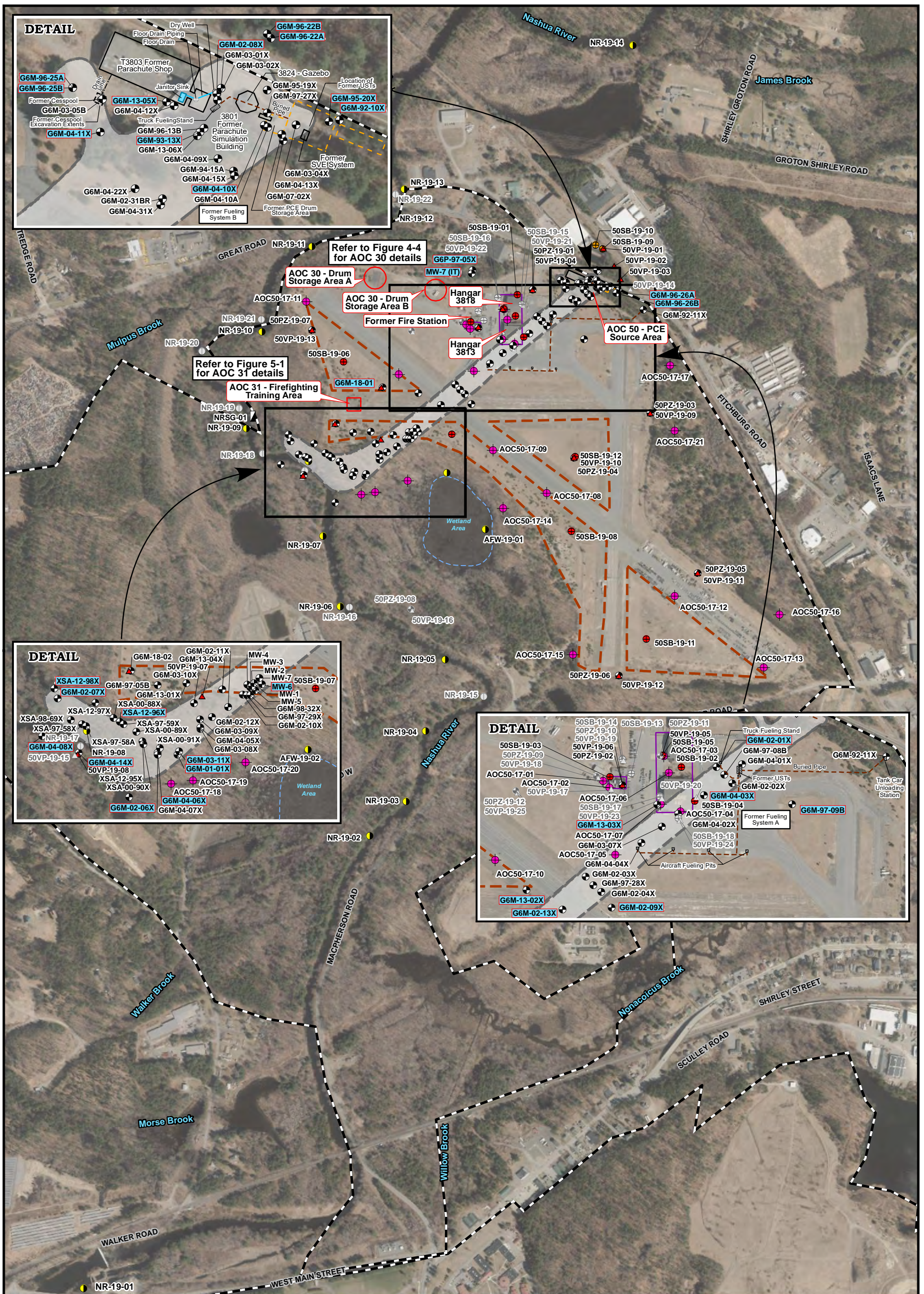
KOMAN Government Solutions, LLC
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Date: 01/12/2021

Figure 5-7





Legend	
	Monitoring Well/Piezometer
	Vertical Profiling Location Installation Phase 1
	Soil Boring Location Installation Phase 1
	Soil Boring Location Installation Phase 2
	Staff Gauge
	Surface Water and Sediment Sampling Location
	Temporary Well Location from SI
	Monitoring Well/Piezometer Not Completed
	Soil Boring Location Not Completed
	Vertical Profiling Location Not Completed
	Surface Water and Sediment Sampling Location Not Completed
	Wells Sampled as Part of PFAS RI
	Site Inspection Study Area Boundary
	Interpretive (2004) Tetrachloroethene (PCE) Contour (µg/L)
	Approximate Areas of Sludge Disposal
	Area of Contamination (AOC)
	Former Fort Devens Boundary

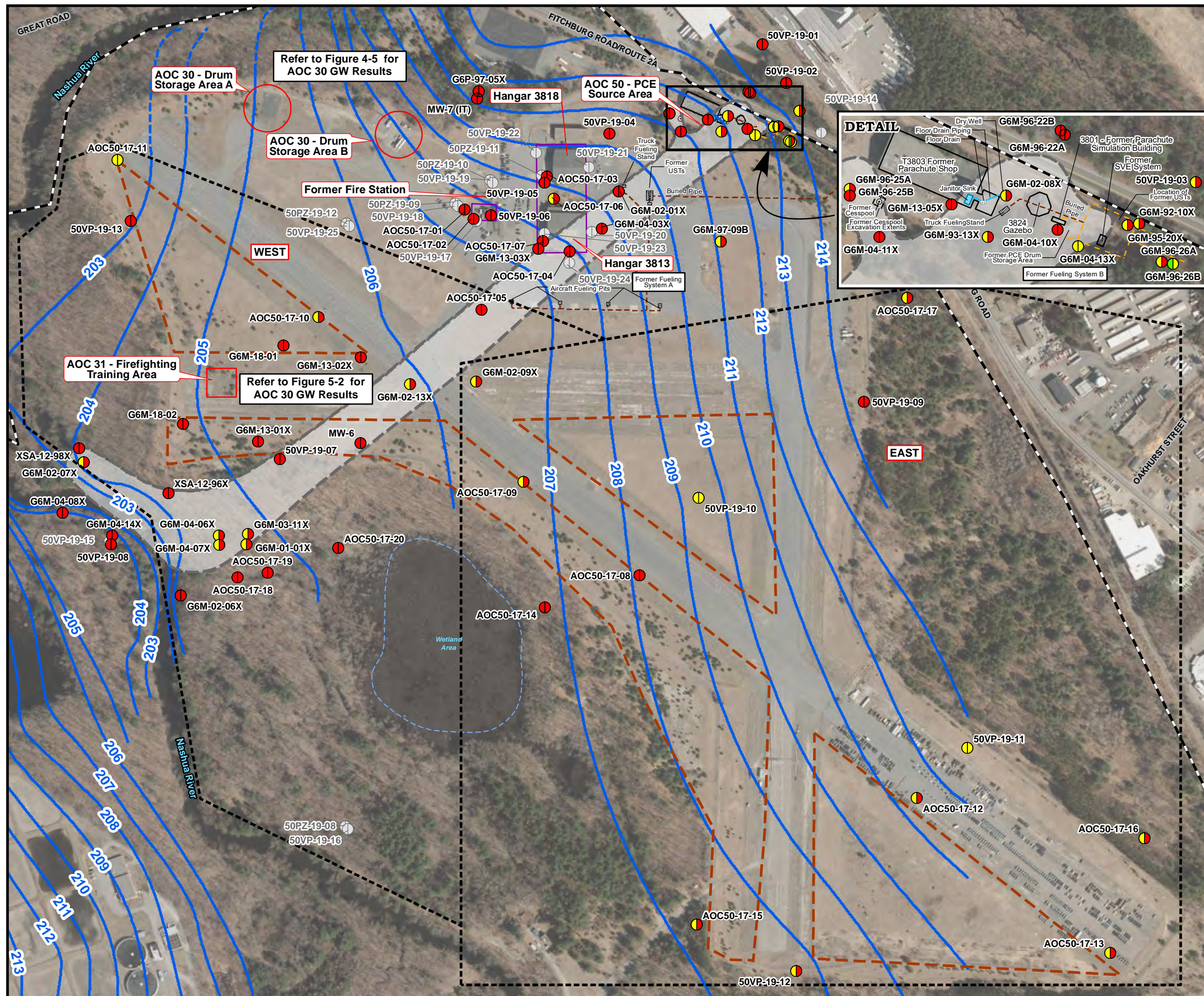
**AOC 50 Field Activities
Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

	Date: 01/12/2021	Figure 6-1	
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Aerial Source: USGS, MassGIS Orthoimagery 2019



Legend

- Monitoring Well/Vertical Profiling Location
- Piezometer/Vertical Profiling Locations Not Completed

EPA LHA (sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA No detection

MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

- Groundwater Contour (April 27, 2020) (Contour Interval = 1 Foot) (ft NAVD88)
- - - Inferred Groundwater Contour (April 27, 2020) (Contour Interval = 1 Foot) (ft NAVD88)
- Interpretive (2004) Tetrachloroethene (PCE) Contour (µg/L)
- Site Inspection Study Area Boundary
- - - Approximate Areas of Sludge Disposal
- Area of Contamination (AOC)
- - - Former Fort Devens Boundary

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
 MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
 EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

Refer to Figure 2-9 for Groundwater Elevation Data

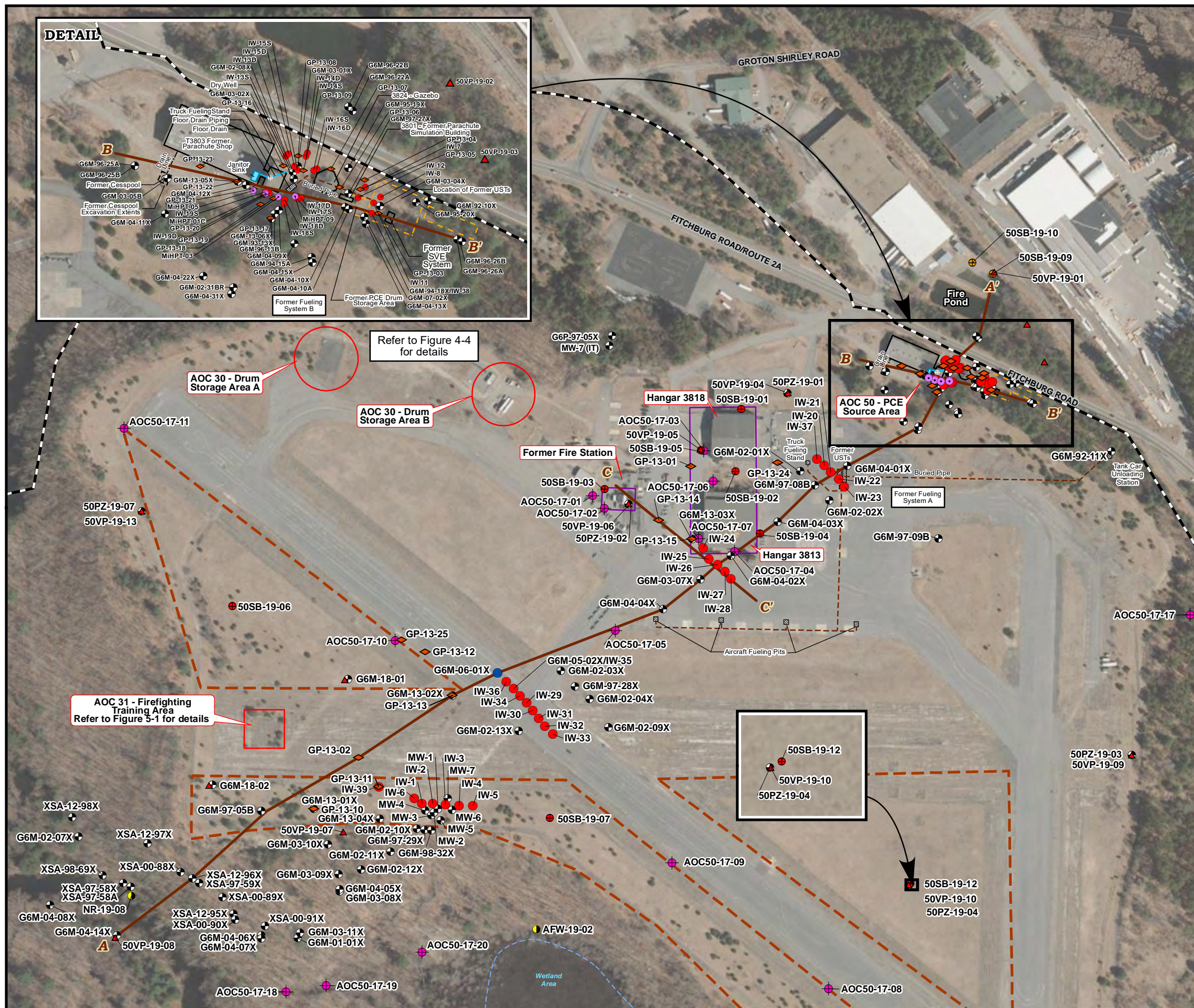
Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC 50 Groundwater Results
 Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
 Devens, Massachusetts

KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

	Date: 02/05/2021	Figure 6-2	
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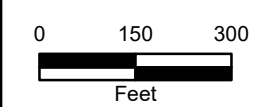
- Legend**
- Monitoring Well/Piezometer
 - ▲ Vertical Profiling Location Installation Phase 1
 - Soil Boring Location Installation Phase 1
 - Soil Boring Location Installation Phase 2
 - Surface Water and Sediment Sampling
 - Monitoring Well Converted to Injection Well
 - Temporary Well Location from SI
 - MiHPT Investigation Location
 - ◆ Vertical Groundwater Profiling Location
 - Injection Well
 - Cross Section Location
 - Site Inspection Study Area Boundary
 - Approximate Areas of Sludge Disposal
 - Area of Contamination (AOC)
 - Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 50 Cross Section Locations
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

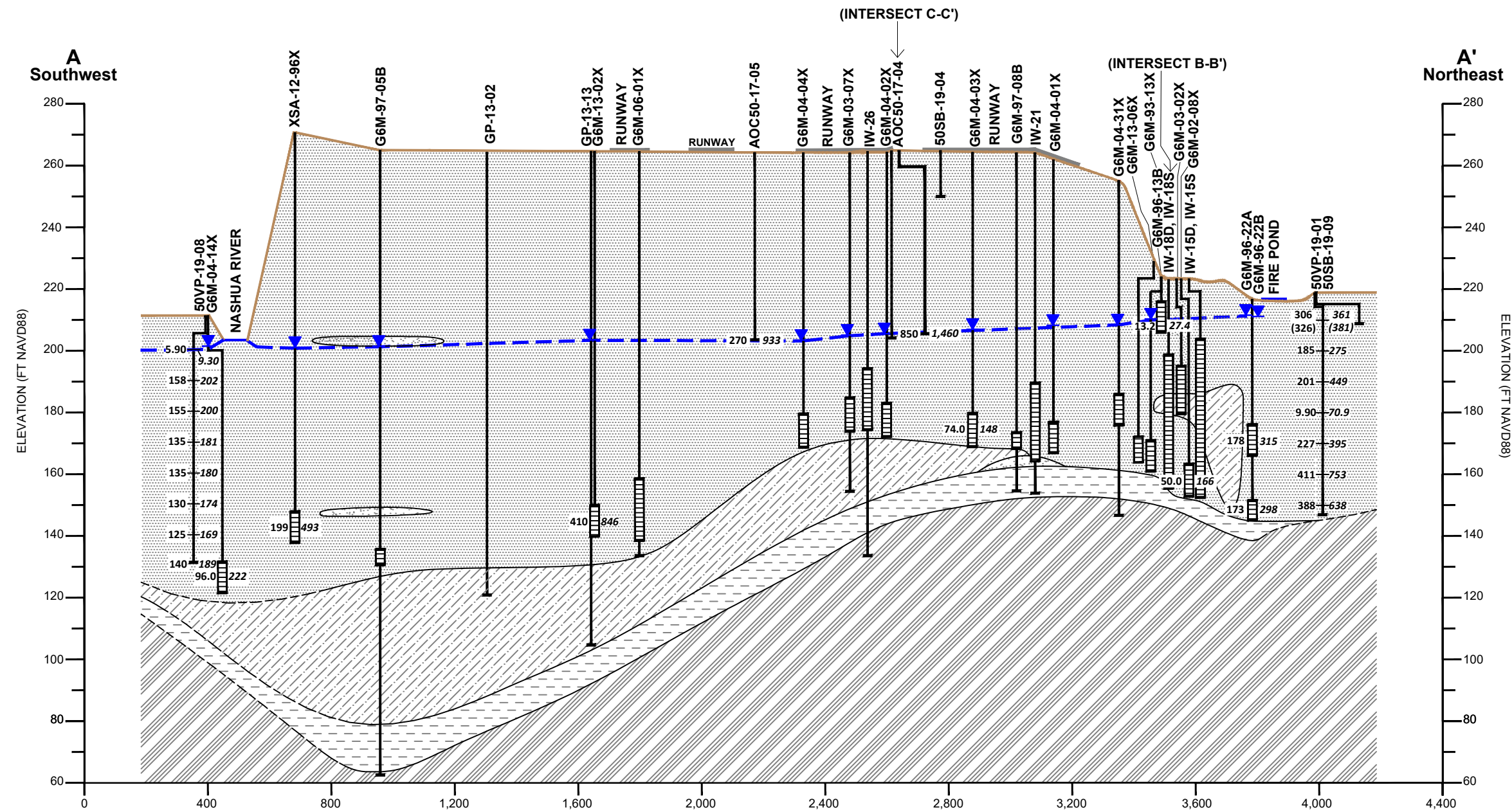
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date:
10/19/2020

Figure
6-3





Legend

Vertical Profile

1.39 U EPA LHA Concentration (sum of PFOA and PFOS)
 2.59 U MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

Screened Interval

Soil Types:

- Medium to Coarse Sand
- Fine Sand
- Sand with Silt/Silty Sand
- Till
- Bedrock
- Unknown

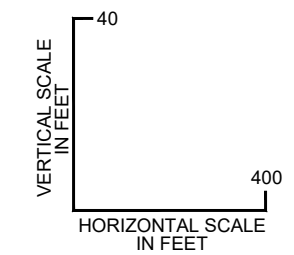
Water Table: Inverted triangle symbol

Inferred Top of Bedrock: Dashed line

Notes:

All results in ng/L
 ng/L = nanograms per liter
 ND = non-detect
 NS = no sample
 () = field duplicate

Perfluorooctanesulfonic acid (PFOS)
 Perfluorooctanoic acid (PFOA)
 Perfluorodecanoic acid (PFDA)
 Perfluoroheptanoic acid (PFHpA)
 Perfluorohexanesulfonic acid (PFHxS)
 Perfluorononanoic acid (PFNA)

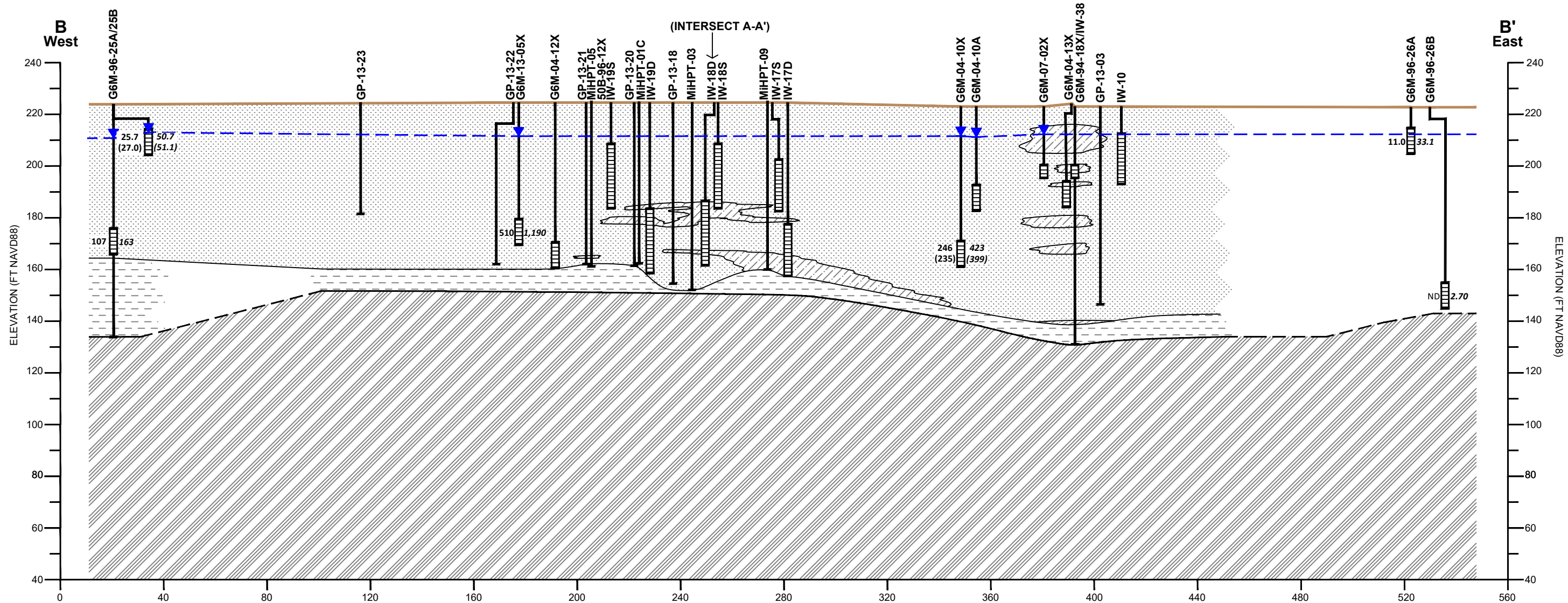


AOC 50 Cross Section A-A'
 Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
 Devens, Massachusetts

KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 10/15/2020	Figure 6-4	
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Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

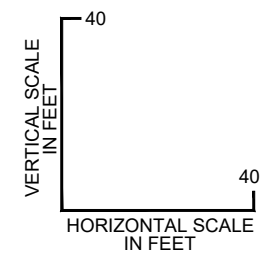
Screened Interval

- Medium to Coarse Sand
- Fine Sand
- Sand with Silt/Silty Sand
- Till
- Bedrock
- Unknown
- Water Table
- Inferred Top of Bedrock

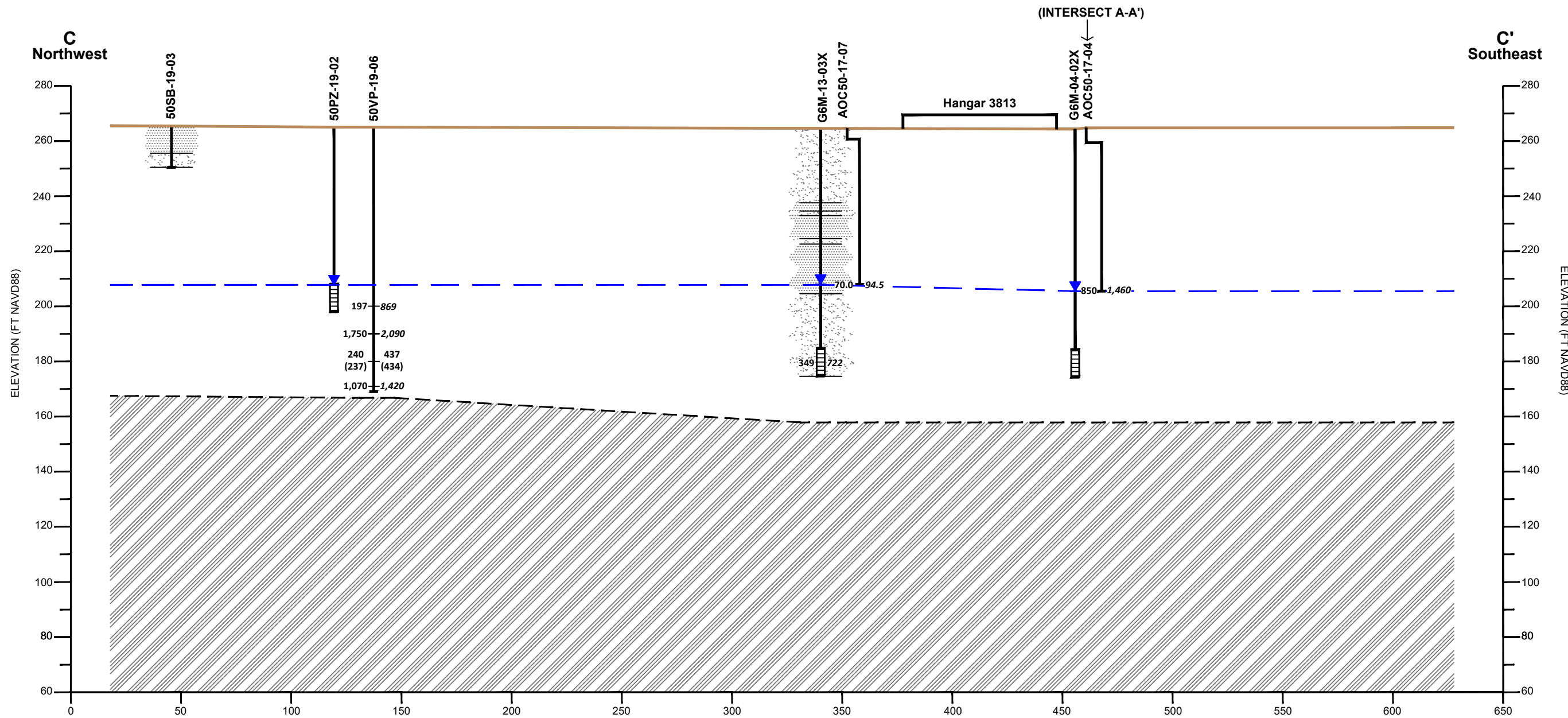
Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOC 50 Cross Section B-B' Devens PFAS RI - Area 3 PSCS			
Former Fort Devens Army Installation Devens, Massachusetts			
KOMAN Government Solutions, LLC 293 Boston Post Road West, Suite 100, Marlborough, MA 01752			
Scale as Shown	Date: 10/15/2020	Figure 6-5	



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

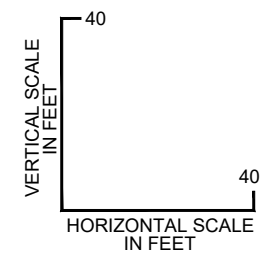
Screened Interval

- Medium to Coarse Sand
- Fine Sand
- Bedrock
- Unknown
- Water Table
- Inferred Top of Bedrock

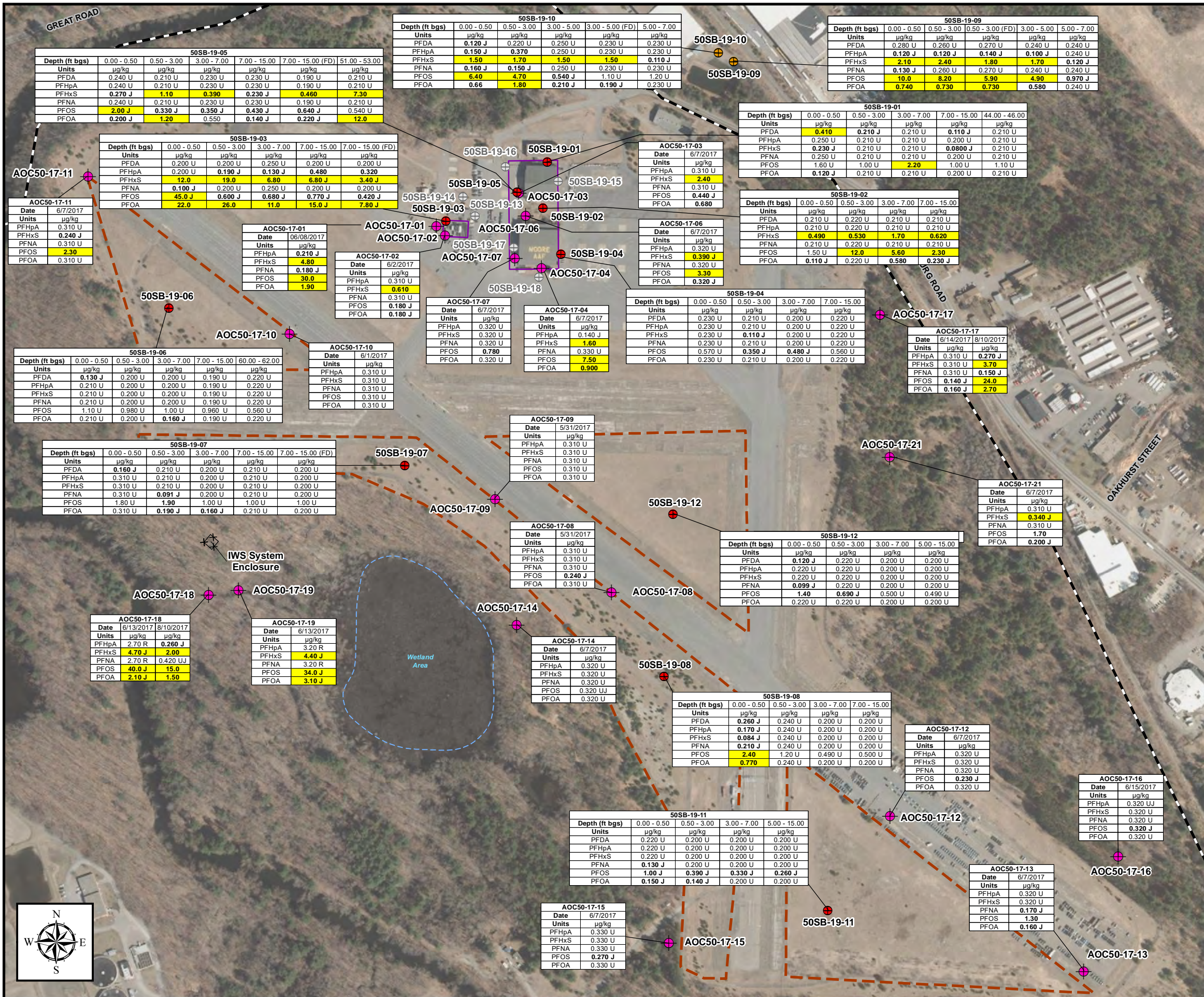
Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
() = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



AOC 50 Cross Section C-C'			
Devens PFAS RI - Area 3 PSCS			
Former Fort Devens Army Installation Devens, Massachusetts			
KOMAN Government Solutions, LLC			
293 Boston Post Road West, Suite 100, Marlborough, MA 01752			
Scale as Shown	Date: 10/15/2020	Figure 6-6	



- Legend**
- Soil Boring Location Installation Phase 1
 - ⊕ Soil Boring Location Installation Phase 2
 - ⊕ Temporary Well Location from SI
 - ⊕ Soil Boring Location Not Completed
 - Site Inspection Study Area Boundary
 - ⊠ Approximate Areas of Sludge Disposal
 - ⊠ Former Fort Devens Boundary

Notes:
 Criteria = S-1/GW-1, Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

2.00 = detection of PFAS
 2.00 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
 U = non-detect
 J = estimated result

AST = Above ground storage tank
 UST = Underground storage Tank
 DRMO = Defense Reutilization and Marketing Office
 TPHC = Total petroleum hydrocarbons

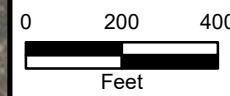
SI Sample locations were not analyzed for PFDA

Aerial Source: USGS, MassGIS 2019 Orthoimagery

**AOC 50 Soil Sampling Results
 Devens PFAS RI – Area 3 PSCS**

Former Fort Devens Army Installation
 Devens, Massachusetts

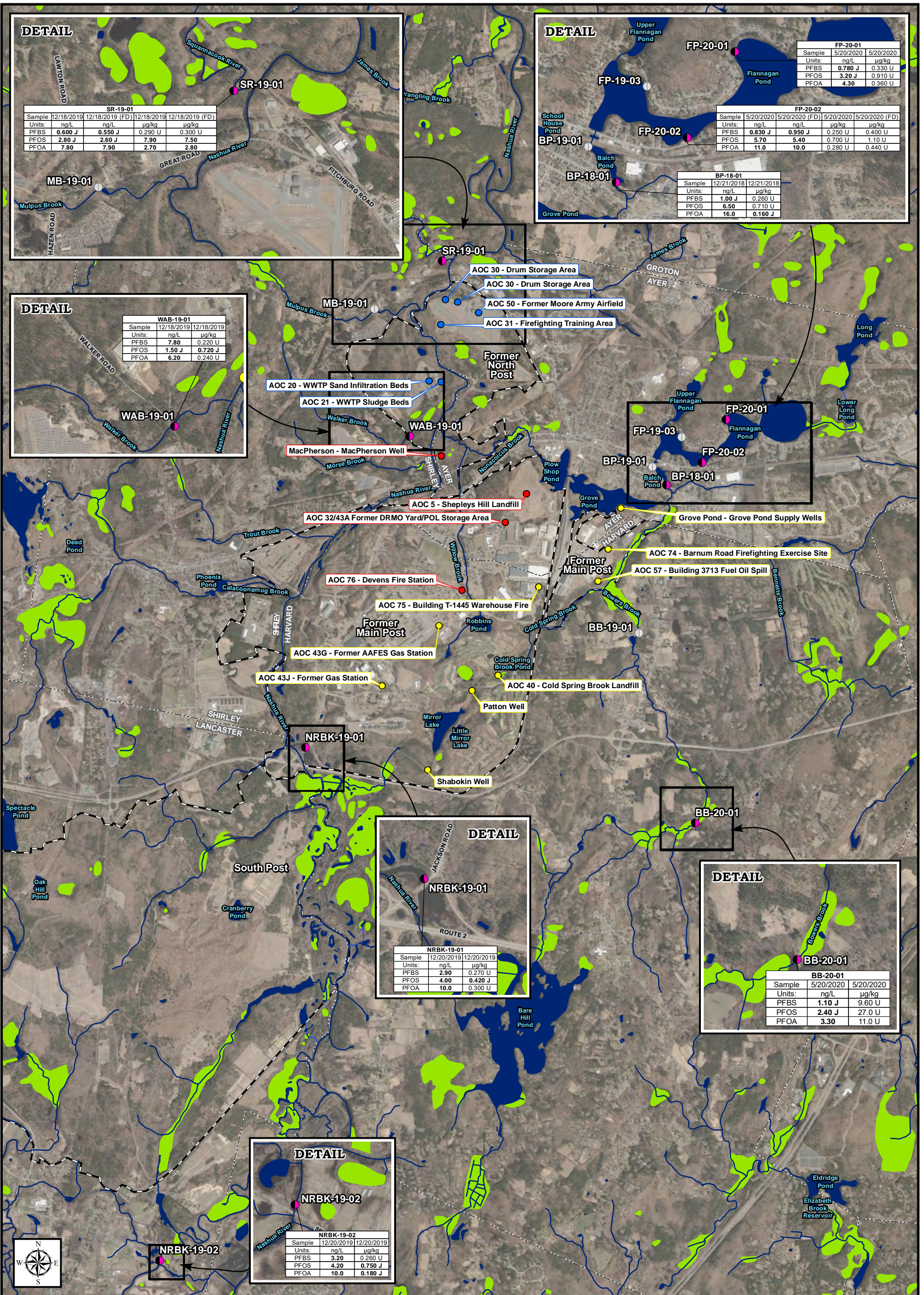
KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date: 01/12/2021

Figure 6-7





Legend

- Area 1 - Grove Pond, Patton and Shabokin Supply Wells, AOCs 40, 43G, 43J, 57, 74, and 75
- Area 2 - MacPherson Water Supply Wells, SHL, AOCs 32/43A, and 76
- Area 3 - AOCs 20, 21, 30, 31, and 50
- Background Surface Water and Sediment Sampling Location
- Background Surface Water and Sediment Sampling Location (Not Collected)

National Hydrography Dataset

- Stream/River
- Connector
- Lake/Pond
- Swamp/Marsh
- City/Town Boundary
- Former Fort Devens Boundary

EPA PFAS Site Specific Screening Levels for Former Fort Devens

Surface Water		Sediment	
Units:	ng/L	Units:	µg/kg
PFOA	2,030	PFOA	609
PFOS	2,030	PFOS	609
PFBS	2,030,000	PFBS	609,000

Notes:
 Perfluorooctane Sulfonic Acid (PFOS)
 Perfluorooctanoic Acid (PFOA)
 ng/L = nanograms per liter (Surface Water Result Value)
 µg/kg = microgram per kilogram (Sediment Result Value)
 J = estimated result
 U = not detected above the reported sample quantitation limit
 Bold = detection

**Background Surface Water and Sediment Sample Results
 Devens PFAS RI - Area 3 PSCS**

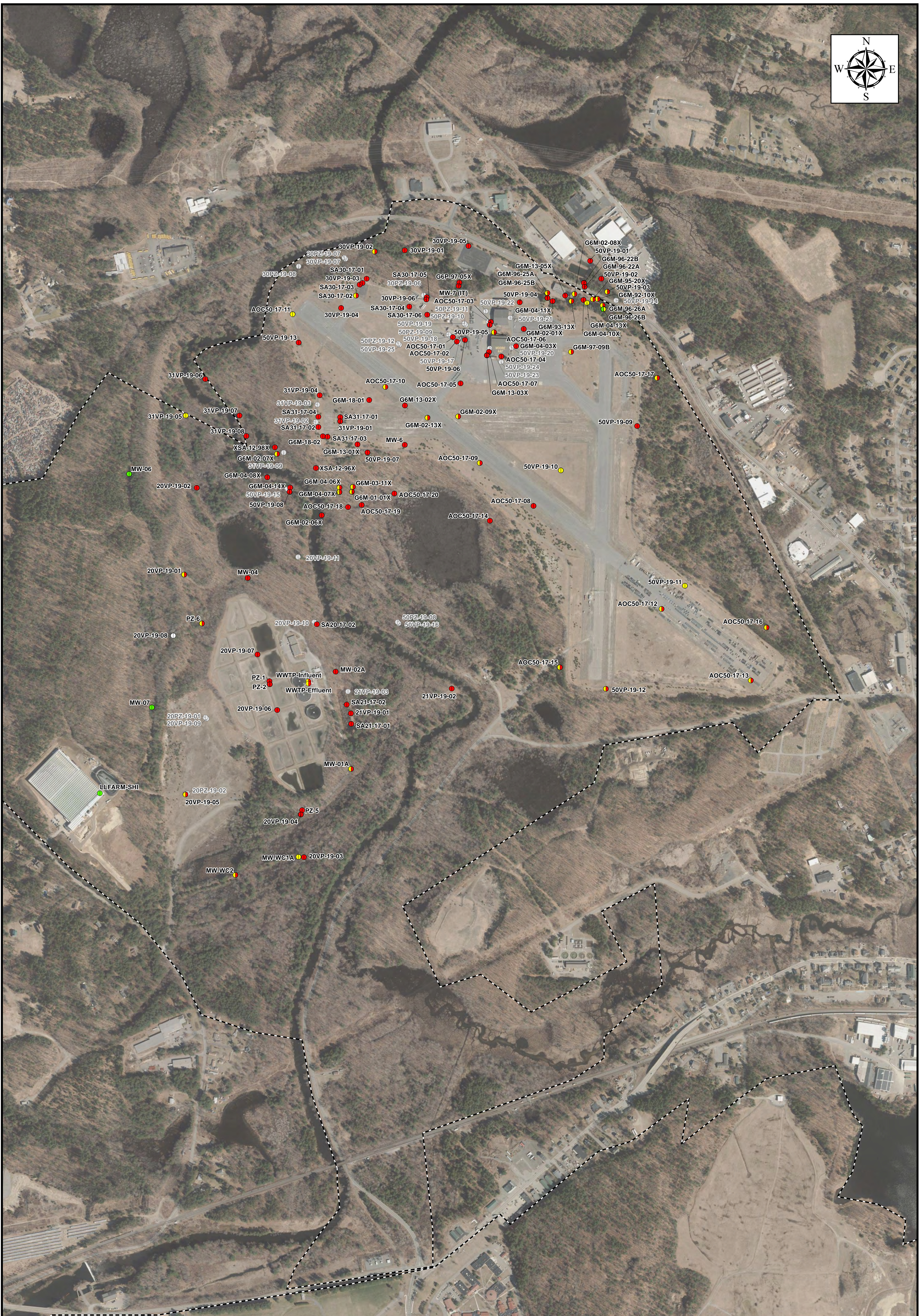
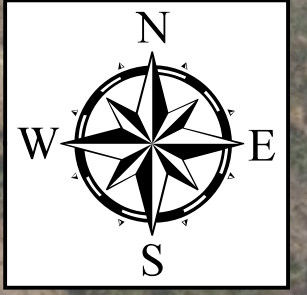
**Former Army Installation Devens
 Devens, Massachusetts**

KOMAN Government Solutions, LLC
 293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 2,000 4,000 Feet

Date: 02/03/2021

Figure 7-1



Legend

- Monitoring Well/Vertical Profiling Location
- Monitoring Well/Vertical Profiling Location Not Completed
- Former Fort Devens Boundary

- EPA LHA (sum of PFOA and PFOS) (ng/L)**
- EPA LHA ≥ 70 ng/L
 - EPA LHA < 70 ng/L
 - EPA LHA No detection

- MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)**
- MassDEP ≥ 20 ng/L
 - MassDEP < 20 ng/L
 - MassDEP no detection

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
 MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
 EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

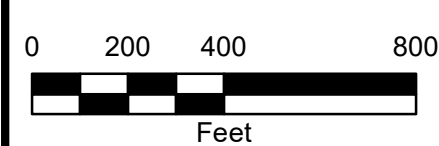
Vertical profile 20VP-19-08 was attempted but no saturated overburden was encountered.

SI GW Results not analyzed for PFDA

**Area 3 Groundwater Results
Devens PFAS RI - Area 3 PSCS**

**Former Fort Devens Army Installation
Devens, Massachusetts**

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752



Date: 01/12/2021

Plate 2





**APPENDIX A MONITORING WELL FIELD
SHEETS**

**Area 3 Existing Monitoring Well Sampling
Field Low Flow Forms**

AOC 20

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: ~~MWAA~~ MW-01A

Project: <u>Durms PFAS RI EW</u>	Date: <u>4/30/19</u>
Location: <u>AOC 21/20</u>	Sampler: <u>CV</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>N/A</td> </tr> <tr> <td>Casing Secure</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>PVC casing intact</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Bolts present</td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Locked (stickup wells)</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure	<input checked="" type="checkbox"/>			Concrete Pad intact			<input checked="" type="checkbox"/>	PVC casing intact	<input checked="" type="checkbox"/>			Well gripper present	<input checked="" type="checkbox"/>			Bolts present			<input checked="" type="checkbox"/>	Locked (stickup wells)	<input checked="" type="checkbox"/>			<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>2"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>13.06</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>30.6</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>27</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>18-33</u> bgs</td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>3.25</u></td> </tr> </table>	Diameter	<u>2"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>13.06</u>	Depth to bottom (ft BTOR)	<u>30.6</u>	Pump Set Depth (ft BTOR)	<u>27</u>	Screen Interval (ft BTOR)	<u>18-33</u> bgs	Total volume purged (gal)	<u>3.25</u>
	Yes	No	N/A																																								
Casing Secure	<input checked="" type="checkbox"/>																																										
Concrete Pad intact			<input checked="" type="checkbox"/>																																								
PVC casing intact	<input checked="" type="checkbox"/>																																										
Well gripper present	<input checked="" type="checkbox"/>																																										
Bolts present			<input checked="" type="checkbox"/>																																								
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Pump Set Depth (ft BTOR)	<u>27</u>																																										
Screen Interval (ft BTOR)	<u>18-33</u> bgs																																										
Total volume purged (gal)	<u>3.25</u>																																										

Sampling Type
Purging Method: Puri Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1025-1105 Tubing diameter: 1/4" Air source: -
Field Instrument (Model/S/N): YSI 656 - 0602657 A1 LM Water 5108-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1040	300	13.06	7.72	6.56	940	8.81	134.9	4.46	clear/clear
1045	↓	↓	7.74	6.55	928	8.64	134.3	4.35	↓
1050	↓	↓	7.70	6.46	919	8.50	135.6	4.06	↓
1055	↓	↓	7.64	6.39	920	8.45	137.7	3.35	↓
1100	↓	↓	7.61	6.37	920	8.37	139.5	3.19	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N): <u>N</u>									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MW-01A-APR19
Sample Time: 1100 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): - Dup ID: -
Filter Size: - Dup Time: -

Comments DO seems a bit high, but stabilized otherwise

[Signature]
Signature

4/30/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: MW-06

Project: PFAS R1 EW A3
Location: AOC 20121

Date: 5/6/19
Sampler: BVA

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	/			Diameter	2"		
Concrete Pad intact			/	Material	PVC		
PVC casing intact	/			Depth to water (ft BTOR)	12.30		
Well gripper present	/			Depth to bottom (ft BTOR)	31.75		
Bolts present			/	Pump Set Depth (ft BTOR)	25		
Locked (stickup wells)	/			Screen Interval (ft BTOR)	14.29		logs
				Total volume purged (gal)	3.5		

Sampling Type
Purging Method Peri Tubing type HOPE Dedicated pump (Y/N) (N)
Purge start/stop time 1020-1130 Tubing diameter 1/4"00 Air source ---

Field Instrument (Model/S/N) YSI 650 XL: 02E0534
Lemette 2020L: 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1030	250	12.35	6.20	7.31	159	3.05	262.4	5.73	clear
1035	250	12.35	6.00	6.53	76	2.13	258.1	4.11	clear
1040	250	12.35	5.97	6.45	71	1.82	253.6	4.93	clear
1045	250	12.35	6.10	6.19	68	2.77	251.4	5.07	clear
1050	250	12.35	6.04	6.04	67	2.79	251.2	4.86	clear
1055	250	12.35	5.99	6.00	67	2.67	248.0	4.79	clear
1100	250	12.35	5.91	5.91	67	2.54	247.1	4.70	clear
1105	250	12.35	6.08	5.84	66	2.59	244.7	4.69	clear
1110	250	12.35	6.02	5.79	66	2.61	244.2	3.96	clear
1115	250	12.35	6.04	5.76	66	0.58	243.7	3.81	clear
1120	250	12.35	6.06	5.78	66	0.57	241.6	3.79	clear
1125	250	12.35	6.05	5.79	66	0.56	240.3	3.76	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	<u>N</u>								

Sampling Details

Sampling ID: MW-06-MA-19
Sample Time: 1125 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments _____

Bud J
Signature

5/6/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: MW-WC1A WC1A

Project: <u>PFAS RI EW A3</u>	Date: <u>5/16/15</u>
Location: <u>A0C20/21</u>	Sampler: <u>B/A</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>N/A</td> </tr> <tr> <td>Casing Secure</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Concrete Pad intact</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>PVC casing intact</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Well gripper present</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Bolts present</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Locked (stickup wells)</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Yes	No	N/A	Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Well gripper present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>2"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>4.39</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>20.90</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>15</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>6.45-17.55</u> top</td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>3.0</u></td> </tr> </table>	Diameter	<u>2"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>4.39</u>	Depth to bottom (ft BTOR)	<u>20.90</u>	Pump Set Depth (ft BTOR)	<u>15</u>	Screen Interval (ft BTOR)	<u>6.45-17.55</u> top	Total volume purged (gal)	<u>3.0</u>
	Yes	No	N/A																																								
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
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Pump Set Depth (ft BTOR)	<u>15</u>																																										
Screen Interval (ft BTOR)	<u>6.45-17.55</u> top																																										
Total volume purged (gal)	<u>3.0</u>																																										

Sampling Type

Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) (Y)

Purge start/stop time 1150 Tubing diameter 1/4" OD Air source —

Field Instrument (Model/S/N) YSI 650XL 02E0534
Lenette 20206 1116-0715

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1200	200	4.50	4.57	5.03	203	0.07	251.9	15.7	clear
1205	200	4.50	4.56	4.67	179	0.19	268.0	12.9	clear
1210	200	4.50	4.48	4.59	180	0.70	267.7	7.50	clear
1215	200	4.50	4.51	4.57	181	0.74	266.8	6.92	clear
1220	200	4.50	4.40	4.53	181	0.96	267.0	6.84	clear
1225	200	4.50	4.41	4.53	183	1.05	266.0	6.81	clear
1230	200	4.50	4.46	4.53	185	1.06	264.9	6.79	clear
1235	200	4.50	4.47	4.53	186	1.08	264.8	6.78	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	<u>N</u>								

Sampling Details

Sampling ID: MW-WC1A-MAY15

Sample Time: 1235 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: —

Filter Size: — Dup Time: —

Comments _____

_____ 5/16/15
 Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: MW-WG2

Project: <u>PFAS RI EWA3</u>	Date: <u>5/6/15</u>
Location: <u>AOC 20/21</u>	Sampler: <u>B/A</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>N/A</td> </tr> <tr> <td>Casing Secure</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td align="center">✓</td> <td></td> <td align="center">✓</td> </tr> <tr> <td>PVC casing intact</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td align="center">-</td> <td></td> <td align="center">✓</td> </tr> <tr> <td>Bolts present</td> <td></td> <td></td> <td align="center">✓</td> </tr> <tr> <td>Locked (stickup wells)</td> <td align="center">✓</td> <td></td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure	✓			Concrete Pad intact	✓		✓	PVC casing intact	✓			Well gripper present	-		✓	Bolts present			✓	Locked (stickup wells)	✓			<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td align="center">2'</td> </tr> <tr> <td>Material</td> <td align="center">PVC</td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td align="center">7.50</td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td align="center">22.10</td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td align="center">15</td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td></td> </tr> <tr> <td>Total volume purged (gal)</td> <td align="center">4.5</td> </tr> </table>	Diameter	2'	Material	PVC	Depth to water (ft BTOR)	7.50	Depth to bottom (ft BTOR)	22.10	Pump Set Depth (ft BTOR)	15	Screen Interval (ft BTOR)		Total volume purged (gal)	4.5
	Yes	No	N/A																																								
Casing Secure	✓																																										
Concrete Pad intact	✓		✓																																								
PVC casing intact	✓																																										
Well gripper present	-		✓																																								
Bolts present			✓																																								
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Screen Interval (ft BTOR)																																											
Total volume purged (gal)	4.5																																										

Sampling Type
 Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) N
 Purge start/stop time 1250- Tubing diameter 1/4" OD Air source _____
 Field Instrument (Model/S/N) YSI 650XL 02E0534
Lenette 20206 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1255	300	7.60	8.14	5.11	176	1.81	157.5	7.13	clear
1300	300	7.60	8.25	5.14	176	2.09	129.1	6.37	clear
1305	300	7.60	8.61	5.34	178	2.05	92.7	5.01	clear
1310	300	7.60	8.66	5.37	177	1.77	85.4	4.26	clear
1315	300	7.60	8.64	5.41	178	1.65	79.4	3.10	clear
1320	300	7.60	8.48	5.45	177	1.42	74.7	3.05	clear
1325	300	7.60	8.60	5.45	177	1.42	73.9	2.99	clear
1330	300	7.60	8.62	5.45	178	1.41	73.2	2.96	clear
1335	300	7.60	8.61	5.45	176	1.46	72.9	3.02	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	N								

Sampling Details

Sampling ID: MW-WG2-MAY15
 Sample Time: 1335 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: —
 Filter Size: — Dup Time: —

Comments _____

 Signature Date 5/6/15

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: PZ-1

Project: <u>PFAS RI EW</u>	Date: <u>5/7/15</u>
Location: <u>AOC20121</u>	Sampler: <u>B/A</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <th></th> <th>Yes</th> <th>No</th> <th>N/A</th> </tr> <tr> <td>Casing Secure</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td></td> <td></td> <td align="center">✓</td> </tr> <tr> <td>PVC casing intact</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td></td> <td align="center">✓</td> <td></td> </tr> <tr> <td>Bolts present</td> <td></td> <td></td> <td align="center">✓</td> </tr> <tr> <td>Locked (stickup wells)</td> <td></td> <td align="center">✓</td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure	✓			Concrete Pad intact			✓	PVC casing intact	✓			Well gripper present		✓		Bolts present			✓	Locked (stickup wells)		✓		<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>1"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>61.33</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>78.10</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>7.2</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>70-75</u> <small>hr</small></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>3.0</u></td> </tr> </table>	Diameter	<u>1"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>61.33</u>	Depth to bottom (ft BTOR)	<u>78.10</u>	Pump Set Depth (ft BTOR)	<u>7.2</u>	Screen Interval (ft BTOR)	<u>70-75</u> <small>hr</small>	Total volume purged (gal)	<u>3.0</u>
	Yes	No	N/A																																								
Casing Secure	✓																																										
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Pump Set Depth (ft BTOR)	<u>7.2</u>																																										
Screen Interval (ft BTOR)	<u>70-75</u> <small>hr</small>																																										
Total volume purged (gal)	<u>3.0</u>																																										

Sampling Type Purging Method <u>MB</u> ^{0.85"} Purge start/stop time <u>1215-1330</u>	Tubing type <u>HDPE</u> Tubing diameter <u>1/4" OD</u>	Dedicated pump (Y/N) <u>(Y)</u> Air source <u>N₂</u>
Field Instrument (Model/S/N) <u>YSI 650XL OAE0534</u> <u>LeMotte 2020E 1116-0715</u>		

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1235	100	61.33	15.46	6.71	2433	1.18	112.4	>4,000	cloudy
1240	100	61.33	14.83	6.54	2423	0.84	114.6	87.1	cloudy
1245	100	61.33	15.07	6.50	2421	0.84	115.1	62.6	cloudy
1250	100	61.33	14.23	6.49	2409	0.84	114.8	58.9	cloudy
1255	100	61.33	13.73	6.49	2405	0.82	114.5	51.8	cloudy
1300	100	61.33	13.75	6.49	2387	0.80	113.7	44.6	cloudy
1305	100	61.33	13.56	6.49	2376	0.99	112.9	36.9	cloudy
1310	100	61.33	13.47	6.49	2368	0.96	111.6	37.1	clear
1315	100	61.33	13.31	6.49	2365	0.97	111.7	37.6	clear
1320	100	61.33	13.02	6.49	2370	0.96	111.7	37.4	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N							0.163 gal/ft or 616 ml/ft

Sampling Details			
Sampling ID: <u>PZ-1-MAY15</u>	Sample Time: <u>1320</u>	Duplicate (Y/N): <u>N</u>	MS/MSD (Y/N): <u>N</u>
Field Filtered (Y/N): _____	Filter Size: _____	Dup ID: _____	Dup Time: _____

Comments _____

5/7/15
 Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: P2-2

Project: PFAS RI EW Date: 5/7/19
 Location: AOC 20/21 Sampler: B/A

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	✓			Diameter	1"
Concrete Pad intact			✓	Material	PVC
PVC casing intact	✓			Depth to water (ft BTOR)	59.86
Well gripper present		✓		Depth to bottom (ft BTOR)	102.40
Bolts present			✓	Pump Set Depth (ft BTOR)	92-97
Locked (stickup wells)		✓		Screen Interval (ft BTOR)	45-100
				Total volume purged (gal)	2.5

Sampling Type
 Purging Method: 0.5" MB Tubing type: HDPE Dedicated pump (Y/N): (N)
 Purge start/stop time: 1030/1150 Tubing diameter: 1/4" OD Air source: N₂
 Field Instrument (Model/S/N): YSI 650XL 02E0531
Leontie 20204 1116-0719

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1050	100	60.05	14.43	6.86	1838	0.15	117.0	25.4	clear-brown tint
1055	100	60.05	14.05	6.58	2055	0.10	122.7	20.7	clear
1100	100	60.05	13.47	6.54	2170	0.12	121.3	14.1	clear
1105	100	60.05	13.24	6.51	2230	0.16	119.1	10.7	clear
1110	100	60.05	13.28	6.50	2263	0.15	116.3	8.62	clear
1115	100	60.05	13.24	6.50	2296	0.23	113.2	8.14	clear
1120	100	60.05	13.35	6.50	2281	0.16	110.9	7.23	clear
1125	100	60.05	13.82	6.49	2283	0.28	107.3	6.19	clear
1130	100	60.05	14.05	6.49	2282	0.31	105.6	5.66	clear
1135	100	60.05	13.90	6.49	2296	0.31	102.9	3.93	clear
1140	100	60.05	13.86	6.49	2297	0.38	101.9	3.89	clear
1145	100	60.05	13.84	6.49	2297	0.39	100.6	3.86	clear

Acceptance Criteria: <0.3ft ±3% ±0.1 ±3% ±10% ± 10mv 10% 2" Screen Volume =
 Post Cal. Check Variance Observed (Y/N): N 0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: P2-2-MAY19
 Sample Time: 1145 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

[Signature]
Signature

5/7/19
Date

AOC 50

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GOM-01-DIX (1/2)

Project: PFAS RI EW Date: 5/1/19
 Location: AOC50 Sampler: B/A

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	<input checked="" type="checkbox"/>			Diameter	<u>2"</u>
Concrete Pad intact			<input checked="" type="checkbox"/>	Material	<u>PVC</u>
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	<u>59.10</u>
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	<u>141.52</u>
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>145</u>
Locked (stickup wells)		<input checked="" type="checkbox"/>		Screen Interval (ft BTOR)	<u>140-150</u> <i>bsg</i>
				Total volume purged (gal)	<u>5.0</u>

Sampling Type
 Purging Method: 1.75" Bladder Tubing type: HDPE Dedicated pump (Y/N): N
 Purge start/stop time: 0800-0930 Tubing diameter: 1/4" OD Air source: N₂
 Field Instrument (Model/S/N): YSI 650XL 02E0534
Lemotte 2020t 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0820	200	59.30	7.73	6.33	961	1.27	72.5	>4,000	cloudy
0825	200	59.30	7.66	6.27	961	1.12	58.9	>4,000	cloudy
0830	200	59.30	7.70	6.24	961	1.03	46.2	>4,000	cloudy
0835	200	59.30	7.66	6.22	959	0.63	33.5	7,4000	cloudy
0840	200	59.30	7.73	6.23	958	0.51	28.4	>4,000	cloudy
0845	200	59.30	7.31	6.25	961	0.47	22.7	>4,000	cloudy
0850	200	59.30	7.43	6.26	956	0.47	21.7	>4,000	cloudy
0855	200	59.30	7.72	6.26	955	0.44	20.5	>4,000	cloudy
0900	200	59.30	7.73	6.28	955	0.38	19.1	>4,000	cloudy
0905	200	59.30	7.76	6.28	954	0.38	18.4	>4,000	cloudy
0910	200	59.30	7.77	6.29	953	0.39	17.0	>4,000	cloudy
0915	200	59.30	7.78	6.29	953	0.41	16.5	>4,000	cloudy
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>		

Sampling Details

Sampling ID: GOM-01-DIX-MAXIS
 Sample Time: 0925 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments: pg 1/2, Turbidity not stable, approve to sample (JCM)

[Signature]
Signature

5/1/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-01X

Project: <u>PFAS RI EW</u>	Date: <u>4/26/19</u>
Location: <u>AOC 50</u>	Sampler: <u>B/A</u>

Well Integrity	Yes	No	N/A	Well Information
Casing Secure	1			Diameter <u>2"</u>
Concrete Pad intact	1			Material <u>PVC</u>
PVC casing intact	1			Depth to water (ft BTOR) <u>52.10</u>
Well gripper present	1			Depth to bottom (ft BTOR) <u>89.5</u>
Bolts present	1			Pump Set Depth (ft BTOR) <u>89.95</u>
Locked (stickup wells)			✓	Screen Interval (ft BTOR) <u>80-95</u> <i>bgs</i>
				Total volume purged (gal) <u>3.0</u>

Sampling Type
 Purging Method 1.75" Biddle Tubing type HDPE Dedicated pump (Y/N) N
 Purge start/stop time 1100- Tubing diameter 1/4" O.D. Air source N₂

Field Instrument (Model/S/N) YSI 650XL 02E0534
Lemmon 10204 1116 075

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1120	250	52.20	9.74	6.99	2940	0.51	-80.5	50.8	clear / black floating solids
1125	250	52.20	9.67	7.12	2937	0.47	-85.1	47.3	clear / "
1130	250	52.20	9.67	7.18	2930	0.50	-93.1	44.0	clear / "
1135	250	52.20	9.65	7.23	2924	0.34	-92.9	33.9	"
1140	250	52.20	9.66	7.26	2926	0.29	-99.2	28.1	"
1145	250	52.20	9.65	7.30	2927	0.33	-102.5	23.6	"
1150	250	52.20	9.62	7.31	2923	0.35	-105.6	20.1	"
1155	250	52.20	9.66	7.33	2933	0.27	-104.6	20.7	"
* 1200	250	52.20	9.65	7.34	2926	0.34	-105.8	19.9	"
1205	250	52.20	9.67	7.34	2929	0.28	-105.0	19.3	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N	N	

Sampling Details

Sampling ID: G6M-02-01X-APR19
 Sample Time: 1205 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

[Signature]
Signature

4/26/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-06X

Project: Neems PFAS RIEW Date: 5/6/19
 Location: AOL SD Sampler: W

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>			Diameter	<u>2"</u>		
Concrete Pad intact			<input checked="" type="checkbox"/>	Material	<u>PVC</u>		
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	<u>4.36</u>		
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	<u>66.41</u>		
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>60</u>		
Locked (stickup wells)	<input checked="" type="checkbox"/>			Screen Interval (ft BTOR)	<u>55-60 65</u>	<u>865</u>	
				Total volume purged (gal)	<u>2.5</u>		

Sampling Type
 Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) N
 Purge start/stop time 0830-0915 Tubing diameter 1/4" Air source -
 Field Instrument (Model/S/N) YSI 536-0602657 A1 LM6011 05108-5014


Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0845	200	4.36	10.55	7.61	159	5.35	145.9	4.96	clear/clear
0850	↓	↓	10.55	7.61	159	5.28	144.3	2.19	↓
0855	↓	↓	10.57	7.62	159	5.27	143.5	2.57	↓
0900	↓	↓	10.60	7.62	159	5.09	139.7	1.77	↓
0905	↓	↓	10.61	7.62	159	5.05	138.1	1.45	↓
0910	↓	↓	10.62	7.62	160	5.01	137.4	1.42	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-02-06X MAY19
 Sample Time: 0910 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____
 Signature
5/6/19 Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GGM-02-07X

Project: <u>Dorms PFAS RIEW</u>	Date: <u>04/24/19</u>
Location: <u>AME SD</u>	Sampler: <u>CV</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <th></th> <th>Yes</th> <th>No</th> <th>N/A</th> </tr> <tr> <td>Casing Secure</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Concrete Pad intact</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>PVC casing intact</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Well gripper present</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Bolts present</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Locked (stickup wells)</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Yes	No	N/A	Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bolts present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>2"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>3.45</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>40.57</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>35</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>30-40</u></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>2.75</u></td> </tr> </table>	Diameter	<u>2"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>3.45</u>	Depth to bottom (ft BTOR)	<u>40.57</u>	Pump Set Depth (ft BTOR)	<u>35</u>	Screen Interval (ft BTOR)	<u>30-40</u>	Total volume purged (gal)	<u>2.75</u>
	Yes	No	N/A																																								
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																								
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Bolts present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																								
Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Diameter	<u>2"</u>																																										
Material	<u>PVC</u>																																										
Depth to water (ft BTOR)	<u>3.45</u>																																										
Depth to bottom (ft BTOR)	<u>40.57</u>																																										
Pump Set Depth (ft BTOR)	<u>35</u>																																										
Screen Interval (ft BTOR)	<u>30-40</u>																																										
Total volume purged (gal)	<u>2.75</u>																																										

Sampling Type: Pon Tubing type: HDPE Dedicated pump (Y/N): N
 Purge start/stop time: 0908-0940 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 536: 0602657 A1 L.M.H. = 5083-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0915	2.50	3.45	10.41	7.18	773	4.97	153.7	9.86	clear/clear
0920	↓	↓	10.49	7.31	779	3.52	146.0	8.73	↓
0925	↓	↓	10.52	7.43	784	2.31	141.0	6.77	↓
0930	↓	↓	10.55	7.49	789	2.21	135.2	6.53	↓
0935	↓	↓	10.60	7.50	795	2.15	133.4	6.43	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>Y</u>	<u>Y</u>	<u>Y</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-02-07X - APR19
 Sample Time: 0935 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments: _____

 Signature

4/24/19
 Date

GGM-02-07X

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-08X

Project: Drums PFAS RI EW Date: 5/2/19
 Location: AOL 50 Sampler: cr

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	✓			Diameter	2.5"		
Concrete Pad intact	✓			Material	PVC		
PVC casing intact	✓			Depth to water (ft BTOR)	11.25	BGS	BTOR
Well gripper present	✓			Depth to bottom (ft BTOR)	91.27	BGS	BTOR
Bolts present			✓	Pump Set Depth (ft BTOR)	65	BGS	BTOR
Locked (stickup wells)	✓			Screen Interval (ft BTOR)	60-70	BGS	
				Total volume purged (gal)	2.25		

Sampling Type
 Purging Method: Puri Tubing type: HOPE Dedicated pump (Y/N): N
 Purge start/stop time: 1115-1155 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 556, 0602657 A1 LM 5108-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1125	200	11.64	10.25	6.48	1,476	4.01	-81.7	10.87	Yellow hue/clear
1130	↓	11.66	10.23	6.47	1,479	3.46	-81.6	9.92	↓
1135	↓	11.71	9.64	6.47	1,482	2.52	-84.4	9.67	↓
1140	↓	↓	9.52	6.48	1,480	2.01	-88.2	8.81	↓
1145	↓	↓	9.45	6.48	1,481	1.93	-91.4	8.63	↓
1150	↓	↓	9.44	6.49	1,482	1.84	-93.7	8.32	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	Y		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-02-08X MAY19
 Sample Time: 1150 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

Signature

5/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-09X

Project: <u>PFAS RI EW</u>	Date: <u>5/2/19</u>
Location: <u>A0C50</u>	Sampler: <u>B/A</u>

Well Integrity	Yes	No	N/A	Well Information
Casing Secure	✓			Diameter <u>2"</u>
Concrete Pad intact			✓	Material <u>PVC</u>
PVC casing intact	✓			Depth to water (ft BTOR) <u>56.78</u>
Well gripper present	✓			Depth to bottom (ft BTOR) <u>100.52</u> <i>106.52</i>
Bolts present			✓	Pump Set Depth (ft BTOR) <u>100</u>
Locked (stickup wells)		✓		Screen Interval (ft BTOR) <u>95-105</u> <i>bgs</i>
				Total volume purged (gal) <u>3.0</u>

Sampling Type
Purging Method 1.75" Bladder Tubing type HDPE Dedicated pump
Purge start/stop time 0930 Tubing diameter 1/4" OD Air source N₂
Field Instrument (Model/S/N) YSI 650 XL 02E0534
Lemitec 2020t 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	200	56.80	8.76	5.76	736	5.71	95.7	49.8	cloudy
0950	200	56.80	8.70	5.73	730	5.63	99.8	32.6	cloudy
0955	200	56.80	8.67	5.72	717	5.42	107.4	30.3	cloudy
1000	200	56.80	8.67	5.72	713	5.43	109.4	30.2	clear
1005	200	56.80	8.68	5.73	710	5.43	112.3	30.1	
1010	200	56.80	8.65	5.73	707	5.45	115.9	28.7	
1015	200	56.80	8.64	5.73	706	5.44	119.9	28.6	
1020	200	56.80	8.65	5.72	705	5.44	121.7	28.5	

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	N								0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-02-09X-MAP19
Sample Time: 1020 Duplicate (Y/N): - MS/MSD (Y/N): -
Field Filtered (Y/N): - Dup ID: -
Filter Size: - Dup Time: -

Comments _____

Bob A
Signature

5/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-02-13x

Project: Downing PPA's RI EW
Location: AOC 50

Date: 5/2/19
Sampler: CV

Well Integrity			Well Information	
	Yes	No	N/A	
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diameter <u>2"</u>
Concrete Pad intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Material <u>PVC</u>
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR) <u>56.45</u> B65
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR) <u>120.67</u> B65
Bolts present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Pump Set Depth (ft BTOR) <u>115</u> B65
Locked (stickup wells)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Screen Interval (ft BTOR) <u>110-120</u> B65
				Total volume purged (gal) <u>1.5</u>

Sampling Type Bladdy Pump Purging Method Bladdy Pump Tubing type MDPE Dedicated pump (Y/N)
Purge start/stop time 0825-0910 Tubing diameter 1/4" Air source Nitrogen
Field Instrument (Model/S/N) YSI 556: 0602657 AI LaMotte: 5108-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0845	200 100	56.45	11.45	6.94	1,106	5.61	-7.2	7.54	clear/clear
0850	↓	↓	11.66	6.81	1,112	4.51	-13.1	4.69	↓
0855	↓	↓	11.78	6.71	1,119	3.49	-17.4	4.33	↓
0900	↓	↓	11.79	6.53	1,121	2.95	-21.2	4.15	↓
0905	↓	↓	11.78	6.53	1,125	2.73	-26.4	3.99	↓
0910	↓	↓	11.78	6.54	1,130	2.61	-28.7	3.88	↓
0915	↓	↓	11.98	6.54	1,134	2.53	-30.2	3.89	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):		N	N	N	N	N	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-02-13X MAY19
Sample Time: 0915 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments: Dedicated Pump taken out during sampling and put back in afterwards

[Signature]
Signature

5/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-03-11X (1/2)

Project: PFAS RIEU Date: 5/1/19
 Location: BA AOC50 Sampler: BA

Well Integrity			Well Information	
	Yes	No	N/A	
Casing Secure	<input checked="" type="checkbox"/>			Diameter <u>2"</u>
Concrete Pad intact			<input checked="" type="checkbox"/>	Material <u>PVC</u>
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR) <u>58.99</u>
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR) <u>131.52</u>
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR) <u>125</u>
Locked (stickup wells)		<input checked="" type="checkbox"/>		Screen Interval (ft BTOR) <u>120-130</u> <i>bgs</i>
				Total volume purged (gal) <u>3.0</u>

Sampling Type
 Purging Method 1.75" Bladder Tubing type HDPE Dedicated pump (Y/N)
 Purge start/stop time 1000-1140 Tubing diameter 1/4"OD Air source N₂
 Field Instrument (Model/S/N) YSI 650 IL 02150534
Lemote 2020t 1116-0719

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1015	200	59.00	7.30	6.29	784	1.18	6.6	66.7	cloudy
1020	200	59.00	7.11	6.24	780	0.87	6.3	60.9	cloudy
1025	200	59.00	7.31	6.25	714	0.66	7.9	52.7	clear
1030	200	59.00	7.34	6.24	670	0.62	12.8	40.8	cloudy
1035	200	59.00	7.40	6.21	607	0.47	16.2	38.9	clear, black specs
1040	200	59.00	7.43	6.20	572	0.47	17.3	37.1	clear, black specs
1045	200	59.00	7.46	6.20	545	0.48	19.7	33.3	clear, black specs
1050	200	59.00	7.48	6.18	483	0.34	27.0	26.4	clear
1055	200	59.00	7.47	6.15	436	0.65	32.5	19.8	clear
1100	200	59.00	7.46	6.15	426	0.69	34.8	15.7	clear
1105	200	59.00	7.50	6.14	413	0.82	37.9	14.3	clear
1110	200	59.00	7.51	6.13	391	1.00	40.1	12.1	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-03-11X-MAY18
 Sample Time: 1130 Duplicate (Y/N): Y MS/MSD (Y/N): N
 Field Filtered (Y/N): - Dup ID: A3-MW-DUP-050119
 Filter Size: - Dup Time: 1135

Comments DUP

BA
Signature

5/1/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-04-03X

Project: PEAS RLEW Date: 4/26/15
 Location: AOCSD Sampler: BCA

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>			Diameter	<u>24</u>		
Concrete Pad intact	<input checked="" type="checkbox"/>			Material	<u>PVC</u>		
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	<u>54.70</u>		
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	<u>93.10</u>		
Bolts present	<input checked="" type="checkbox"/>			Pump Set Depth (ft BTOR)	<u>90</u>		
Locked (stickup wells)			<input checked="" type="checkbox"/>	Screen Interval (ft BTOR)	<u>85-95</u>	<u>bgs</u>	
				Total volume purged (gal)	<u>3.0</u>		

Sampling Type
 Purging Method 1.75" Backsiphon Tubing type HDPE Dedicated pump (Y/N) (N)
 Purge start/stop time 0840 Tubing diameter 1/4" OD Air source N₂
 Field Instrument (Model/S/N) YSI 650XL 02E0534
Lemote 2020t 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0855	250	54.70	9.72	6.50	2663	1.17	-42.6	2.64	clear
0900	250	54.79	9.65	6.40	2768	0.77	-45.6	2.14	clear
0910	250	54.79	9.57	6.36	2883	0.59	-56.0	3.64	clear
0915	250	54.79	9.60	6.37	2874	0.71	-58.6	3.90	clear
0915	250	54.79	9.55	6.37	2376	1.00	-53.1	4.71	clear
0920	250	54.79	9.55	6.34	2399	1.15	-49.7	3.96	clear
0925	250	54.79	9.52	6.30	2397	0.80	-47.1	3.81	
0930	250	54.79	9.50	6.31	2370	0.55	-48.7	2.90	
0935	250	54.79	9.49	6.32	2330	0.60	-49.1	2.90	
0940	250	54.79	9.46	6.32	2376	0.49	-51.1	2.88	

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft	

Sampling Details
 Sampling ID: G6M-04-03X-APR-15
 Sample Time: 0940 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

Bob [Signature]
Signature

4/26/15
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-04-06X

Project: <u>PFAS RI EW</u>	Date: <u>5/1/19</u>
Location: <u>AOC50</u>	Sampler: _____

Well Integrity	Yes	No	N/A	Well Information
Casing Secure	✓			Diameter <u>2"</u>
Concrete Pad intact	✓			Material <u>PVC</u>
PVC casing intact	✓			Depth to water (ft BTOR) <u>57.53</u>
Well gripper present	✓			Depth to bottom (ft BTOR) <u>106.8</u>
Bolts present			✓	Pump Set Depth (ft BTOR) <u>95-100</u>
Locked (stickup wells)	✓			Screen Interval (ft BTOR) <u>95-105</u> <i>bgg</i>
				Total volume purged (gal) <u>3.0</u>

Sampling Type
Purging Method 1.75" Bicolor Tubing type HDPE Dedicated pump Removed for PFAS
Purge start/stop time 1210-1300 Tubing diameter 1/4" OD Air source N₂

Field Instrument (Model/S/N) YSI 650XL 02E0534
Leconte 2020E 1116-0719

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1225	250	57.60	8.45	5.90	231	1.13	104.0	2.16	clear
1230	250	57.60	8.49	5.90	231	1.41	105.2	3.41	clear
1235	250	57.60	8.45	5.87	230	1.00	111.6	2.73	clear
1240	250	57.60	8.40	5.86	230	0.65	117.2	1.93	clear
1245	250	57.60	8.38	5.86	230	0.25	120.4	2.09	clear
1250	250	57.60	8.36	5.86	230	0.21	122.5	1.99	clear
1255	250	57.60	8.37	5.85	229	0.30	123.6	1.89	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N):				N	Y	N	N	N	

Sampling Details

Sampling ID: G6M-04-06X-MAY19
Sample Time: 1255 Duplicate (Y/N): — MS/MSD (Y/N): —
Field Filtered (Y/N): — Dup ID: —
Filter Size: — Dup Time: —

Comments _____

[Signature]
Signature

5/1/19
Date



KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-04-08X

Project: Devms PEAS RI EW
Location: AOC 5D

Date: 04/30/19
Sampler: CV

Well Integrity			Well Information		
	Yes	No			
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Diameter	<u>2"</u>	
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	Material	<u>PVC</u>	
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR)	<u>2.61</u>	
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR)	<u>90.5</u>	
Bolts present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>85</u>	
Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Screen Interval (ft BTOR)	<u>80-90</u>	<u>bgs</u>
			Total volume purged (gal)	<u>3 gal</u>	

Sampling Type
Purging Method: Puri Tubing type: NDFE Dedicated pump (Y/N): N
Purge start/stop time: 0930-0935 Tubing diameter: 1/4" Air source: -
Field Instrument (Model/S/N): YST 536:0602657 A1 LaMotte: 5708-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0900	250	2.61	11.66	6.74	1,803	3.90	142.4	26.9	<u>clear/clear</u>
0905	↓	↓	11.72	6.78	1,812	2.58	129.3	21.6	↓
0910	↓	↓	11.82	6.81	1,810	2.01	123.0	23.3	↓
0915	↓	↓	11.84	6.84	1,830	1.49	110.8	9.64	↓
0920	↓	↓	11.89	6.88	1,861	1.30	104.9	7.60	↓
0925	↓	↓	11.86	6.88	1,867	1.31	103.2	7.55	↓
0930	↓	↓	11.85	6.88	1,873	1.31	102.4	7.77	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N): <u>N</u>									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-04-08X - APR 19
Sample Time: 0930 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments _____

Signature

4/30/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Identification: G6M-04-10X

Project: Dams PMS RE Ev
Location: AOC 50

Date: 04/29/19
Sampler: CV

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diameter	<u>2"</u>		
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Material	<u>PVC</u>		
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR)	<u>11.08</u>		
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR)	<u>64.07</u>		
Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	57	<u>57</u>	
Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Screen Interval (ft BTOR)	52-62	<u>52-62 bps</u>	
				Total volume purged (gal)	<u>21.25</u>		

Sampling Type
Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1230-1310 Tubing diameter: 1/4" Air source: -
Field Instrument (Model/S/N): YSI 536:0602657 A1 LaMotte 3083-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1240	150	11.08	9.97	9.91	1,383	4.45	86.9	36.2	clear/clear
1245	↓	↓	9.98	9.89	1,405	3.49	80.3	40.1	↓
1250	↓	↓	10.01	9.89	1,409	3.18	76.8	38.7	↓
1255	↓	↓	10.05	9.93	1,415	3.01	75.4	38.3	↓
1300	↓	↓	10.08	9.98	1,417	2.92	74.9	38.2	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	N	Y	N	N	Y				

Sampling Details
Sampling ID: G6M-04-10X-APR19
Sample Time: 1300 Duplicate (Y/N): Y MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: A3-G6M-04-10X-DUP-042919
Filter Size: - Dup Time: 1305

Comments: pH seems a bit high

[Signature]
Signature

04/29/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GGM-04-11X

Project: <u>Devens PFAS RI Existing Well</u>	Date: <u>4/25/2019</u>
Location: <u>AOC 50</u>	Sampler: <u>ES</u>

Well Integrity				Well Information			
	Yes	No	N/A	Diameter	2"		
Casing Secure	X			Material	PVC		
Concrete Pad intact	X			Depth to water (ft BTOR)	17.46		
PVC casing intact	X			Depth to bottom (ft BTOR)	46.97		
Well gripper present	X			Pump Set Depth (ft BTOR)	40		
Bolts present			X	Screen Interval (ft BTOR)	35-45		
Locked (stickup wells)		X		Total volume purged (gal)	8.06 (21 gal)		

Sampling Type			
Purging Method	<u>Perri</u>	Tubing type	<u>HDPE</u>
Purge start/stop time	<u>1233/1308</u>	Tubing diameter	<u>1/4" OD</u>
Field Instrument (Model/S/N)	<u>YSI 550 MPS 06C2657A1</u> <u>LaMotte 2020t 116-0719</u>		
Dedicated pump (Y/N)	<u>no</u>		
Air source	<u>-</u>		

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1235	260	18.82	11.08	6.60	231	10.76	110.8	40.7	hazy
1240	260	18.68	10.94	6.60	233	9.39	113.6	18.8	clear
1245	250	18.78	10.95	6.60	233	8.72	115.8	8.09	clear
1250	250	18.88	10.93	6.59	233	8.38	118.9	6.03	clear
1255	250	18.98	10.92	6.58	234	8.10	121.9	6.37	clear
1300	250	19.06	10.99	6.56	236	8.01	123.8	6.74	clear
1305	250	19.10	10.81	6.54	238	8.03	127.4	6.66	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	no	no	yes	no	yes	yes	0.163 gal/ft or 616 ml/ft	

Sampling Details			
Sampling ID:	<u>GGM-04-11X-001 APR19</u>		
Sample Time:	<u>1305</u>	Duplicate (Y/N):	<u>no</u>
Field Filtered (Y/N):	<u>no</u>	Dup ID:	<u>-</u>
Filter Size:	<u>-</u>	Dup Time:	<u>-</u>
MS/MSD (Y/N):	<u>no</u>		

Comments _____


 Signature

4/25/2019
 Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-04-13X

Project: Devms PFAS RT EW Date: 5/8/19
 Location: AOC 50 Sampler: CV

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	✓			Diameter	2"		
Concrete Pad intact			✓	Material	PVC		
PVC casing intact	✓			Depth to water (ft BTOR)	12.10		
Well gripper present		✓		Depth to bottom (ft BTOR)	41.31		
Bolts present			✓	Pump Set Depth (ft BTOR)	35		
Locked (stickup wells)		✓		Screen Interval (ft BTOR)	30-40	BGS	
				Total volume purged (gal)	2.0		

Sampling Type
 Purging Method: Puri Tubing type: HDPE Dedicated pump (Y/N): N
 Purge start/stop time: 0755-0815 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 536: 0602653 A1 LaMotte: 5708-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	150 150	12.10	9.48	5.80	185	4.35	97.4	10.33	clear/clear
0815	↓	↓	9.44	5.80	182	3.15	86.1	5.78	↓
0820	↓	↓	9.52	5.79	181	2.45	74.8	5.11	↓
0825	↓	↓	9.67	5.84	179	1.82	64.6	4.00	↓
0830	↓	↓	9.69	5.84	180	1.75	62.9	3.87	↓
0835	↓	↓	9.73	5.85	180	1.65	60.8	3.68	↓
0840	↓	↓	9.75	5.86	179	1.62	60.1	3.55	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-04-13X MAY19
 Sample Time: 0840 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

Signature

5/8/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-04-14X

Project: PFAS RI EW
Location: AOE SD

Date: 4/30/19
Sampler: B/A

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>			Diameter	2"		
Concrete Pad intact			<input checked="" type="checkbox"/>	Material	PVC		
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	3.57		
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	92.92		
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	85		
Locked (stickup wells)		<input checked="" type="checkbox"/>		Screen Interval (ft BTOR)	80-90 <i>bgs</i>		
				Total volume purged (gal)	3.5		

Sampling Type
Purging Method Peri Tubing type HDPE Dedicated pump —
Purge start/stop time 0835-0935 Tubing diameter — Air source —
Field Instrument (Model/S/N) YSI 1050XL 02E0534
Lenette 2020E 1116-0715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0830	250	3.75	9.47	7.78	342	2.92	250.5	6.81	clear
0835	250	3.75	9.42	7.01	471	1.36	249.7	5.28	↓
0840			9.40	6.64	519	0.10	249.5	4.00	
0845			9.50	6.80	632	0.05	235.0	2.60	
0850			9.50	6.83	642	0.06	237.2	2.51	
0855			9.48	6.91	661	0.08	231.8	2.03	
0900			9.53	7.01	884	0.12	227.1	1.72	
0905			9.57	7.13	945	0.12	220.1	1.70	
0910			9.50	7.22	951	0.06	216.7	1.68	
0915			9.46	7.26	952	0.09	213.4	1.72	
0920			9.43	7.28	958	0.06	208.9	1.65	
0925	✓	✓	9.40	7.32	962	0.08	202.1	1.69	

Acceptance Criteria: <0.3ft ±3% ±0.1 ±3% ±10% ±10mv 10% 2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N): N N N N N

Sampling Details

Sampling ID: G6M-04-14X-APR19
Sample Time: 0925 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: —
Filter Size: — Dup Time: —

Comments Purged before using @ 0810

[Signature]
Signature

4/30/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-92-10X

Project: Downs PFAS RI EW
Location: AOL 50

Date: 4/26/19
Sampler: CV

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	✓			Diameter	4"		
Concrete Pad intact			✓	Material	PVC		
PVC casing intact	✓			Depth to water (ft BTOR)	10.41		
Well gripper present		✓		Depth to bottom (ft BTOR)	21.35		
Bolts present			✓	Pump Set Depth (ft BTOR)	17.0		
Locked (stickup wells)		✓		Screen Interval (ft BTOR)	30-40 9-19 b/s		
				Total volume purged (gal)	1.5		

Sampling Type
Purging Method: Puri Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 0925-1020 Tubing diameter: 1/4" Air source: -
Field Instrument (Model/S/N): YSI 556: 104100928 LullMolle: 5083-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0940	100	10.52	7.83	5.53	6059	7.57	74.4	7.43	clear/clear
0945	↓	↓	7.81	5.72	6081	7.55	77.0	5.09	↓
0950	↓	↓	7.77	5.80	6095	7.95	81.5	4.77	↓
0955	↓	↓	7.75	5.70	6190	8.50	86.4	4.61	↓
1000	↓	↓	7.45	5.68	6105	8.58	89.5	4.56	↓
1005	↓	↓	7.30	5.70	6090	8.01	92.4	4.73	↓
1010	↓	↓	7.29	5.69	6085	8.49	93.2	4.33	↓
1015	↓	↓	7.28	5.70	6084	8.61	90.2	4.71	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10my	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):		N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-92-10X-APR19
Sample Time: 1015 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments _____

Signature

4/26/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-93-13X

Project: <u>PFAS RT EW</u>	Date: <u>4/22/19</u>
Location: <u>AOL 50</u>	Sampler: <u>CV</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>N/A</td> </tr> <tr> <td>Casing Secure</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>PVC casing intact</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>Bolts present</td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Locked (stickup wells)</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure	<input checked="" type="checkbox"/>			Concrete Pad intact			<input checked="" type="checkbox"/>	PVC casing intact	<input checked="" type="checkbox"/>			Well gripper present	<input checked="" type="checkbox"/>			Bolts present			<input checked="" type="checkbox"/>	Locked (stickup wells)	<input checked="" type="checkbox"/>			<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>4"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>10.55</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>19.66</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>16.0</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>9-19</u></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>~2.25</u></td> </tr> </table>	Diameter	<u>4"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>10.55</u>	Depth to bottom (ft BTOR)	<u>19.66</u>	Pump Set Depth (ft BTOR)	<u>16.0</u>	Screen Interval (ft BTOR)	<u>9-19</u>	Total volume purged (gal)	<u>~2.25</u>
	Yes	No	N/A																																								
Casing Secure	<input checked="" type="checkbox"/>																																										
Concrete Pad intact			<input checked="" type="checkbox"/>																																								
PVC casing intact	<input checked="" type="checkbox"/>																																										
Well gripper present	<input checked="" type="checkbox"/>																																										
Bolts present			<input checked="" type="checkbox"/>																																								
Locked (stickup wells)	<input checked="" type="checkbox"/>																																										
Diameter	<u>4"</u>																																										
Material	<u>PVC</u>																																										
Depth to water (ft BTOR)	<u>10.55</u>																																										
Depth to bottom (ft BTOR)	<u>19.66</u>																																										
Pump Set Depth (ft BTOR)	<u>16.0</u>																																										
Screen Interval (ft BTOR)	<u>9-19</u>																																										
Total volume purged (gal)	<u>~2.25</u>																																										

Sampling Type Purging Method: <u>Pur</u> Purge start/stop time: <u>1145-1215</u>	Tubing type: <u>HDPE</u> Tubing diameter: <u>1/4"</u>	Dedicated pump (Y/N): <u>N</u> Air source: <u>-</u>
Field Instrument (Model/S/N): <u>YSI 556:0602657 A1</u> <u>Lab# 5083-5014</u>		

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	200	10.55	8.05	7.39	108	8.80	97.4	20.80	clear/clear
1155	↓	↓	8.15	7.10	102	8.41	96.5	17.50	↓
1200	↓	↓	8.29	6.90	102	7.01	99.9	14.70	↓
1205	↓	↓	8.35	6.86	102	6.70	101.3	14.86	↓
1210	↓	↓	8.40	6.81	101	6.51	104.5	14.13	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N	Y	N	N	Y	Y	Y	0.163 gal/ft or 616 ml/ft

Sampling Details			
Sampling ID:	<u>G6M-93-13X</u>	APR19	
Sample Time:	<u>1210</u>	Duplicate (Y/N):	<u>N</u>
Field Filtered (Y/N):	<u>N</u>	Dup ID:	<u>-</u>
Filter Size:	<u>-</u>	Dup Time:	<u>-</u>
		MS/MSD (Y/N):	<u>N</u>

Comments _____

 Signature

4/22/19
 Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-95-20X

Project: <u>Dunn's PETS RI EW</u>	Date: <u>4/26/19</u>
Location: <u>AOL 50</u>	Sampler: <u>CV</u>

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	<input checked="" type="checkbox"/>			Diameter	<u>2"</u>
Concrete Pad intact			<input checked="" type="checkbox"/>	Material	<u>PVC</u>
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	<u>10.45</u>
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	<u>24.9</u>
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>21.0</u>
Locked (stickup wells)	<input checked="" type="checkbox"/>			Screen Interval (ft-BTOR)	<u>18-23</u> bgs
				Total volume purged (gal)	<u>1.0</u>

Sampling Type
Purging Method: Puri Tubing type: HOPE Dedicated pump (Y/N): N
Purge start/stop time: 0820-0853 Tubing diameter: 1/4" Air source: -
Field Instrument (Model/S/N): YSI 556: 10H100928 L.Mo.No: 5083-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0830	100	11.71	8.62	6.61	707	0.82	-15.7	5.96	clear/low
0835	↓	11.75	8.69	6.28	704	0.49	-57.8	4.74	↓
0840	↓	11.81	8.91	6.26	706	0.46	-56.7	4.93	↓
0845	↓	11.86	8.75	6.24	705	0.39	-57.1	4.67	↓
0850	↓	11.94	8.78	6.23	706	0.38	-60.2	4.70	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	0.163 gal/ft or 616 ml/ft	

Sampling Details

Sampling ID: G6M-95-20X-APR19
Sample Time: 0850 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments _____

[Signature]
Signature

4/26/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GGM-96-22A

Project: <u>Downs PFAS RI EW</u>	Date: <u>5/6/19</u>
Location: <u>AOC 50</u>	Sampler: <u>ev</u>

Well Integrity				Well Information			
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diameter	2"		
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Material	PVC		
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR)	3.27		
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR)	57.30		
Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	45		
Locked (stickup wells)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Screen Interval (ft BTOR)	40-58 BGS		
				Total volume purged (gal)	2.25		

Sampling Type
Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1100-1140 Tubing diameter: 1/4" Air source: -

Field Instrument (Model/S/N): YSI 556: 0602657 A1 LoMotte: 5708-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1110	200	3.27	10.58	6.38	1,457	5.35	129.4	10.70	clear/clear
1115	↓	↓	10.53	6.35	1,452	4.99	146.5	5.05	
1120	↓	↓	10.57	6.30	1,453	4.57	148.2	5.44	
1125	↓	↓	10.64	6.20	1,464	4.04	153.3	3.61	
1130	↓	↓	10.61	6.16	1,471	3.90	153.6	3.65	
1135	↓	↓	10.65	6.14	1,480	3.82	153.9	2.62	

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft	

Sampling Details

Sampling ID: GGM-96-22A MAY19
Sample Time: 1135 Duplicate (Y/N): ~~Y~~ N MS/MSD (Y/N): ~~N~~ Y
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments: MS/MSD taken

[Signature]
Signature

5/6/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GGM-96-22B

Project: Downs PFAS RI EW Date: 5/6/19
 Location: AOL 50 Sampler: CU

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	✓			Diameter	2"
Concrete Pad intact			✓	Material	PVC
PVC casing intact	✓			Depth to water (ft BTOR)	3.16
Well gripper present	✓			Depth to bottom (ft BTOR)	31.6
Bolts present			✓	Pump Set Depth (ft BTOR)	68.0
Locked (stickup wells)		✓		Screen Interval (ft BTOR)	65.5-70.5
				Total volume purged (gal)	2.95

Sampling Type
 Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N
 Purge start/stop time: 1005-1055 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 536: 0602657 A1 LM64r, 5108-5814

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1026	700	3.16	10.12	6.88	2,098	5.40	174.8	13.00	clear/clear
1025	↓	↓	10.19	6.79	2,102	3.94	173.1	6.53	↓
1030	↓	↓	10.28	6.72	2,103	3.05	172.8	4.75	↓
1035	↓	↓	10.39	6.61	2,107	2.50	167.4	2.25	↓
1040	↓	↓	10.39	6.52	2,105	2.03	163.7	2.52	↓
1045	↓	↓	10.38	6.51	2,105	1.94	162.9	2.76	↓
1050	↓	↓	10.35	6.49	2,106	1.85	161.5	2.72	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N		

Sampling Details

Sampling ID: GGM-96-22B B MAY19
 Sample Time: 1050 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

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Signature

5/6/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-96-~~213~~²⁵

Project: Dinos PHS RI EW Date: 5/2/19
 Location: AOC 50 Sampler: ev

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diameter	<u>2.5</u>		
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Material	<u>PVC</u>		
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR)	<u>13.35</u>	<u>B65 BTOR</u>	
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR)	<u>59.31</u>	<u>B65 BTOR</u>	
Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>53</u>	<u>B65 BTOR</u>	
Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Screen Interval (ft BTOR)	<u>48-58</u>	<u>B65</u>	
				Total volume purged (gal)	<u>1.75</u>		

Sampling Type
 Purging Method: Puri Tubing type: HDPF Dedicated pump (Y/N): N
 Purge start/stop time: 1225-1305 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 556, 0602657 M1 LowM.06, 5108-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1240	150	13.35	9.58	7.84	94	4.85	-54.6	9.18	clear/clear
1245	↓	↓	9.63	8.22	93	4.71	-26.8	4.28	↓
1250	↓	↓	9.70	8.55	91	4.65	-5.4	3.74	↓
1255	↓	↓	9.76	8.61	89	4.52	3.0	3.60	↓
1300	↓	↓	9.79	8.63	88	4.45	4.1	3.61	↓

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>Y</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-96-~~213~~^{25B} MAY19
 Sample Time: 1306 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: 1 Dup Time: -

Comments _____

Signature

5/2/19
Date

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KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-96-26A

Project: Drums PFAS RI EW Date: 5/3/19
 Location: AOC 50 Sampler: CV

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>			Diameter	2"		
Concrete Pad intact			<input checked="" type="checkbox"/>	Material	PV		
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	9.41	1365	BTOR
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	19.1	1365	BTOR
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	15.0	1365	BTOR
Locked (stickup wells)	<input checked="" type="checkbox"/>			Screen Interval (ft BTOR)	8-18	1365	
				Total volume purged (gal)	~2.0		

Sampling Type
 Purging Method: Perri Tubing type: LDPE Dedicated pump (Y/N): N
 Purge start/stop time: 0830-0915 Tubing diameter: 1/4" Air source: -
 Field Instrument (Model/S/N): YSI 856 ; 0602657 AI LMA: 5708-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0846	150	9.41	6.68	6.13	134	5.50	120.4	36.8	clear/clear
0846	↓	9.45	6.71	6.14	121	5.31	130.1	9.74	
0850	↓	9.47	6.52	6.14	111	5.00	132.5	6.02	
0855	↓	9.48	6.50	6.13	111	4.96	133.4	4.80	
0900	↓	↓	6.56	6.13	111	4.94	134.0	4.10	
0905	↓	↓	6.56	6.13	111	4.88	134.7	3.79	
0910	↓	↓	6.58	6.13	110	4.82	135.1	3.02	

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>							0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-96-26A - MAY19
 Sample Time: 0910 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

 Signature

5/3/19
 Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-96-26B

Project: Downs PFAS RI EW Date: 5/3/19
 Location: AAC 50 Sampler: W

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diameter	<u>2.5"</u>		
Concrete Pad intact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Material	<u>PVC</u>		
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to water (ft BTOR)	<u>11.57</u>	<u>865 BTOR</u>	
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Depth to bottom (ft BTOR)	<u>79.57</u>	<u>1365 BTOR</u>	
Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>23.0</u>	<u>1365 BTOR</u>	
Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Screen Interval (ft BTOR)	<u>68-78</u>	<u>1365</u>	
				Total volume purged (gal)	<u>~2.0</u>		

Sampling Type Puri Tubing type 140PE Dedicated pump (Y/N) N
 Purging Method Puri Tubing diameter 1/4" Air source -
 Purge start/stop time 0740-0825
 Field Instrument (Model/S/N) YSI 556: 02060602687A1 L.Motte: 5708-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0755	150	11.57	8.50	7.01	289	4.59	140.1	15.7	clear/clear
0800	↓	11.59	8.49	7.05	275	4.10	137.2	11.0	↓
0805	↓	11.60	8.46	7.09	268	3.79	135.3	9.16	↓
0810	↓	↓	8.45	7.15	267	3.50	131.0	7.01	↓
0815	↓	↓	8.43	7.19	267	3.45	128.4	7.17	↓
0820	↓	↓	8.42	7.24	266	3.37	126.3	7.11	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N): <u>N</u>									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-96-26B_MAY19 MS/MSD (Y/N): N
 Sample Time: 0820 Duplicate (Y/N): N
 Field Filtered (Y/N): N Dup ID: -
 Filter Size: - Dup Time: -

Comments _____

[Signature] 5/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-97-09B (1/2)

Project: <u>PFAS R/EW</u>	Date: <u>5/3/19</u>
Location: <u>AXSO</u>	Sampler: <u>BCA</u>

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	✓			Diameter	2"
Concrete Pad intact			✓	Material	PVC
PVC casing intact	✓			Depth to water (ft BTOR)	48.10
Well gripper present	✓			Depth to bottom (ft BTOR)	84.90
Bolts present			✓	Pump Set Depth (ft BTOR)	80
Locked (stickup wells)	✓			Screen Interval (ft BTOR)	71.5-81.5
				Total volume purged (gal)	

Sampling Type
Purging Method 1.75" Bladder Tubing type HDPE Dedicated pump (Y/N) -
Purge start/stop time 0955- Tubing diameter 1/4"OD Air source N₂

Field Instrument (Model/S/N) YSI 1050XL 02E0534
LaMotte 20206 1116-078

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1015	200	48.12	8.95	6.02	470	7.44	199.6	22.3	cloudy
1020	200	48.12	8.93	6.00	401	6.30	199.3	20.1	clear
1025	200	48.12	8.91	5.93	333	5.21	198.6	17.5	clear
1030	200	48.12	8.92	5.90	310	5.13	199.0	16.2	clear
1035	200	48.12	8.92	5.88	291	5.09	199.2	15.5	clear
1040	200	48.12	8.97	5.87	285	5.03	198.8	13.7	clear
1045	200	48.12	8.98	5.87	277	5.10	198.2	11.2	clear
1050	200	48.12	8.96	5.85	267	5.12	197.6	10.0	clear
1055	200	48.12	9.00	5.85	260	5.00	197.4	8.25	clear
1100	200	48.12	9.01	5.85	261	4.99	196.8	6.73	clear
1105	200	48.12	9.02	5.86	262	4.97	196.1	5.99	clear
1110	200	48.12	9.06	5.84	251	4.96	194.8	6.00	clear

Acceptance Criteria: <0.3ft ±3% ±0.1 ±3% ±10% ± 10mv 10% 2" Screen Volume =
Post Cal. Check Variance Observed (Y/N): 0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-97-09B-MAY19
Sample Time: 1125 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments Purged 3/8" TLPE @ 0940, purge entire

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Signature

5/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6P-97-05X

Project: Devon PEAS RT EW Date: 5/8/19
Location: AOC 50 Sampler: CV

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	✓			Diameter	2"		
Concrete Pad intact			✓	Material	PVC		
PVC casing intact	✓			Depth to water (ft BTOR)	23.95		
Well gripper present	✓			Depth to bottom (ft BTOR)	44.14		
Bolts present			✓	Pump Set Depth (ft BTOR)	40		as 3/10/19
Locked (stickup wells)		✓		* Screen Interval (ft BTOR)	35-45 33-43		865
				Total volume purged (gal)	1.25		

Sampling Type
Purging Method Peri Tubing type HOPE Dedicated pump (Y/N) N
Purge start/stop time 0930-1015 Tubing diameter 1/4" Air source -
Field Instrument (Model/S/N) YSI 556: 0602659 A1 L.Motte: 5708-5014

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	100	24.09	10.24	5.50	119	5.60	140.8	11.54	clear/clear
0950	↓	24.25	10.23	5.54	118	5.15	140.9	6.00	
0955		24.30	10.48	5.62	118	4.73	133.5	4.62	
1000		24.38	10.32	5.63	118	4.64	128.9	2.00	
1005		24.45	10.35	5.63	117	4.57	132.0	1.53	
1010	↓	24.62	10.34	5.63	117	4.46	132.7	1.43	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):		N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details
Sampling ID: G6P-97-05X - MAY19
Sample Time: 1010 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments: * Screen interval is estimated as we have no data besides DTB (field measurement). Update spike w/ RM. Screen is 33-43 by S
- low recharge rate; must pump w/ a slow flow rate
Signature: [Signature] Date: 5/8/19
3/8/19

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: XSA-12-96X

Project: <u>PFAS RI EW</u>	Date: <u>5/7/19</u>
Location: <u>ADCSO</u>	Sampler: <u>B1A</u>

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	✓			Diameter	1"
Concrete Pad intact			✓	Material	Steel
PVC casing intact			✓	Depth to water (ft BTOR)	65.10
Well gripper present	✓			Depth to bottom (ft BTOR)	132.25
Bolts present			✓	Pump Set Depth (ft BTOR)	125
Locked (stickup wells)		✓		Screen Interval (ft BTOR)	120-130
				Total volume purged (gal)	8.2 1.0 gal


Sampling Type
 Purging Method 0.55" MB Tubing type HDPE Dedicated pump (Y/N) (N)
 Purge start/stop time 0750-0850 Tubing diameter 1/4" OD Air source N₂
 Field Instrument (Model/S/N) YSI 650XL 02EDS34
Lumatec 2020t 1116-0715

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0815	75	65.10	9.10	6.86	1356	0.70	-48.3	15.6	clear
0820	75	65.10	8.85	6.51	1361	0.51	-34.8	9.42	clear
0825	75	65.10	8.91	6.44	1362	0.46	-22.1	8.19	clear
0830	75	65.10	8.85	6.41	1365	0.32	-16.4	5.43	clear
0835	75	65.10	8.84	6.40	1364	0.26	-13.0	5.26	clear
0840	75	65.10 65.10	8.85	6.39	1361	0.31	-9.3	5.20	clear
0845	75	65.10	8.82	6.39	1361	0.37	-8.6	5.31	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N							0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XSA-12-96X-MAX19
 Sample Time: 0845 Duplicate (Y/N): N MS/MSD (Y/N): N
 Field Filtered (Y/N): N Dup ID:
 Filter Size: Dup Time:

Comments _____

 Signature

5/7/19
 Date

Supplemental Sampling

Fall 2019

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: GM-18-01

Project: <u>LTM - Fall 2019 AOC SO</u>	Date: <u>10/14/19</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>BCA</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <th></th> <th>Yes</th> <th>No</th> <th>N/A</th> </tr> <tr> <td>Casing Secure</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>PVC casing intact</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Bolts present</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Locked (stickup wells)</td> <td></td> <td></td> <td align="center">✓</td> </tr> </table>		Yes	No	N/A	Casing Secure	✓			Concrete Pad intact	✓			PVC casing intact	✓			Well gripper present	✓			Bolts present	✓			Locked (stickup wells)			✓	<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>2"</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>61.64</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>125.88</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>120</u></td> </tr> <tr> <td>Screen Interval (ft bgs)</td> <td><u>116-126</u></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>4.0</u></td> </tr> </table>	Diameter	<u>2"</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>61.64</u>	Depth to bottom (ft BTOR)	<u>125.88</u>	Pump Set Depth (ft BTOR)	<u>120</u>	Screen Interval (ft bgs)	<u>116-126</u>	Total volume purged (gal)	<u>4.0</u>
	Yes	No	N/A																																								
Casing Secure	✓																																										
Concrete Pad intact	✓																																										
PVC casing intact	✓																																										
Well gripper present	✓																																										
Bolts present	✓																																										
Locked (stickup wells)			✓																																								
Diameter	<u>2"</u>																																										
Material	<u>PVC</u>																																										
Depth to water (ft BTOR)	<u>61.64</u>																																										
Depth to bottom (ft BTOR)	<u>125.88</u>																																										
Pump Set Depth (ft BTOR)	<u>120</u>																																										
Screen Interval (ft bgs)	<u>116-126</u>																																										
Total volume purged (gal)	<u>4.0</u>																																										

Sampling Type

Purging Method: 1.75" Bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1000-1120 Tubing diameter: 1/4" ID Air source: N₂

Field Instrument (Model/S/N): YSI 550MP5 (15F101567)
Hach 2100Q (1160100047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1015	250	61.70	13.20	6.13	140	7.65	180.3	280	cloudy
1020	250	61.70	13.22	5.73	136	7.63	173.0	137	cloudy
1025	250	61.70	13.32	5.75	133	7.60	147.8	125	cloudy
1030	250	61.70	13.59	6.00	132	7.58	132.8	47.4	cloudy
1035	250	61.70	13.23	5.84	134	7.68	137.0	39.8	cloudy
1040	250	61.70	13.07	5.74	136	7.35	140.4	34.3	cloudy
1045	250	61.70	13.17	5.94	138	7.21	132.0	26.7	clear
1050	250	61.70	13.29	5.98	139	6.99	131.8	10.2	clear
1055	250	61.70	13.40	5.98	140	6.87	131.0	7.81	clear
1100	250	61.70	13.43	5.99	140	6.94	128.8	5.50	clear
1105	250	61.70	13.45	5.98	141	6.89	135.0	5.41	clear
1110	250	61.70	13.40	6.02	141	6.81	134.5	5.53	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft	

Sampling Details

Sampling ID: GM-18-01-FAL19

Sample Time: 1110 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): Y Dup ID: -

Filter Size: 0.45µm Dup Time: -

Comments: Full Suite + PFAS

[Signature]
Signature

10/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6P-97-05X

Project: <u>LTM - Fall 2019</u> <u>AOC 50</u>	Date: <u>10/15/2019</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>E. Seiler</u>

Well Integrity			Well Information	
	Yes	No	N/A	
Casing Secure	X			Diameter <u>2"</u>
Concrete Pad intact			X	Material <u>PVC</u>
PVC casing intact	X			Depth to water (ft BTOR) <u>27.47</u>
Well gripper present	X			Depth to bottom (ft BTOR) <u>44.44</u>
Bolts present			X	Pump Set Depth (ft BTOR) <u>38</u>
Locked (stickup wells)		X		Screen Interval (ft BTOR) <u>38-43</u> <i>BGS</i>
				Total volume purged (gal) <u>1.05</u>

Sampling Type

Purging Method Perri Tubing type HDPE Dedicated pump (Y/N) no

Purge start/stop time 1346/1406 Tubing diameter 1/4" OD Air source -

Field Instrument (Model/S/N) YSI 560 MDS 11G100386
HACH 2100Q 17060C059342

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1351	80	28.17	11.34	6.06	426	5.74	139.3	83.3	Hazy
1356	80	28.21	11.19	5.67	431	5.97	152.1	48.3	Hazy/clear
1401	80	28.21	11.00	5.49	432	4.64	152.8	41.3	Clear
1406	80	28.21	11.06	5.43	433	5.70	150.8	22.7	Clear
1411	80	27.98	11.13	5.41	432	4.83	147.4	7.34	Clear
1416	80	28.00	11.16	5.39	432	5.50	145.0	5.56	Clear
1421	80	27.98	11.40	5.36	432	5.36	142.2	7.45	Clear
1426	80	28.02	11.16	5.41	432	5.36	140.0	4.40	Clear
1431	80	28.08	11.06	5.46	429	5.36	137.7	2.74	Clear
1436	80	28.12	10.96	5.37	428	5.34	134.8	2.00	Clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N):	<u>no</u>	<u>yes</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	<u>no</u>	

Sampling Details

Sampling ID: G6P-97-05X-FAL19

Sample Time: 1436 Duplicate (Y/N): yes MS/MSD (Y/N): no

Field Filtered (Y/N): no Dup ID: AOC50-DUP-101519

Filter Size: - Dup Time: 1439

Comments _____

E. Seiler
Signature

10/15/2019
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: MW-7 (IT)

Project: <u>LTM - Fall 2019</u> <u>40C5D</u>	Date: <u>10/18/14</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>Michael Spaulding</u>

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	<input checked="" type="checkbox"/>			Diameter	<u>4"</u>
Concrete Pad intact	<u>gravel</u>			Material	<u>PVC</u>
PVC casing intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	<u>28.31</u>
Well gripper present	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	<u>34.27</u>
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR)	<u>~30</u>
Locked (stickup wells)		<input checked="" type="checkbox"/>		Screen Interval (ft BTOR)	<u>22-32</u> bgs
				Total volume purged (gal)	<u>~2.5</u>

Sampling Type		
Purging Method	<u>Peristaltic</u>	Tubing type <u>HDPE</u>
Purge start/stop time	<u>1015</u>	Dedicated pump (Y/N) <u>N</u>
		Air source <u>N/A</u>
Field Instrument (Model/S/N) <u>YSI 650 MDS (116100386)</u> <u>HACH 2100Q (17060609342)</u>		

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1025	120	28.36	10.24	5.24	385	5.98	205.2	14.7	clear
1030	110	28.35	10.16	5.19	381	6.07	200.6	11.5	clear
1035	100	28.38	10.14	5.20	378	5.92	193.3	8.48	clear
1040	100	28.38	10.12	5.20	373	5.96	187.2	5.32	clear
1045	100	28.38	10.06	5.20	367	5.95	183.4	5.36	clear
1050	100	28.40	10.04	5.21	359	5.99	173.6	5.54	clear
1055	100	28.40	10.01	5.21	355	5.99	164.7	4.78	clear
1100	100	28.40	10.01	5.21	350	6.04	157.8	4.72	clear
1105	100	28.40	10.00	5.22	346	6.07	152.2	4.00	clear
1110	100	28.40	9.99	5.22	342	6.10	148.3	3.67	clear
1115	100	28.40	9.99	5.22	342	6.10	146.4	3.81	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>Y</u>	0.163 gal/ft or 616 ml/ft	

Sampling Details			
Sampling ID:	<u>MW-7 (IT) - FALL19</u>	Duplicate (Y/N):	<u>N</u>
Sample Time:	<u>1115</u>	Dup ID:	<u>N/A</u>
Field Filtered (Y/N):	<u>N</u>	Dup Time:	<u>N/A</u>
Filter Size:	<u>NA</u>		
		MS/MSD (Y/N):	<u>N</u>

Comments _____

Michael Spaulding
Signature

10/18/14
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-01X (Pg 1/2)

Project: <u>LTM - Fall 2019 AOC 50</u>	Date: <u>10/16/19</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>BIA</u>

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	1			Diameter	24		
Concrete Pad intact	1			Material	PVC		
PVC casing intact	1			Depth to water (ft BTOR)	54.62		
Well gripper present	1			Depth to bottom (ft BTOR)	89.36		
Bolts present	1			Pump Set Depth (ft BTOR)	85		
Locked (stickup wells)			1	Screen Interval (ft bgs)	79.44 - 94.44	15 ft BTOR	
				Total volume purged (gal)	4.0		

Sampling Type	<u>1.75" Bleeder</u>	Tubing type	<u>HDPE</u>	Dedicated pump (Y/N)	<u>Y - pulled for HDPE LPFAS</u>
Purge start/stop time	<u>0820-</u>	Tubing diameter	<u>1/4" OD</u>	Air source	<u>N₂</u>
Field Instrument (Model/S/N)	<u>YSI 556MPS 15F101567</u>				
	<u>Hech2000 16010C047202</u>				

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0835	200	54.71	13.29	6.70	2908	1.46	-74.4	225	cloudy
0840	200	54.71	12.70	6.76	2927	0.67	-100.7	153	cloudy
0850 0845	200	54.71	12.49	6.83	2913	0.36	-112.8	89.1	cloudy
0850	200	54.71	12.42	6.83	2899	0.32	-115.2	67.5	cloudy
0855	200	54.71	12.44	6.86	2890	0.21	-118.5	60.9	cloudy
0900	200	54.71	12.48	6.88	2879	0.22	-117.4	51.3	cloudy
0905	200	54.71	12.46	6.89	2866	0.21	-120.0	48.6	cloudy
0910	200	54.71	12.54	6.92	2843	0.15	-117.1	27.2	cloudy
0915	200	54.71	12.49	6.92	2818	0.09	-114.8	24.0	cloudy clear
0920	200	54.71	12.52	6.93	2768	0.13	-114.3	20.1	clear
0925	200	54.71	12.52	6.94	2771	0.13	-114.2	17.2	clear
0930	200	54.71	12.47	6.94	2754	0.13	-114.7	16.8	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume =	
Post Cal. Check Variance Observed (Y/N):	N							0.163 gal/ft or 616 ml/ft	

Sampling ID: <u>G6M-02-01X-FALIS</u>			MS/MSD (Y/N): <u>PFAS ms/msd only</u>		
Sample Time: <u>0930 0940</u>	Duplicate (Y/N): <u>Y</u>				
Field Filtered (Y/N): <u>Y</u>	Dup ID: <u>AOC50-DUP03-FAL19</u>				
Filter Size: <u>0.45µm</u>	Dup Time: <u>0945</u>				

Comments VOCs, FF metals, PFAS (ms/msd)

Butt
Signature

10/16/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
 Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-012 (Pg 2/2)

Project: <u>LTM - Fall 2019 AOC 50</u>	Date: <u>10/16/19</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>B/A</u>

Well Integrity <i>see Page 1 of 2</i> <table border="1" style="width:100%"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>N/A</td> </tr> <tr> <td>Casing Secure</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td></td> <td></td> <td></td> </tr> <tr> <td>PVC casing intact</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Well gripper present</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bolts present</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Locked (stickup wells)</td> <td></td> <td></td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure				Concrete Pad intact				PVC casing intact				Well gripper present				Bolts present				Locked (stickup wells)				Well Information <i>See Pg 1/2</i> <table border="1" style="width:100%"> <tr> <td>Diameter</td> <td></td> </tr> <tr> <td>Material</td> <td></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td></td> </tr> <tr> <td>Screen Interval (ft bgs)</td> <td></td> </tr> <tr> <td>Total volume purged (gal)</td> <td></td> </tr> </table>	Diameter		Material		Depth to water (ft BTOR)		Depth to bottom (ft BTOR)		Pump Set Depth (ft BTOR)		Screen Interval (ft bgs)		Total volume purged (gal)	
	Yes	No	N/A																																								
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Screen Interval (ft bgs)																																											
Total volume purged (gal)																																											

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
 Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0935	200	54.71	12.47	6.55	2690	0.13	-115.9	16.4	clear
0940	200	54.71	12.45	6.56	2691	0.13	-116.9	16.0	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: _____
 Sample Time: _____ Duplicate (Y/N): _____ MS/MSD (Y/N): _____
 Field Filtered (Y/N): _____ Dup ID: _____
 Filter Size: _____ Dup Time: _____

Comments _____

 Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: XSA-12-96X

Project: <u>LTM - Fall 2019 AOC50</u>	Date: <u>11/6/19</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>BrA</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <th></th> <th>Yes</th> <th>No</th> <th>N/A</th> </tr> <tr> <td>Casing Secure</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Concrete Pad intact</td> <td></td> <td></td> <td align="center">✓</td> </tr> <tr> <td>PVC casing intact</td> <td align="center">✓</td> <td></td> <td align="center">✓</td> </tr> <tr> <td>Well gripper present</td> <td align="center">✓</td> <td></td> <td></td> </tr> <tr> <td>Bolts present</td> <td></td> <td align="center">✓</td> <td align="center">✓</td> </tr> <tr> <td>Locked (stickup wells)</td> <td></td> <td align="center">✓</td> <td></td> </tr> </table>		Yes	No	N/A	Casing Secure	✓			Concrete Pad intact			✓	PVC casing intact	✓		✓	Well gripper present	✓			Bolts present		✓	✓	Locked (stickup wells)		✓		<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>1"</u></td> </tr> <tr> <td>Material</td> <td><u>Steel</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>68.70</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>136.75</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>130</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>122.97-132.57</u></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>2.5</u></td> </tr> </table>	Diameter	<u>1"</u>	Material	<u>Steel</u>	Depth to water (ft BTOR)	<u>68.70</u>	Depth to bottom (ft BTOR)	<u>136.75</u>	Pump Set Depth (ft BTOR)	<u>130</u>	Screen Interval (ft BTOR)	<u>122.97-132.57</u>	Total volume purged (gal)	<u>2.5</u>
	Yes	No	N/A																																								
Casing Secure	✓																																										
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Screen Interval (ft BTOR)	<u>122.97-132.57</u>																																										
Total volume purged (gal)	<u>2.5</u>																																										

Sampling Type

Purging Method: 0.675" microbleeder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0855-1005 Tubing diameter: 1/4"OD Air source: N₂

Field Instrument (Model/S/N): YSI 556 MPS 15F101567
Hach 2100Q 160100047202

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0915	70	68.58	8.84	8.12	597	0.72	-154.3	39.1	clear
0920	70	68.58	8.84	7.66	832	0.33	-147.8	36.4	clear
0925	70	68.58	8.81	7.55	896	0.31	-139.0	24.5	clear
0930	70	68.58	9.08	7.22	1056	0.28	-115.6	16.8	clear
0935	70	68.58	9.20	7.10	1109	0.26	-106.7	9.96	clear
0940	70	68.58	9.12	6.91	1166	0.27	-95.2	8.32	clear
0945	70	68.58	9.00	6.77	1200	0.28	-86.4	7.18	clear
0950	70	68.58	9.14	6.70	1223	0.31	-81.6	5.37	clear
0955	70	68.58	9.29	6.64	1236	0.23	-76.9	5.20	clear
1000	70	68.58	9.51	6.63	1244	0.23	-74.5	5.08	clear
1005	70	68.58	9.53	6.59	1244	0.20	-72.8	5.01	clear
Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	±10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft	
Post Cal. Check Variance Observed (Y/N):	N								

Sampling Details

Sampling ID: XSA-12-96X

Sample Time: 1005 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): Y Dup ID: -

Filter Size: 0.45µm Dup Time: -

Comments: VOCs + PF metals + PFAS (MS37)

[Signature]
Signature

11/6/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: XSA-12-98X

Project: <u>LTM - Fall 2019 ACCESS</u>	Date: <u>10/9/19</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>CV</u>

Well Integrity				Well Information
	Yes	No	N/A	Diameter <u>0.5"</u>
Casing Secure	<input checked="" type="checkbox"/>			Material <u>steel</u>
Concrete Pad intact			<input checked="" type="checkbox"/>	Depth to water (ft BTOR) <u>8.90</u>
PVC casing intact			<input checked="" type="checkbox"/>	Depth to bottom (ft BTOR) <u>71.60</u>
Well gripper present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR) <u>69.0</u>
Bolts present			<input checked="" type="checkbox"/>	Screen Interval (ft BTOR) <u>62.97-72.97</u>
Locked (stickup wells)	<input checked="" type="checkbox"/>			Total volume purged (gal) <u>~2.75</u>

Sampling Type
Purging Method Peri-Pump Tubing type HDPE Dedicated pump (Y/N) N
Purge start/stop time 1000-1050 Tubing diameter 1/4" Air source -
Field Instrument (Model/S/N) YSI 650 MDS: 116100386 HACH 2100Q: 170602059342

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1015	200	8.90	11.18	7.68	376	1.41	17.0	6.86	clear/clear
1020	↓	↓	11.18	7.68	376	0.90	-3.0	4.77	↓
1025	↓	↓	11.19	7.69	376	0.75	-24.2	4.52	↓
1030	↓	↓	11.19	7.69	376	0.69	-41.1	4.33	↓
1035	↓	↓	11.19	7.70	375	0.73	-49.5	3.79	↓
1040	↓	↓	11.20	7.70	375	0.63	-57.0	3.84	↓
1045	↓	↓	11.20	7.70	375	0.62	-61.4	3.63	↓
1050	↓	↓	11.20	7.70	375	0.62	-65.2	3.47	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):		N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XSA-12-98X_FALL19
Sample Time: 1050 Duplicate (Y/N): N MS/MSD (Y/N): Y
Field Filtered (Y/N): Y* Dup ID: -
Filter Size: 0.45µm Dup Time: -

Comments Teflon tubing removed before sampling; HDPE used for sampling and teflon tubing was put back after sampling was finished; sampled for PFAS
10/9/19
[Signature]
Signature **Date**

*Y = Field filtered for metals only

Supplemental Sampling
Spring 2020

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-02-01X AOC Name: AOC 50

Project: <u>Spring 2020 Supplemental Event</u>	Date: <u>5/7/2020</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>BrA</u>

Well Integrity				Well Information			
	Yes	No	N/A	Diameter	2"		
Casing Secure	<input checked="" type="checkbox"/>			Material	PVC		
Concrete Pad intact	<input checked="" type="checkbox"/>			Depth to water (ft BTOR)	52.83		
PVC casing intact	<input checked="" type="checkbox"/>			Depth to bottom (ft BTOR)	89.32		
Well gripper present	<input checked="" type="checkbox"/>			Pump Set Depth (ft BTOR)			
Bolts present	<input checked="" type="checkbox"/>			Screen Interval (ft BTOR)			
Locked (stickup wells)			<input checked="" type="checkbox"/>	Total volume purged (gal)	3.0		

Sampling Type
Purging Method: 1.75" Bleeder Tubing type: HDPE Dedicated pump (Y/N): Y (used diff. pump)
Purge start/stop time: 0925-1015 Tubing diameter: 1/4" OD Air source: N2
Field Instrument (Model/S/N): YSI 556 MPS 0561941AD
Lamotte 1020w 99a-211

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0935	250	53.05	12.83	6.68	2807	2.49	-85.7	12.8	clear
0940	250	53.05	12.65	6.79	2730	1.91	-108.4	5.57	clear
0945	250	53.05	12.66	6.81	2686	1.80	-116.9	5.70	clear
0950	250	53.05	12.61	6.82	2678	1.89	-120.9	5.91	clear
0955	250	53.05	12.63	6.82	2650	1.81	-125.5	5.68	clear
1000	250	53.05	12.62	6.83	2638	1.83	-128.3	5.49	clear
1005	250	53.05	12.57	6.83	2599	1.81	-134.3	5.51	clear
1010	250	53.05	12.57	6.83	2596	1.84	-137.1	5.46	clear
1015	250	53.05	12.59	6.83	2586	1.85	-138.9	5.40	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N):								

Sampling Details

Sampling ID: G6M-02-01X-SPR20
Sample Time: 1015 Duplicate (Y/N): N MS/MSD (Y/N): Y
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments: PFAS only (MS37); Pulled dedicated BP w/ TLPE @ 0915 prior to setting different pump w/ HDPE.
BrA Signature Date: 5/7/20

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: G6M-18-01 AOC Name: AOC 50

Project: Spring 2020 Supplemental Event Date: 5/7/2020
Location: Fort Devens, Massachusetts Sampler: Bra

Well Integrity				Well Information			
	Yes	No	N/A				
Casing Secure	✓			Diameter	2"		
Concrete Pad intact	✓			Material	PVC		
PVC casing intact	✓			Depth to water (ft BTOR)	58.35		
Well gripper present	✓			Depth to bottom (ft BTOR)	-		- too deep for WLM
Bolts present	✓			Pump Set Depth (ft BTOR)	120		
Locked (stickup wells)			✓	Screen Interval (ft BTOR)	116-126		
				Total volume purged (gal)	3.0		

Sampling Type
Purging Method: 1.75" B-Stodder Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1105-1200 Tubing diameter: 1/4" OD Air source: N₂
Field Instrument (Model/S/N): YSI 556 MPS 0561941 AD
Lamotte 2020 we 081-2111

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1115	250	58.40	13.38	7.12	177	8.09	-1.3	18.4	clear
1120	250	58.40	12.88	6.55	144	7.40	17.1	5.65	clear
1125	250	58.40	13.05	6.48	141	7.27	19.2	3.70	clear
1130	250	58.40	13.20	6.43	141	7.08	20.3	2.58	clear
1135	250	58.40	12.86	6.40	141	7.28	21.7	1.38	clear
1140	250	58.40	12.36	6.32	140	7.31	26.8	1.15	clear
1145	250	58.40	12.85	6.25	140	7.20	28.8	1.07	clear
1150	250	58.40	12.90	6.32	139	7.19	25.0	0.90	clear
1155	250	58.40	12.83	6.32	140	7.22	24.8	0.93	clear
1200	250	58.40	12.86	6.32	140	7.25	25.1	0.96	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	N							0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-18-01-SPR20
Sample Time: 1200 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments: PFAS only (M537)
Bra
Signature Date: 5/7/2020

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66P-97-05X AOC Name: 50

Project: <u>Spring 2020 Supplemental Event</u>	Date: <u>5/7/20</u>
Location: <u>Fort Devens, Massachusetts</u>	Sampler: <u>W/A</u>

Well Integrity	Well Information																																										
<table border="1" style="width:100%"> <tr> <th></th> <th>Yes</th> <th>No</th> <th>N/A</th> </tr> <tr> <td>Casing Secure</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Concrete Pad intact</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>PVC casing intact</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Well gripper present</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Bolts present</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Locked (stickup wells)</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Yes	No	N/A	Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Concrete Pad intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bolts present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Locked (stickup wells)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<table border="1" style="width:100%"> <tr> <td>Diameter</td> <td><u>2.11</u></td> </tr> <tr> <td>Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Depth to water (ft BTOR)</td> <td><u>25.01</u></td> </tr> <tr> <td>Depth to bottom (ft BTOR)</td> <td><u>44.54</u></td> </tr> <tr> <td>Pump Set Depth (ft BTOR)</td> <td><u>38</u></td> </tr> <tr> <td>Screen Interval (ft BTOR)</td> <td><u>33-43</u></td> </tr> <tr> <td>Total volume purged (gal)</td> <td><u>1.0</u></td> </tr> </table>	Diameter	<u>2.11</u>	Material	<u>PVC</u>	Depth to water (ft BTOR)	<u>25.01</u>	Depth to bottom (ft BTOR)	<u>44.54</u>	Pump Set Depth (ft BTOR)	<u>38</u>	Screen Interval (ft BTOR)	<u>33-43</u>	Total volume purged (gal)	<u>1.0</u>
	Yes	No	N/A																																								
Casing Secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Concrete Pad intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
PVC casing intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
Well gripper present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																								
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Diameter	<u>2.11</u>																																										
Material	<u>PVC</u>																																										
Depth to water (ft BTOR)	<u>25.01</u>																																										
Depth to bottom (ft BTOR)	<u>44.54</u>																																										
Pump Set Depth (ft BTOR)	<u>38</u>																																										
Screen Interval (ft BTOR)	<u>33-43</u>																																										
Total volume purged (gal)	<u>1.0</u>																																										

Sampling Type

Purging Method: grotches Tubing type: HDPPE Dedicated pump (Y/N): N

Purge start/stop time: 9:10/9:55 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 656APS ~~062657A1~~ 374-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
9:10	75	25.57	10.09	6.11	258	3.74	92.7	12.70	clear
9:15	75	25.52	10.13	6.03	257	3.30	99.6	12.90	clear
9:20	75	25.52	10.12	6.01	256	3.30	103.2	18.63	clear
9:25	75	25.52	10.18	6.00	256	3.27	123.1	16.99	clear
9:30	75	25.52	10.22	5.99	257	3.13	131.4	17.21	clear
9:35	75	25.52	10.27	5.99	253	3.18	130.7	16.87	clear
9:40	75	25.52	10.22	5.98	252	3.17	131.6	16.87	clear
9:45	75	25.52	10.19	5.97	256	3.16	132.7	16.83	clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66P-97-05X-SR20

Sample Time: 9:50 Duplicate (Y/N): Y MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: AD650-DVP-5720

Filter Size: N/A Dup Time: 9:35

Comments: PFAS

 Signature

5/7/20
 Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: XSA-12-96X AOC Name: 50

Project: Spring 2020 Supplemental Event Date: 5/8/20
Location: Fort Devens, Massachusetts Sampler: VA

Well Integrity			Well Information	
	Yes	No	N/A	
Casing Secure	<input checked="" type="checkbox"/>			Diameter <u>1"</u>
Concrete Pad intact	<input checked="" type="checkbox"/>			Material <u>5121</u>
PVC casing intact				Depth to water (ft BTOR) <u>49.99</u>
Well gripper present			<input checked="" type="checkbox"/>	Depth to bottom (ft BTOR) <u>132.84</u>
Bolts present			<input checked="" type="checkbox"/>	Pump Set Depth (ft BTOR) <u>125</u>
Locked (stickup wells)		<input checked="" type="checkbox"/>		Screen Interval (ft BTOR) <u>120-130</u>
				Total volume purged (gal) <u>1-0</u>

Sampling Type
Purging Method Microblytic Tubing type HDPE (X2) Dedicated pump (Y/N) Yes
Purge start/stop time 8:55/9:35 Tubing diameter 1/4" Air source N
Field Instrument (Model/S/N) QAC YSE 556MPS 06C2657A1
Loroff 2020E 3711-3913

Stabilization Parameters									
Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
855	50	50.27	9.67	8.70	759	3.49	-165.4	23.7	Clear
900	50	50.27	10.89	8.64	801	2.81	-142.1	21.6	Clear
905	50	50.27	10.37	8.63	817	2.60	-133.7	20.3	Clear
910	50	50.27	10.31	8.62	821	2.53	-131.7	21.7	Clear
915	50	50.27	10.37	8.62	823	2.52	-130.6	22.0	Clear
920	50	50.27	10.41	8.62	824	2.50	-130.6	21.8	Clear
925	50	50.27	10.43	8.61	825	2.49	-129.3	21.7	Clear
930	50	50.27	10.37	8.60	827	2.47	-129.1	21.4	Clear

Acceptance Criteria:	<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%/	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XSA-12-96X-SPR20
Sample Time: 935 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: N/A
Filter Size: N/A Dup Time: N/A

Comments: PFAS
[Signature]
Signature _____ Date 5/8/20

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log



Well Identification: 66M-13-05X AOC Name: 50

Project: Spring 2020 Supplemental Event Date: 5/7/20
Location: Fort Devens, Massachusetts Sampler: N/A

Well Integrity				Well Information	
	Yes	No	N/A		
Casing Secure	✓			Diameter	2 1/2
Concrete Pad intact	✓			Material	PVC
PVC casing intact	✓			Depth to water (ft BTOR)	12.94
Well gripper present	✓			Depth to bottom (ft BTOR)	56.60
Bolts present			✓	Pump Set Depth (ft BTOR)	50
Locked (stickup wells)	✓			Screen Interval (ft BTOR)	45-55
				Total volume purged (gal)	3.0

Sampling Type
Purging Method: grab Tubing type: HIDPE Dedicated pump (Y/N): Tubing
Purge start/stop time: 7:40/8:20 Tubing diameter: 1/4" Air source: N/A
Field Instrument (Model/S/N): YSI 650 MPS 06C2657A1
Lamar 2020 5711-3953

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
740	200	12.94	10.69	7.00	998	0.69	-141.7	31.6	clear
745	200	12.94	10.66	7.86	994	0.57	-134.3	31.6	clear
750	200	12.94	10.64	7.47	987	0.63	-100.2	28.7	clear
755	200	12.94	10.62	7.43	980	0.76	-92.0	27.1	clear
800	200	12.94	10.60	7.42	979	0.74	-91.7	26.9	clear
805	200	12.94	10.57	7.40	977	0.72	-90.6	26.4	clear
810	200	12.94	10.53	7.41	976	0.69	-91.0	26.4	clear
815	200	12.94	10.49	7.39	975	0.68	-89.7	26.3	clear

Acceptance Criteria: <0.3ft ±3% ±0.1 ±3% ±10% ± 10mv 10%
Post Cal. Check Variance Observed (Y/N): N N N N N N N
2" Screen Volume = 0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-13-05X-SPR20
Sample Time: 8:20 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: N/A
Filter Size: N/A Dup Time: N/A

Comments: PFAS

[Signature]
Signature

5/7/20
Date

Calibration Sheets



Field Instrument Calibration Log

Date: 4/25/2019

Weather: _____

Project/Site Name: Devens PFAS RI Existing Well

Instrument: YSI 556 MPS

Calibrated By: Seiler

Serial Number: 06C2657 AI

Parameters	Solution Expiration Date	AM Calibration Time <u>6005</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1425</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/2019</u>	<u>1381</u>	<u>1413</u>	<u>16.58</u>	<u>1416 → 1413</u>	<u>16.90</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>no</u>
pH (7)	<u>10/2020</u>	<u>6.89</u>	<u>7.00</u>	<u>16.81</u>	<u>6.89 → 7.00</u>	<u>16.72</u>	$\pm 0.3 \text{ Ph}^*$	<u>no</u>
pH (4)	<u>3/2020</u>	<u>3.98</u>	<u>4.00</u>	<u>16.60</u>	<u>4.02 → 4.00</u>	<u>16.61</u>	$\pm 0.3 \text{ Ph}^*$	<u>no</u>
pH (10)	<u>12/31/2019</u>	<u>10.22</u>	<u>10.04</u>	<u>16.57</u>	<u>10.26 → 10.04</u>	<u>16.89</u>	$\pm 0.3 \text{ Ph}^*$	<u>no</u>
ORP (240 mv)	<u>10/2019</u>	<u>238.0</u>	<u>240.0</u>	<u>16.63</u>	<u>241.1 → 240.0</u>	<u>16.94</u>	$\pm 10 \text{ mv}$	<u>no</u>
Dissolved Oxygen (%)	<u>-</u>	<u>108.9</u>	<u>100.0</u>	<u>15.78</u>	<u>82.9 → 100.1</u>	<u>17.88</u>	<u>-</u>	<u>-</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>10.82</u>	<u>9.92</u>	<u>15.78</u>	<u>7.88 → 9.51</u>	<u>17.88</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>yes</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Kevin Seiler

Date: 4/25/2019



Field Instrument Calibration Log

Date: 4/26/19

Weather: Rainy 50's

Project/Site Name: Drums PFAS RI EW

Instrument: YSI 556

Calibrated By: CV

Serial Number: ~~5014~~ 107100928

Parameters	Solution Expiration Date	AM Calibration Time <u>0645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1205</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^2$)	<u>11/2019</u>	<u>1.472</u>	<u>1.413</u>	<u>17.72</u>	<u>1.419</u>	<u>17.71</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>3/2020</u>	<u>7.17</u>	<u>7.00</u>	<u>17.16</u>	<u>7.15</u>	<u>17.25</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2020</u>	<u>4.09</u>	<u>4.00</u>	<u>17.54</u>	<u>4.16</u>	<u>17.49</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>3/2020</u>	<u>9.76</u>	<u>10.00</u>	<u>17.62</u>	<u>9.80</u>	<u>17.55</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>233.0</u>	<u>240.0</u>	<u>17.66</u>	<u>237.4</u>	<u>17.56</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	-	<u>99.8</u>	<u>100.0</u>	<u>17.50</u>	<u>99.6</u>	<u>17.01</u>	-	<u>-</u>
Dissolved Oxygen (mg/L)	-	<u>9.60</u>	<u>9.73</u>	<u>17.50</u>	<u>10.11</u>	<u>17.01</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	-	<u>760</u>	-	-	<u>760</u>	-	-	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

[Handwritten Signature] 4/26/19



Turbidity Instrument Calibration Log

Project/Site Name: Damms PEAS RI EW

Instrument: LaMotte

Calibrated By: CV

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/26/19	0.01	0.00	6.56	9.85	8.01	9.47	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: 

Date: 4/26/19



Field Instrument Calibration Log

Date: 4/26/19

Weather: Rain, 48°F

Project/Site Name: PFAS RI EW AOC50

Instrument: YSI 650XL

Calibrated By: BNA

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)		1417	1413	14.57	1411	13.20	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)		7.00	7.00	14.95	7.01	13.38	$\pm 0.3 \text{ Ph}^*$	↓
pH (4)		3.66	4.00	14.94	3.99	14.04	$\pm 0.3 \text{ Ph}^*$	
pH (10)		9.68	10.00	14.86	9.98	13.60	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)		240.0	240.0	14.63	239.7	14.03	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)		96.6	100	14.52	98.9	13.51	-	
Dissolved Oxygen (mg/L)		9.85	10.05	14.52	9.99	13.51	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	-	760	-	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: BNA

Date: 4/26/19



Field Instrument Calibration Log

Date: 4/29/19

Weather: Sun, 50°F

Project/Site Name: PEAS R/W A1

Instrument: YSI 650XL

Calibrated By: BIA

Serial Number: 62E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)		1347	1413	14.19	1405	15.83	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)		7.13	7.00	14.60	7.01	15.55	$\pm 0.3 \text{ Ph}^*$	N
pH (4)		3.57	4.00	14.41	4.01	15.82	$\pm 0.3 \text{ Ph}^*$	N
pH (10)		9.84	10.00	14.39	10.14	15.79	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)		237.3	240.1	14.20	243.7	15.80	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)		7.6 7.59	100	13.90	98.1	15.63	-	N
Dissolved Oxygen (mg/L)		7.83	10.12	13.90	10.03	15.63	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)		760.5	760.5	-	760.0	-	-	✓

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: BIA

Date: 4/29/19



Field Instrument Calibration Log

Date: 4/29/19

Weather: Sunny 40's - 50's

Project/Site Name: Devms PFAS RI EW

Instrument: YSI 576 MPS

Calibrated By: EW

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1345</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm ^o)	<u>11/2019</u>	<u>1,4123</u>	<u>1,413</u>	<u>15.63</u>	<u>1,391</u>	<u>16.87</u>	±10 µS/cm	<u>Y</u>
pH (7)	<u>10/2020</u>	<u>7.04</u>	<u>7.00</u>	<u>15.84</u>	<u>7.13</u>	<u>16.69</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/2020</u>	<u>4.03</u>	<u>4.00</u>	<u>15.64</u>	<u>4.10</u>	<u>17.00</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>12/31/2019</u>	<u>10.00</u>	<u>10.00</u>	<u>15.84</u>	<u>9.94</u>	<u>16.78</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>238.7</u>	<u>240.0</u>	<u>15.76</u>	<u>238.4</u>	<u>16.90</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>108.4</u>	<u>100.0</u>	<u>16.42</u>	<u>101.7</u>	<u>16.35</u>	-	<u>-</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>10.60</u>	<u>9.79</u>	<u>16.42</u>	<u>9.96</u>	<u>16.35</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 4/29/19



Field Instrument Calibration Log

Date: 4/30/19

Weather: Rainy 40's - 50's

Project/Site Name: Dwms PIAS RI EW

Instrument: YSI 556 MPS

Calibrated By: W

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1255</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1,394	1,413	17.42	1,405	17.29	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.84	7.00	17.54	6.94	17.15	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2020	3.93	4.00	17.39	4.18	17.27	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/31/2019	10.05	10.00	17.40	10.00	17.34	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	239.2	240.0	17.43	240.6	17.33	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.9	100.0	16.60	100.0	15.10	-	-
Dissolved Oxygen (mg/L)	-	9.71	9.64	16.60	10.01	15.10	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 4/30/19



Field Instrument Calibration Log

Date: 5/2/19

Weather: Overcast, 40's-50's

Project/Site Name: Dovms PFAS RT EW

Instrument: YSI 536 MPS

Calibrated By: W

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0545</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1355</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1,418</u>	<u>1,413</u>	<u>16.89</u>	<u>1,418</u>	<u>17.58</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/2026</u>	<u>7.09</u>	<u>7.00</u>	<u>16.90</u>	<u>6.94</u>	<u>17.22</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2020</u>	<u>3.90</u>	<u>4.00</u>	<u>16.94</u>	<u>4.08</u>	<u>17.58</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>12/31/2019</u>	<u>10.00</u>	<u>10.00</u>	<u>17.05</u>	<u>10.15</u>	<u>17.68</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>237.4</u>	<u>240.0</u>	<u>16.99</u>	<u>240.1</u>	<u>17.62</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>99.8</u>	<u>100.0</u>	<u>16.96</u>	<u>98.6</u>	<u>15.91</u>	<u>-</u>	<u>-</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>9.70</u>	<u>9.65</u>	<u>16.96</u>	<u>9.65</u>	<u>15.91</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>-</u>

Notes: _____

* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 5/2/19



Field Instrument Calibration Log

Date: 5/3/19

Weather: Partly Sunny, 48° S

Project/Site Name: Dovms PFAS RIEW

Instrument: YSI 556

Calibrated By: EW

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>0955</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/2019</u>	<u>1,413</u>	<u>1,413</u>	<u>17.22</u>	<u>1,409</u>	<u>16.54</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/2020</u>	<u>6.95</u>	<u>7.00</u>	<u>17.12</u>	<u>6.98</u>	<u>16.77</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2020</u>	<u>4.05</u>	<u>4.00</u>	<u>17.22</u>	<u>4.12</u>	<u>16.78</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>12/31/2019</u>	<u>10.02</u>	<u>10.00</u>	<u>17.15</u>	<u>9.97</u>	<u>17.00</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>239.5</u>	<u>240.0</u>	<u>17.31</u>	<u>241.3</u>	<u>16.94</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>99.9</u>	<u>100.0</u>	<u>17.10</u>	<u>99.8</u>	<u>16.57</u>	<u>-</u>	
Dissolved Oxygen (mg/L)	<u>-</u>	<u>9.69</u>	<u>9.70</u>	<u>17.10</u>	<u>10.01</u>	<u>16.57</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>			<u>-</u>	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 5/3/19



Field Instrument Calibration Log

Date: 4/30/19

Weather: Rain, 45°F

Project/Site Name: PFAS BAEW

Instrument: YSI 650XL

Calibrated By: B.A.

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1445</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1450</u>	<u>1413</u>	<u>16.09</u>	<u>1420</u>	<u>14.92</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.21</u>	<u>7.00</u>	<u>15.30</u>	<u>7.15</u>	<u>14.78</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>07/20</u>	<u>3.77</u>	<u>4.00</u>	<u>15.12</u>	<u>4.00</u>	<u>14.90</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>02/20</u>	<u>9.63</u>	<u>10.00</u>	<u>15.10</u>	<u>10.13</u>	<u>14.89</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>237.8</u>	<u>240.0</u>	<u>14.98</u>	<u>243.6</u>	<u>15.07</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>155</u>	<u>100</u>	<u>15.18</u>	<u>103.8</u>	<u>15.01</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>15.00</u>	<u>10.02</u>	<u>15.18</u>	<u>10.13</u>	<u>15.01</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>757.7</u>	<u>757.2</u>	<u>15.18</u>	<u>759.3</u>	<u>-</u>	-	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Brett

Date: 4/30/19



Field Instrument Calibration Log

Date: 5/1/19

Weather: Sun, 50°F

Project/Site Name: PFAS RI EW

Instrument: YSI 650XL

Calibrated By: B.A

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0855</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1418</u>	<u>1413</u>	<u>15.01</u>	<u>1409</u>	<u>14.38</u>	<u>$\pm 10 \mu\text{S}/\text{cm}$</u>	<u>Y</u>
pH (7)	<u>10/20</u>	<u>7.07</u>	<u>7.00</u>	<u>14.92</u>	<u>7.03</u>	<u>14.47</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>07/20</u>	<u>3.67</u>	<u>4.00</u>	<u>14.94</u>	<u>4.02</u>	<u>14.50</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>02/20</u>	<u>9.60</u>	<u>9.92</u>	<u>14.82</u>	<u>9.96</u>	<u>14.41</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>25 239.3</u>	<u>240.0</u>	<u>14.71</u>	<u>240.8</u>	<u>14.39</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>55.5</u>	<u>100.0</u>	<u>14.62</u>	<u>91.7</u>	<u>14.20</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>5.64</u>	<u>10.20</u>	<u>14.62</u>	<u>10.08</u>	<u>14.20</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>763.1</u>	<u>763.1</u>	<u>-</u>	<u>759.3</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature:

Date: 5/1/19



Field Instrument Calibration Log

Date: 5/2/15

Weather: Rain, 45°F

Project/Site Name: PFAS R1 EW

Instrument: 81 650XL

Calibrated By: B.A

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0545</u>		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/19	1442	1413	14.46	1411	15.13	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/20	6.92	7.00	14.43	7.01	15.10	$\pm 0.3 \text{ Ph}^*$	↓
pH (4)	07/20	3.94	4.00	14.43	3.98	15.01	$\pm 0.3 \text{ Ph}^*$	
pH (10)	02/20	10.01	10.00	14.35	10.05	15.20	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	10/19	242.3	24 240.0	14.21	241.3	15.38	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	—	137.8	99.2	14.29	108.0	15.03	—	
Dissolved Oxygen (mg/L)	—	14.2	10.16	14.29	10.31	15.03	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	754.8	—	—	756.1	—	—	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 5/2/15



Field Instrument Calibration Log

Date: 5/3/19

Weather: Cloudy, 45°F

Project/Site Name: PFAS RI EW

Instrument: YSI 650XL

Calibrated By: B.A

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0545</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1315</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm ²)	<u>11/19</u>	<u>1428</u>	<u>1413</u>	<u>14.61</u>	<u>1411</u>	<u>14.46</u>	±10 µS/cm	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.12</u>	<u>7.00</u>	<u>14.62</u>	<u>6.99</u>	<u>14.42</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>07/20</u>	<u>3.96</u>	<u>4.00</u>	<u>14.67</u>	<u>4.04</u>	<u>14.49</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>02/20</u>	<u>9.86</u>	<u>10.00</u>	<u>14.54</u>	<u>9.85</u>	<u>14.48</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>239.0</u>	<u>240.0</u>	<u>14.42</u>	<u>238.7</u>	<u>240</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>57.8</u>	<u>99.3</u>	<u>14.46</u>	<u>96.4</u>	<u>100</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>5.89</u>	<u>10.19</u>	<u>14.46</u>	<u>10.02</u>	<u>10.20</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>756.6</u>	<u>-</u>	<u>14.46</u>	<u>761.3</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 5/3/19



Field Instrument Calibration Log

Date: ~~PFAS RLEW~~ 5/6/19

Weather: Sun, 45°F

Project/Site Name: PFAS RLEW A3

Instrument: YSI 650XL

Calibrated By: BRA

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0625</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/19</u>	<u>1447</u>	<u>1413</u>	<u>14.81</u>	<u>1411</u>	<u>15.42</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.18</u>	<u>7.00</u>	<u>14.83</u>	<u>7.06</u>	<u>15.40</u>	$\pm 0.3 \text{ Ph}^*$	
pH (4)	<u>07/20</u>	<u>3.78</u>	<u>4.00</u>	<u>14.88</u>	<u>4.02</u>	<u>15.28</u>	$\pm 0.3 \text{ Ph}^*$	
pH (10)	<u>02/20</u>	<u>9.60</u>	<u>9.92</u>	<u>14.86</u>	<u>10.13</u>	<u>15.31</u>	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	<u>10/19</u>	<u>240.5</u>	<u>240.0</u>	<u>14.30</u>	<u>240.1</u>	<u>15.12</u>	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	<u>-</u>	<u>170</u>	<u>98.8</u>	<u>14.92</u>	<u>98.6</u>	<u>14.99</u>	-	
Dissolved Oxygen (mg/L)	<u>-</u>	<u>17.17</u>	<u>9.98</u>	<u>14.92</u>	<u>9.97</u>	<u>14.99</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	<u>-</u>	<u>750.9</u>	<u>750.9</u>	<u>-</u>	<u>758.9</u>	<u>-</u>	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 5/6/19



Field Instrument Calibration Log

Date: 5/7/19

Weather: Sun, 45°F

Project/Site Name: PFAS RI EW

Instrument: YSI 650XL

Calibrated By: B.A

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>0600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/15</u>	<u>1355</u>	<u>1413</u>	<u>15.01</u>	<u>1404</u>	<u>17.58</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>6.98</u>	<u>7.00</u>	<u>15.18</u>	<u>7.13</u>	<u>17.20</u>	$\pm 0.3 \text{ Ph}^*$	↓
pH (4)	<u>07/20</u>	<u>3.90</u>	<u>4.00</u>	<u>15.24</u>	<u>4.01</u>	<u>17.30</u>	$\pm 0.3 \text{ Ph}^*$	
pH (10)	<u>02/20</u>	<u>9.84</u>	<u>9.97</u>	<u>15.81</u>	<u>10.16</u>	<u>17.58</u>	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	<u>10/19</u>	<u>238.6</u>	<u>240.0</u>	<u>15.72</u>	<u>235.6</u>	<u>17.20</u>	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	<u>-</u>	<u>92.1</u>	<u>100.1</u>	<u>15.30</u>	<u>90.3</u>	<u>16.88</u>	<u>-</u>	
Dissolved Oxygen (mg/L)	<u>-</u>	<u>9.52</u>	<u>9.90</u>	<u>15.30</u>	<u>9.50</u>	<u>16.88</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	<u>-</u>	<u>755.3</u>	<u>-</u>	<u>-</u>	<u>758.6</u>	<u>-</u>	<u>-</u>	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 5/7/19



Field Instrument Calibration Log

Date: 5/8/15

Weather: Sun.

Project/Site Name: PFAS RI EW

Instrument: YSI 650XL

Calibrated By: B.A

Serial Number: 02E0534

Parameters	Solution Expiration Date	AM Calibration Time <u>9:00</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1:35</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/19</u>	<u>1414</u>	<u>1413</u>	<u>15.54</u>	<u>1404</u>	<u>16.20</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.00</u>	<u>7.00</u>	<u>15.56</u>	<u>7.00</u>	<u>15.92</u>	$\pm 0.3 \text{ Ph}^*$	
pH (4)	<u>8/7/20</u>	<u>4.01</u>	<u>4.00</u>	<u>15.73</u>	<u>3.99</u>	<u>16.15</u>	$\pm 0.3 \text{ Ph}^*$	
pH (10)	<u>02/20</u>	<u>9.80</u>	<u>10.00</u>	<u>15.72</u>	<u>10.04</u>	<u>16.07</u>	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	<u>10/15</u>	<u>237.2</u>	<u>240.0</u>	<u>15.34</u>	<u>239.8</u>	<u>16.20</u>	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	<u>-</u>	<u>43.2</u>	<u>99.8</u>	<u>15.10</u>	<u>96.4</u>	<u>15.92</u>	-	
Dissolved Oxygen (mg/L)	<u>-</u>	<u>4.35</u>	<u>10.04</u>	<u>15.10</u>	<u>9.81</u>	<u>15.92</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	<u>-</u>	<u>757.4</u>	<u>757.4</u>	<u>15.10</u>	<u>760.1</u>	<u>15.92</u>	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 5/8/15



Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI EW - AOCSD

Instrument: Lemotte 2020t

Calibrated By: B/A

Serial Number: 1116-0719

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/26/19	0.03	0.01	11.0	10.05	0.07	10.07	N
4/30/19	0.05	0.02	12.6	10.2	0.03	10.21	N
5/1/19	0.07	0.06	11.3	10.5	0.05	10.6	N
5/2/19	0.08	0.05	10.9	10.8	0.06	10.9	N
5/3/19	0.12	0.05	11.7	10.9	0.06	11.1	N
5/6/19	0.26	0.10	10.8	10.6	0.13	11.0	N
5/7/19	0.08	0.04	6.27	10.0	0.06	10.2	N
5/8/19	0.02	0.01	10.07	10.00	0.04	10.07	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____

Date: _____

5/8/19



Field Instrument Calibration Log

Date: 5/6/19

Weather: Cloudy 40's - 50's

Project/Site Name: Darius PFAS RIEW

Instrument: YSI 556

Calibrated By: AOC ST

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0705</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1215</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1,401	1,413	17.53	1,404	17.61	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.07	7.00	17.56	7.09	17.65	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2020	3.89	4.00	17.51	4.10	17.58	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/31/2019	10.00	10.00	17.52	9.89	17.63	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	240.5	240.0	17.39	237.4	17.49	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	102.1	100.0	17.12	101.3	17.19	-	-
Dissolved Oxygen (mg/L)	-	9.69	9.37	17.12	9.70	17.19	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	260	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 24 5/6/19



Field Instrument Calibration Log

Date: 5/8/19

Weather: Partly Cloudy - Sunny, 50's-60's

Project/Site Name: Dennis PFAS RIEW

Instrument: YSI 556

Calibrated By: W

Serial Number: 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1250</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^{\circ}$)	11/2019	1,405	1,413	18.61	1,404	18.12	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.08	7.00	18.44	6.88	18.15	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2020	3.96	4.00	18.57	4.06	18.31	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/31/2019	9.90	10.00	18.38	10.00	18.20	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	237.4	70 240.0	18.50	240.9	18.18	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	95.6	100.0	17.21	98.6	18.05	-	-
Dissolved Oxygen (mg/L)	-	9.11	9.55	17.21	9.34	18.05	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 5/8/19



Turbidity Instrument Calibration Log

Project/Site Name: Downs PFAS RT EW

Instrument: LUNA

Calibrated By: W

Serial Number: 5108-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/6/19	0.19	0.01	6.70	10.00	0.14	9.83	N
5/8/19	0.06	0.00	10.20	10.00	0.08	9.73	N

Notes: Mark Noted Variances on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Handwritten Signature]

Date: 5/8/19



Field Instrument Calibration Log

Date: 10/9/19

Weather: Cloudy -> Rainy; 50's-60's (°F)

Project/Site Name: LTM - Fall 2019

Instrument: YSI 688 MAS

Calibrated By: CV

Serial Number: 116100386

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1,406</u>	<u>1,413</u>	<u>18.21</u>	<u>1,414</u>	<u>18.61</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>02/2021</u>	<u>6.93</u>	<u>7.00</u>	<u>18.07</u>	<u>7.01</u>	<u>17.99</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>03/2021</u>	<u>3.99</u>	<u>4.00</u>	<u>18.08</u>	<u>4.03</u>	<u>18.31</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>02/2021</u>	<u>10.01</u>	<u>10.00</u>	<u>18.06</u>	<u>10.00</u>	<u>18.32</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>12/2019</u>	<u>245.9</u>	<u>240.0</u>	<u>18.41</u>	<u>239.3</u>	<u>18.59</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>93.9</u>	<u>100.0</u>	<u>18.01</u>	<u>103.2</u>	<u>18.01</u>	<u>-</u>	<u>-</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>8.67</u>	<u>9.23</u>	<u>18.01</u>	<u>9.51</u>	<u>18.01</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 10/9/19



Field Instrument Calibration Log

Date: 10/10/19

Weather: Rain, 50°F

Project/Site Name: Devens LTM - AOC50

Instrument: YSI 556 MPS

Calibrated By: BVA

Serial Number: 15F101567

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	03/20	1447	1413	16.65	1410	17.61	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	01/21	7.09	7.00	16.42	6.80	17.59	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	03/20	3.97	4.00	16.65	4.28	17.64	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	02/20	9.96	10.00	16.43	10.23	17.59	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	06/23	240.8	240.0	16.80	238.6	17.50	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	111.0	99.9	16.74	100.0	15.94	-	N
Dissolved Oxygen (mg/L)	-	10.80	9.70	16.74	9.89	15.94	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	760	16.74	760	15.94	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 10/10/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: Hach 2100Q

43G-1AOC50

Calibrated By: B/A

Serial Number: 16010C047202

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
10/9/19	10.0/10.0	19.5/20.0	99.0/100	803/800	10.3/10	20.8/20	97/100	804/800	N
10/10/19	10.1/10.0	17.9/20.0	96.2/100	803/800	10.4/10	20.7/20	101/100	817/800	N
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Signature: 

Date: 10/10/19



Field Instrument Calibration Log

Date: 10/16/19

Weather: Cool, 36°F (AM)

Project/Site Name: Devens LTM - AOC30

Instrument: YSI 556MPS

Calibrated By: BrA

Serial Number: 15F1015167

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1515</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	03/20	1400	143	15.55	1416	18.63	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	01/21	7.38	7.00	15.79	14.49 6.89	17.91	$\pm 0.3 \text{ Ph}^*$	
pH (4)	03/20	3.89	4.00	15.66	4.05	18.87	$\pm 0.3 \text{ Ph}^*$	
pH (10)	02/20	9.81	10.00	15.75	9.96	18.46	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	06/23	239.0	240.0	15.81	237.9	18.50	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	—	107	100	16.49	95.2	18.87	—	
Dissolved Oxygen (mg/L)	—	10.46	9.80	16.49	9.52	18.87	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	16.45	760	18.87	—	

Notes: _____

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 10/16/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM - AOC50

Instrument: ~~YSI~~ Hach 2100Q

Calibrated By: B/A

Serial Number: 160100047202

Date	AM Calibration				PM Post Calibration Check				Variance Noted	
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU		
10/14/19	9.94/10	17.5/20	82.5/100	776/800	10.2	19.3/20	97	810	N	
10/15/19	9.98/10	20.8/20	98.8/100	799/800	9.93/10	20.1/20	97.5/100	800	N	
10/16/19	10.3/10	19.2/20	101/100	807/800	9.91/10	20.6/20	101/100	795/800	N	
10/18/19	10.3/10	19.4/20	98.6/100	799/800	9.95/10	20.4/20	102/100	808/800	N	
10/28/19	10.1/10	19.8/20	99.1/100	801/800	9.90/10	20.1/20	98/100	796/800	N	
10/29/19	10.0/10	20.7/20	103/100	803/800	10.0/10	20.2/20	102.0/100	801/800	N	
10/30/19	10.2/10	17.5/20	92.4/100	773/800	10.2/10	19.8/20	98/100	794/800	N	
10/31/19	10.3/10	20.1/	104/100	802/800	9.9 10.1/10	20.2/20	98.8/100	800/800	N	
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria					
					± 0.5	± 1	± 5	± 40		

Signature:

Date: 10/14-10/31



Field Instrument Calibration Log

Date: 11/6/15

Weather: Sun, 48°F

Project/Site Name: Devens Ltm

Instrument: YSI 556 MPS

Calibrated By: Brd

Serial Number: 15F101567

Parameters	Solution Expiration Date	AM Calibration Time <u>class</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>150</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	03/20	1428	1413	17.41	1410	17.30	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	01/21	7.20	7.00	17.68	7.04	17.25	$\pm 0.3 \text{ Ph}^*$	<div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; width: 100%;"></div>
pH (4)	03/21	3.81	4.00	17.53	3.96	18.01	$\pm 0.3 \text{ Ph}^*$	
pH (10)	03/20	9.91	10.00	18.10	10.05	17.57	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	06/23	256.1	270	17.08	239.1	18.10	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	/	96.4	100	16.4	103.8	16.90	-	
Dissolved Oxygen (mg/L)	/	9.28	9.33	16.71	9.40	16.90	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	/	760	760	16.71	760	16.90	-	

Notes: _____

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: Brd

Date: 11/6/15



Turbidity Instrument Calibration Log

Project/Site Name: Devens Ltn

Instrument: Hach 2100Q

Calibrated By: B.A

Serial Number: 160100047202

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
11/1/19	10.3/10	19.8/20	97.8/100	800/800	10/10	20.4/20	102/100	800/800	N
11/5/19	10.4/10	20.8/20	100/100	799/800	10.2/10	20.4/20	101/100	800/800	N
11/6/19	10.6/10	19.7/20	101/100	808/800	10.2/10	19.9/20	104/100	806/800	N
11/7/19	10.2/10	19.3/20	96.7/100	798/800	10.1/10	20.1/20	103/100	804/800	N
11/8/19	10.1/10	19.4/20	97.1/100	796/800	10.0/10	20.0/20	101/100	790/800	N
11/11/19	10.1/10	19.6/20	97.6/100	803/800	10.2/10	19.2/20	103/100	799/800	N
11/12/19	10.1/10	20.5/20	96.9/100	800/800	10.1/10	19.8/20	101/100	796/800	N
11/13/19	10.2/10	20.1/20	97.1/100	801/800	10.1/10	19.9/20	104/100	795/800	N
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Signature:

Date: 11/1 - 11/13/19



Field Instrument Calibration Log

Date: 5/7/2020

Weather: 40° F, Sun.

Project/Site Name: Devens Supplemental Sampling

Instrument: YSI 556 MPS

Calibrated By: B/A

Serial Number: 0561941 AD

Parameters	Solution Expiration Date	AM Calibration Time <u>0600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1300</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	10/20	1391	1413	16.39	1411	17.28	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/21	7.00	7.00	16.32	7.01	17.51	$\pm 0.3 \text{ Ph}^*$	↓
pH (4)	10/21	4.01	4.00	16.39	3.99	17.43	$\pm 0.3 \text{ Ph}^*$	
pH (10)	10/21	9.94	10.00	16.42	10.08	17.28	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	05/20	241.5	240.0	16.41	239.6	17.50	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	-	99.3	98.0	16.60	97.1	17.20	-	
Dissolved Oxygen (mg/L)	-	9.68	9.55	16.60	9.49	17.20	$\pm 0.5 \text{ mg/L}$ <small>< 0.5 mg/L for 0 mg/L solution, no negative value</small>	
Barometric Pressure (mmHg)	-	745.1	745.1	16.60	746.5	17.20	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: B/A

Date: 5/7/20



Field Instrument Calibration Log

Date: 5/8/2020

Weather: 45°F, Sun

Project/Site Name: Devers Spring 2020 Supplemental

Instrument: YSI 556 MPS

Calibrated By: Bra

Serial Number: 05G1941AD

Parameters	Solution Expiration Date	AM Calibration Time <u>0615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1230</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^2$)	10/20	1415	1413	16.43	1416	17.81	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/21	7.02	7.00	16.35	7.01	18.04	$\pm 0.3 \text{ Ph}^*$	↓
pH (4)	10/21	3.95	4.00	16.30	3.97	17.90	$\pm 0.3 \text{ Ph}^*$	
pH (10)	10/21	9.98	10.00	16.42	10.08	17.96	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)	05/20	238.8	240.0	16.12	241.6	18.02	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	-	98.5	98.5	16	99.9	17.50	-	
Dissolved Oxygen (mg/L)	-	9.72	9.71	16	9.74	17.50	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	747.5	747.5	16	749.6	17.50	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 5/8/20



Field Instrument Calibration Log

Date: 5/17/20

Weather: 50's

Project/Site Name: Dams

Instrument: 484 536 M25

Calibrated By: WJ

Serial Number: 06CL657A1

Parameters	Solution Expiration Date	AM Calibration Time <u>6:40</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>12:30</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^2$)	10/20	1.447	1.413	16.94	1.410	17.81	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.09	7.00	16.78	7.11	17.77	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	10/21	4.11	4.00	16.81	4.00	17.69	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	10/21	9.63	10.00	17.01	10.03	17.83	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	220.3	240.0	16.90	237.7	17.81	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	91.0%	100.0%	15.11	101.1%	17.80	-	N
Dissolved Oxygen (mg/L)	N/A	9.70	10.00	14.61	10.09	16.87	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 5/17/20



Field Instrument Calibration Log

Date: 5/18/20

Weather: 50's

Project/Site Name: Davers

Instrument: YSI 55612J

Calibrated By: WAT

Serial Number: 0602657A1

Parameters	Solution Expiration Date	AM Calibration Time <u>650</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1215</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	<u>10/20</u>	<u>1.478</u>	<u>1.413</u>	<u>16.99</u>	<u>1.410</u>	<u>16.39</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.30</u>	<u>7.00</u>	<u>16.83</u>	<u>7.03</u>	<u>16.47</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>10/21</u>	<u>4.18</u>	<u>4.00</u>	<u>17.21</u>	<u>4.01</u>	<u>16.50</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>10/21</u>	<u>9.83</u>	<u>10.00</u>	<u>17.09</u>	<u>10.00</u>	<u>16.51</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>5/20</u>	<u>231.0</u>	<u>249.0</u>	<u>16.87</u>	<u>241.1</u>	<u>16.42</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>99.0%</u>	<u>100.0%</u>	<u>16.79</u>	<u>100.0%</u>	<u>16.39</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.47</u>	<u>10.00</u>	<u>16.80</u>	<u>9.81</u>	<u>16.27</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 5/18/20



Turbidity Instrument Calibration Log

Project/Site Name: Dover

Instrument: LaMotte 2020FE

Calibrated By: MA

Serial Number: 3711-3913

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/5/20	0.09	0.00	10.18	10.00	0.07	10.00	N
5/7/20	0.39	0.00	10.47	10.00	0.02	10.13	N
5/8/20	0.29	0.00	9.73	10.00	0.00	10.18	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]

Date: 5/8/20



Field Instrument Calibration Log

Date: 10/10/19

Weather: 80°F partially cloudy

Project/Site Name: LTM - Fall 2019

Instrument: VSI 556 MPS

Calibrated By: Melissa Miller

Serial Number: 14A100102

Parameters	Solution Expiration Date	AM Calibration Time <u>0740</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	<u>03/20</u>	<u>1410</u>	<u>1413</u>	<u>19.55</u>	<u>1405</u>	<u>15.73</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>02/21</u>	<u>7.25</u>	<u>7.00</u>	<u>19.63</u>	<u>6.91</u>	<u>15.89</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>03/21</u>	<u>3.99</u>	<u>4.00</u>	<u>19.37</u>	<u>3.98</u>	<u>15.65</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>02/21</u>	<u>9.98</u>	<u>10.00</u>	<u>19.10</u>	<u>9.95</u>	<u>15.92</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>237.8</u>	<u>240</u>	<u>19.53</u>	<u>237.1</u>	<u>15.77</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>—</u>	<u>104.2</u>	<u>100.0</u>	<u>19.10</u>	<u>95.1</u>	<u>13.85</u>	<u>—</u>	<u>N</u>
Dissolved Oxygen (mg/L)	<u>—</u>	<u>9.81</u>	<u>9.45</u>	<u>19.10</u>	<u>9.89</u>	<u>13.85</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>760</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: *Melissa Miller*

Date: 10/10/19



Field Instrument Calibration Log

Date: 10/15/15

Weather: Sun, 45°F

Project/Site Name: Devens LTM - Arc50

Instrument: YSI 556MPS

Calibrated By: B.A.

Serial Number: 15F10154767

Parameters	Solution Expiration Date	AM Calibration Time <u>0615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)		1414	1413	17.36	1411	19.99	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)		6.99	7.00	17.22	6.90	19.33	$\pm 0.3 \text{ Ph}^*$	N
pH (4)		3.96	4.00	16.92	4.20	19.43	$\pm 0.3 \text{ Ph}^*$	
pH (10)		10.09	10.00	17.44	9.98	19.55	$\pm 0.3 \text{ Ph}^*$	
ORP (240 mv)		245.6	240.0	17.69	238.7	19.90	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)		111.5	99.5	17.24	100.2	20.03	-	
Dissolved Oxygen (mg/L)		10.72	9.61	17.24	9.65	20.03	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	17.24	760	20.03	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 10/15/15



Turbidity Instrument Calibration Log


Project/Site Name: Devens LTM - AOCSD

Instrument: ~~YSI~~ Hach 2100B

Calibrated By: BVA
SHL

Serial Number: 160100047202

Date	AM Calibration				PM Post Calibration Check				Variance Noted	
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU		
10/14/19	9.94/10	17.5/20	82.9/100	776/800	10.2	19.3/20	97	810	N	
10/15/19	9.98/10	20.8/20	98.8/100	799/800	9.93/10	20.1/20	97.5/100	800	N	
10/16/19	10.3/10	19.2/20	101/100	807/800	9.91/10	20.6/20	101/100	795/800	N	
10/18/19	10.3/10	19.4/20	98.6/100	799/800	9.95/10	20.4/20	102/100	808/800	N	
10/28/19	10.1/10	19.8/20	99.1/100	801/800	9.90/10	20.1/20	98/100	796/800	N	
10/29/19	10.0/10	20.7/20	103./100	803/800	10.0/10	20.2/20	102.0/100	801/800	N	
10/30/19	10.2/10	17.5/20	92.4/100	773/800	10.2/10	19.8/20	98/100	794/800	N	
10/31/19	10.3/10	20.1	104/100	802/800	9.9 10.1/10	20.2/20	98.8/100	800/800	N	
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria					
					± 0.5	± 1	± 5	± 40		

Signature: 

Date: 10/14 - 10/31



Field Instrument Calibration Log

Date: 10/15/2019

Weather: clear, sunny, ≈ 50-65°F

Project/Site Name: LTM - Fall 2019

Instrument: YSI 560 MDS

Calibrated By: E. Seiler

Serial Number: 116140386

Parameters	Solution Expiration Date	AM Calibration Time <u>0635</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1520</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^{\circ}$)	2/20 11/2019	1409	1413	18.49	1392 → 1413	19.15	±10 $\mu\text{S}/\text{cm}$	yes
pH (7)	2/2021	6.97	7.00	18.89	6.85 → 7.00	19.26	± 0.3 Ph *	no
pH (4)	3/2021	5.93	4.00	18.99	4.09 → 4.00	18.83	± 0.3 Ph *	no
pH (10)	2/2021	10.23	10.04	18.82	10.15 → 10.03	19.35	± 0.3 Ph *	no
ORP (240 mv)	12/2019	244.1	240.0	18.72	236.1 → 240.0	19.15	±10 mv	no
Dissolved Oxygen (%)	-	103.4	100.0	17.72	100.3 → 100.0	20.99	-	-
Dissolved Oxygen (mg/L)	-	9.85	9.52	17.27	8.95 → 8.91	20.99	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	yes no
Barometric Pressure (mmHg)	760	-	-	-	760	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: E. Seiler

Date: 10/15/2019



Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: HACH 2100Q

Calibrated By: E. Seiler

Serial Number: 170606059342

*160106047202

Date	AM Calibration				PM Post Calibration Check				Variance Noted	
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU		
10/14/2019	10.3/10	20.4/20	106/100	812/800	10.0/10	20.1/20	103/100	796/800	NO	
10/15/2019	10.4/10	19.3/20	96.5/100	799/800	9.7/10	20.6/20	96.9/100	790/800	NO	
10/16/2019	9.87/10	20.4/20	103/100	816/800	10.0/10	19.6/20	102/100	793/800	NO	
10/17/2019	10.1/10	19.7/20	98.6/100	810/800	10.02/10	19.9/20	97.2/100	779/800	NO	
10/21/2019	9.06/10	20.2/20	104/100	814/800	10.09/10	19.8/20	95.7/100	779/800	NO	
10/23/2019	12.3/10	20.6/20	103/100	811/800	10.2/10	20.3/20	103/100	802/800	NO	
10/24/2019	9.90/10	20.1/20	102/100	804/800	10.02/10	20.2/20	¹¹⁰ 140 /100	791/800	YES	
* 10/25/2019	10.0/10	20.5/20	102/100	790/800	10.0/10	20.2/20	96.8/100	810/800	NO YES	
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria					
					± 0.5	± 1	± 5	± 40		

Signature: E. Seiler

Date: 10/25/2019



Field Instrument Calibration Log

Date: 10/18/19

Weather: 50-60°

Project/Site Name: Deming Mill LTM

Instrument: YST 650 MDS

Calibrated By: Michael Spaulding

Serial Number: 116100386

Parameters	Solution Expiration Date	AM Calibration Time <u>0620</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1520</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1399</u>	<u>1414</u>	<u>17.48</u>	<u>1417 / 1413</u>	<u>18.46</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/2021</u>	<u>6.99</u>	<u>7.00</u>	<u>17.65</u>	<u>7.00 / 7.00</u>	<u>19.80</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2021</u>	<u>4.00</u>	<u>4.00</u>	<u>17.55</u>	<u>4.08 / 4.00</u>	<u>18.79</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>10.18</u>	<u>10.03</u>	<u>17.63</u>	<u>10.01 / 10.00</u>	<u>18.60</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>12/2019</u>	<u>238.1</u>	<u>240.1</u>	<u>17.59</u>	<u>236.7 / 239.9</u>	<u>18.61</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)		<u>102.6</u>	<u>100.0</u>	<u>17.75</u>	<u>102.6 / 100.0</u>	<u>18.82</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)		<u>9.76</u> 10.10	<u>9.51</u>	<u>17.75</u>	10.26 <u>9.50 / 9.31</u>	<u>18.82</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)		<u>760</u>		<u>17.75</u>	<u>760</u>	<u>18.82</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: 

Date: 10/18/19



Turbidity Instrument Calibration Log

Project/Site Name: FT Dennis Fall LTM

Instrument: ~~YSI 850 ADS~~

Calibrated By: Michael Spaulding

Serial Number: NACH 21000

~~15100286~~
170600054342

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
10/18/19	9.92/10	20.4/20	104/100	811/800	9.68	19.4	44.4	793	Y

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: 

Date: 10/18/19



**APPENDIX B SYNOPTIC WATER LEVEL
EVENT FIELD SHEETS**

Airfield Overburden Synoptic Event, August 14, 2019



Groundwater Water Level Measurement Sheet

8/14/2019

Project/Site Name: Fort Devens/Area 3 Synoptic
 Water Level Summer 2019

Date : _____

Field Team Member: Brett Anchukaitis

Weather: 75 sunny

Water Level Meter Model: Heron Dipper-T

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
Area 1	G6M-96-22A	1216	4.74	52.48	N		Y	Good
Area 1	G6M-96-22B	1215	5.10	72.87	N		Y	Good
Area 1	G6M-96-25A	0754	12.22	21.26	N		Y	Good
Area 1	G6M-96-25B	0752	14.81	61.61	N		Y	Dedicated Tubing, Good
Area 1	G6M-04-11X	0756	18.55	46.96	N		Y	Dedicated Tubing, Good
Area 1	G6M-13-05X	0746	13.41	56.65	N		Y	Dedicated Tubing, Good
Area 1	G6M-02-08X	0742	12.35	71.99	Y		Y	Dedicated Bladder Pump, Good
Area 1	G6M-95-19X	0728	11.65	58.65	Y		Y	Good
Area 1	G6M-95-20X	0725	12.19	24.98	N		Y	Good
Area 1	G6M-07-02X	0732	12.79	29.85	Y		Y	Dedicated Bladder pump, good
Area 1	G6M-04-10X	0734	12.50	63.48	Y		Y	Dedicated Tubing, Good
Area 1	G6M-04-10A	0738	11.95	42.08	Y		Y	Dedicated Bladder pump, good
Area 1	G6M-04-22X	0834	45.08	85.42	Y		Y	Dedicated Tubing, Good
Area 1	G6M-04-31X	0830	44.96	80.15	Y		Y	Dedicated Tubing, top PVC section loose
Area 1	G6M-04-15X	0826	41.55	81.01	Y		Y	Dedicated Tubing, Good
AOC 50	50PZ-19-01	0821	42.10	54.62	N		Y	VP location 50VP-19-04
Area 2	30PZ-19-05	0815	11.08	29.05		Y	Y	VP location 30VP-19-05
Area 2	30PZ-19-01	0808	17.65	30.72	N		Y	VP location 30VP-19-01
Area 2	G6P-97-05B	0849	26.00	44.45	N		Y	Good, 4" PVC
Area 2	50PZ-19-02	0844	57.90	66.94		Y	Y	VP location 50VP-19-06
Area 2	G6M-02-01X	0944	53.35	89.40		Y	Y	Dedicated Bladder Pump, Good
Area 2	G6M-04-01X	0948	51.38	89.67		N	Y	Dedicated Tubing, Good
Area 2	G6M-04-03X	0954	55.95	93.04		N	Y	Dedicated Tubing, Good
Area 2	30PZ-19-02	0855	60.88	79.81		Y	Y	Good
Area 2	30PZ-19-03	0904	64.65	79.72		Y	Y	VP location 30VP-19-03



Groundwater Water Level Measurement Sheet

8/14/2019

Project/Site Name: Fort Devens/Area 3 Synoptic
Water Level Summer 2019

Date : _____

Field Team Member: Brett Anchukaitis

Weather: 75 sunny

Water Level Meter Model: Heron Dipper-T

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
Area 2	30PZ-19-04	0915	64.25	76.40		Y	Y	VP location 30VP-19-04
Area 3	G6M-04-02X	0959	59.14	92.31	Y		Y	Good
Area 3	G6M-13-03X	1210	57.28	90.28		N	Y	Dedicated Tubing, Good
Area 3	G6M-03-07X	1003	56.00	88.26		N	Y	Dedicated Bladder Pump, Good
Area 3	G6M-04-04X	1006	57.35	104.15		N	Y	Dedicated Tubing, Good
Area 4	G6M-02-04X	1017	60.13	106.75	Y		Y	Dedicated Tubing, Good
Area 4	G6M-97-28X	1014	60.96	107.10	Y		Y	Dedicated Tubing, Good
Area 4	GM-02-03X	1010	58.15	103.67		Y	Y	soft bottom, Good
Area 4	G6M-13-02X	1020	59.31	125.04		Y	Y	Dedicated Tubing, Good
Area 4	G6M-18-01	1155	60.46	124.94		Y	Y	Dedicated Tubing, Good
Area 5	G6M-02-11X	1140	60.40	136.90	Y		Y	Dedicated Bladder Pump, Good
Area 5	G6M-03-10X	1129	62.53	136.81	Y		Y	Dedicated Bladder Pump, Good
Area 5	G6M-04-05X	1135	54.90	112.36	Y		Y	Dedicated Bladder Pump, Good
Area 5	G6M-13-01X	1100	63.40	136.50	N		Y	Dedicated Tubing, Good
Area 5	G6M-13-04X	1145	63.65	137.40	Y		Y	Dedicated Tubing, Good
Area 5	G6M-97-05B	1055	65.13	137.61	Y		Y	Dedicated Tubing, Good
Area 5	G6M-18-02	1039	65.80	135.89	Y		Y	Dedicated Tubing, Good
Area 5	31PZ-19-01	1046	66.89	78.72	N		Y	VP location 31VP-19-04; locking part broken off

Airfield Overburden Synoptic Event, October 7, 2019



Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - AOC 50 Fall 2019
 Field Team Member: Michael Spaulding
 Water Level Meter Model: Solinst 101 S/n# 268249

Date: 10/7/19
 Weather: 70-75°F overcast

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW	
CW	G6M-96-22A							See well evaluation form	4.74	
	G6M-96-22B							See well evaluation form	5.10	
	G6M-02-08X	0747	14.68	72.59	Y	NA	Y	See well evaluation form	14.97	
	G6M-04-09X	0930	31.98	66.81	Y	NA	Y	See well evaluation form	30.87	
	G6M-04-10X	0911	13.58	63.52	Y	NA	Y	See well evaluation form	13.97	
	G6M-04-10A	0902	13.08	42.14	Y	NA	Y	See well evaluation form	13.3	
	G6M-04-11X	1015	14.61	47.04	N	NA	Y	See well evaluation form	20.14	
	G6M-04-13X	0818	14.81	42.11	N	NA	N	See well evaluation form	15.18	
	G6M-04-15X	0939	42.65	81.09	Y	NA	Y	See well evaluation form	43.04	
	G6M-04-22X	1000	46.13	85.67	Y	NA	Y	See well evaluation form	46.57	
	G6M-04-31X	0951	46.02	80.33	Y	NA	Y	See well evaluation form	51.29	
	G6M-07-02X	0859	14.54	24.65	Y	NA	Y	See well evaluation form	14.58	
	G6M-13-05X	0735	14.49	56.46	N	NA	Y	See well evaluation form	14.97	
	G6M-13-06X	0922	13.99	62.21	Y	NA	Y	See well evaluation form	14.42	
	G6M-95-19X	0800	12.73	58.45	Y	NA	Y	See well evaluation form	13.04	
	G6M-95-20X	0810	13.32	25.00	N	NA	Y	See well evaluation form	13.62	
	PPAS	30PZ-19-05	1033	12.30	28.96	NA	Y	Y	See well evaluation form	11.08
		30PZ-19-01	1050	21.16	30.73	N	NA	Y	See well evaluation form	17.65
50PZ-19-01 MW-7 (IT)		1115	21.9	31.00	Y	NA	Y	See well evaluation form	42.10 NA	
G6P-97-05X		1103	27.36	30.14	N	NA	Y	See well evaluation form	26.00	
MW-7 (IT) 50PZ-19-01		1130	42.98	54.85	N	NA	Y	See well evaluation form	NA 42.10	
G6M-02-01X		1205	54.32	89.38	NA	Y	Y	See well evaluation form	55.19	
G6M-04-01X								See well evaluation form	52.88	
G6M-04-03X		1224	57.02	93.10	NA	N	Y	See well evaluation form	57.46	

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
PFAS	50PZ-19-02	1255	59.07	60.88	NA	Y	Y	See well evaluation form	57.90
	30PZ-19-02	1310	62.02	78.81	NA	Y	Y	See well evaluation form	60.88
	30PZ-19-03	1339	65.68	78.78	NA	Y	Y	See well evaluation form	64.65
	30PZ-19-04	1325	65.14	76.46	NA	Y	Y	See well evaluation form	64.25
3	G6M-03-07X							See well evaluation form	57.70
	G6M-04-02X							See well evaluation form	60.67
	G6M-04-04X							See well evaluation form	58.80
	G6M-13-03X							See well evaluation form	58.85
	50PZ-19-03							See well evaluation form	N/A
	50PZ-19-04							See well evaluation form	N/A
4	G6M-02-03X							See well evaluation form	58.15
	G6M-02-04X							See well evaluation form	60.13
	G6M-02-13X							See well evaluation form	61.63
	G6M-13-02X							See well evaluation form	60.73
	G6M-97-28X							See well evaluation form	62.43
	50PZ-19-07							See well evaluation form	N/A
	31PZ-19-01							See well evaluation form	66.89
	50PZ-19-05							See well evaluation form	N/A
	50PZ-19-06							See well evaluation form	N/A
	G6M-02-06X							See well evaluation form	9.37
	G6M-02-07X							See well evaluation form	10.23
	G6M-02-11X							See well evaluation form	61.97
	G6M-02-12X							See well evaluation form	60.65
	G6M-03-08X							See well evaluation form	56.88
	G6M-03-09X							See well evaluation form	57.27
	G6M-03-10X							See well evaluation form	64.07
	G6M-04-05X							See well evaluation form	56.48
	G6M-04-06X							See well evaluation form	63.27

Mike



Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - AOC 50 Fall 2019
 Field Team Member: Kristin Esser
 Water Level Meter Model: Solinst 107

Date: 10/7/19
 Weather: Cloudy 70's

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
1	G6M-96-22A							See well evaluation form	4.74
	G6M-96-22B							See well evaluation form	5.10
	G6M-02-08X							See well evaluation form	14.97
	G6M-04-09X							See well evaluation form	30.87
	G6M-04-10X							See well evaluation form	13.97
	G6M-04-10A							See well evaluation form	13.3
	G6M-04-11X							See well evaluation form	20.14
	G6M-04-13X							See well evaluation form	15.18
	G6M-04-15X							See well evaluation form	43.04
	G6M-04-22X							See well evaluation form	46.57
	G6M-04-31X							See well evaluation form	51.29
	G6M-07-02X							See well evaluation form	14.58
	G6M-13-05X							See well evaluation form	14.97
	G6M-13-06X							See well evaluation form	14.42
	G6M-95-19X							See well evaluation form	13.04
G6M-95-20X							See well evaluation form	13.62	
2	30PZ-19-05							See well evaluation form	11.08
	30PZ-19-01							See well evaluation form	17.65
	50PZ-19-01							See well evaluation form	42.10
	G6P-97-05X							See well evaluation form	26.00
	MW-7 (IT)							See well evaluation form	N/A
	G6M-02-01X							See well evaluation form	55.19
	G6M-04-01X							See well evaluation form	52.88
G6M-04-03X							See well evaluation form	57.46	

Kristin

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
	50PZ-19-02							See well evaluation form	57.90
	30PZ-19-02							See well evaluation form	60.88
	30PZ-19-03							See well evaluation form	64.65
	30PZ-19-04							See well evaluation form	64.25
3 PFAS	G6M-03-07X	1227	57.45	89.95	NA	N	Y	See well evaluation form	57.70
	G6M-04-02X	1248	60.80	94.88	Y	NA	Y	See well evaluation form	60.67
	G6M-04-04X	1215	58.90	106.80	NA	N	Y	See well evaluation form	58.80
	G6M-13-03X	1258	58.90	92.40	NA	N	Y	See well evaluation form	58.85
	50PZ-19-03	1144	45.10	52.85	Y	NA	Y	See well evaluation form	N/A
	50PZ-19-04	1157	52.20	58.60	Y	NA	Y	See well evaluation form	N/A
4	G6M-02-03X	1340	59.97	100.30	NA	Y	Y	See well evaluation form	58.15
	G6M-02-04X	1324	62.03	109.55	Y	NA	Y	See well evaluation form	60.13
	G6M-02-13X	0958	60.85	122.70	NA	N	Y	See well evaluation form	61.63
	G6M-13-02X	1022	60.85	127.80	Y	NA	Y	See well evaluation form	60.73
	G6M-97-28X	1313	62.50	109.65	Y	NA	Y	See well evaluation form	62.43
PFAS	50PZ-19-07	0745	69.15	77.10	N	NA	Y	See well evaluation form	N/A
	31PZ-19-01	0730	68.7	79.25	N	NA	Y	See well evaluation form	66.89
	50PZ-19-05	1124	44.40	52.80	Y	NA	Y	See well evaluation form	N/A
	50PZ-19-06	1108	51.05	63.09	NA	N	Y	See well evaluation form	N/A
	G6M-02-06X							See well evaluation form	9.37
	G6M-02-07X							See well evaluation form	10.23
	G6M-02-11X							See well evaluation form	61.97
	G6M-02-12X							See well evaluation form	60.65
	G6M-03-08X							See well evaluation form	56.88
	G6M-03-09X							See well evaluation form	57.27
	G6M-03-10X							See well evaluation form	64.07
	G6M-04-05X							See well evaluation form	56.48
	G6M-04-06X							See well evaluation form	63.27

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
5 CV	G6M-04-07X							See well evaluation form	63.14
	G6M-13-01X	0850	56.51	139.40	N	NA	Y	See well evaluation form	64.93
	G6M-13-04X	0900	63.9	140.45	Y	NA	Y	See well evaluation form	64.25
	G6M-13-10X							See well evaluation form	64.07
	G6M-97-05B	0810	66.35	140.80	Y	NA	Y	See well evaluation form	66.64
	MW-3							See well evaluation form	64.12
	MW-7	0935	63.20	138.45	Y	NA	Y	See well evaluation form	62.64
	XSA-12-95X							See well evaluation form	74.34
	G6M-18-01	1044	61.95	128.9	NA	Y	Y	See well evaluation form	57.0
	G6M-18-02	0828	67.20	138.8	Y	NA	Y	See well evaluation form	62.2
	XSA-12-96X							See well evaluation form	69.57
	XSA-12-97X							See well evaluation form	74.28
	XSA-12-98X							See well evaluation form	3.04
	31PZ-19-02S							See well evaluation form	N/A
	31PZ-19-02D							See well evaluation form	N/A
Nashua River	G6M-04-08X							See well evaluation form	63.27
	G6M-04-14X							See well evaluation form	20.42



Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - AOC 50 Fall 2019
 Field Team Member: Chris Vigneri
 Water Level Meter Model: Solinst 101

Date: 10/2/19
 Weather: Cloudy, 70-95°F

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
1	G6M-96-22A	1519	5.77	52.55	N	N	Y	See well evaluation form	4.74
	G6M-96-22B	1522	6.05	71.80	N	N	Y	See well evaluation form	5.10
	G6M-02-08X							See well evaluation form	14.97
	G6M-04-09X							See well evaluation form	30.87
	G6M-04-10X							See well evaluation form	13.97
	G6M-04-10A							See well evaluation form	13.3
	G6M-04-11X							See well evaluation form	20.14
	G6M-04-13X							See well evaluation form	15.18
	G6M-04-15X							See well evaluation form	43.04
	G6M-04-22X							See well evaluation form	46.57
	G6M-04-31X							See well evaluation form	51.29
	G6M-07-02X							See well evaluation form	14.58
	G6M-13-05X							See well evaluation form	14.97
	G6M-13-06X							See well evaluation form	14.42
	G6M-95-19X							See well evaluation form	13.04
G6M-95-20X							See well evaluation form	13.62	
2	30PZ-19-05							See well evaluation form	11.08
	30PZ-19-01							See well evaluation form	17.65
	50PZ-19-01							See well evaluation form	42.10
	G6P-97-05X							See well evaluation form	26.00
	MW-7 (IT)							See well evaluation form	N/A
	G6M-02-01X							See well evaluation form	55.19
	G6M-04-01X	1308	52.49	90.60	N	N	Y	See well evaluation form	52.88
	G6M-04-03X							See well evaluation form	57.46

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
	50PZ-19-02							See well evaluation form	57.90
	30PZ-19-02							See well evaluation form	60.88
	30PZ-19-03							See well evaluation form	64.65
	30PZ-19-04							See well evaluation form	64.25
3	G6M-03-07X							See well evaluation form	57.70
	G6M-04-02X							See well evaluation form	60.67
	G6M-04-04X							See well evaluation form	58.80
	G6M-13-03X							See well evaluation form	58.85
	50PZ-19-03							See well evaluation form	N/A
	50PZ-19-04							See well evaluation form	N/A
4	G6M-02-03X							See well evaluation form	58.15
	G6M-02-04X							See well evaluation form	60.13
	G6M-02-13X							See well evaluation form	61.63
	G6M-13-02X							See well evaluation form	60.73
	G6M-97-28X							See well evaluation form	62.43
	50PZ-19-07							See well evaluation form	N/A
	31PZ-19-01							See well evaluation form	66.89
	50PZ-19-05							See well evaluation form	N/A
	50PZ-19-06							See well evaluation form	N/A
	G6M-02-06X	0925	8.44	62.95	Y	N	Y	See well evaluation form	9.37
	G6M-02-07X	1057	9.65	40.45	Y	N	Y	See well evaluation form	10.23
	G6M-02-11X	1130	61.64	136.90	Y	N	Y	See well evaluation form	61.97
	G6M-02-12X	1139	59.30	135.00	N	N	Y	See well evaluation form	60.65
	G6M-03-08X	1208	56.61	139.45	Y	N	Y	See well evaluation form	56.88
	G6M-03-09X	1149	56.89	141.01	Y	N	Y	See well evaluation form	57.27
	G6M-03-10X	1220	63.69	136.87	Y	N	Y	See well evaluation form	64.07
G6M-04-05X	1201	56.11	112.15	Y	N	Y	See well evaluation form	56.48	
G6M-04-06X	0914	62.68	105.99	Y	N	Y	See well evaluation form	63.27	

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
5 not on 77? map	G6M-04-07X	0904	62.42	131.85	Y	N	Y	See well evaluation form	63.14
	G6M-13-01X							See well evaluation form	64.93
	G6M-13-04X							See well evaluation form	64.25
	G6M-13-10X	DNE						See well evaluation form	64.07
	G6M-97-05B							See well evaluation form	66.64
	MW-3	1342	63.25	137.35	Y	N	Y	See well evaluation form	64.12
	MW-7							See well evaluation form	62.64
	XSA-12-95X	0943	70.40	131.86	N	N	Y	See well evaluation form	74.34
	G6M-18-01							See well evaluation form	57.0
	G6M-18-02							See well evaluation form	62.2
	XSA-12-96X	0955	69.00	131.75	N	N	Y	See well evaluation form	69.57
	XSA-12-97X	1010	71.23	132.59	N	N	Y	See well evaluation form	74.28
	XSA-12-98X	1049	8.94	71.58	Y	N	Y	See well evaluation form	3.04
	31PZ-19-02S	1037	8.81	16.14	Y	N	N	See well evaluation form	N/A
31PZ-19-02D	1028	8.60	72.62	Y	N	Y	See well evaluation form	N/A	
Nashua River	G6M-04-08X	0831	8.27	97.4	N	N	Y	See well evaluation form	63.27 ?
	G6M-04-14X	0823	9.33	92.77	N	N	Y	See well evaluation form	20.42 ?

Area 3 Synoptic Event, April 27, 2020



Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - Area 3 Synoptic (PFAS RI)

Date: 4/27/2020

Field Team Member: Michael Spaulding

Weather: 40-45°F light rain

Water Level Meter Model: Skippy D. 800 A00225

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
	G6M-96-22A	1005	3.24	52.25	Y	-	Y	Good	4.74
	G6M-96-22B	0958	3.85	71.68	Y	-	Y	Good	5.10
	G6M-03-01X	0739	12.40	72.67	Y	-	Y	Good	
	G6M-02-08X	0751	13.29	71.73	Y	-	Y	Good dead Tubing	14.97
	G6M-04-09X	0940	30.51	66.81	Y	-	Y	Good dead tubing	30.87
	G6M-04-10X	0847	12.12	63.20	Y	-	Y	Good Dead Tubing	13.97
	G6M-04-10A	0842	11.36	41.81	Y	-	Y	Good Dead B.P	13.3
	G6M-04-11X	0857	18.43	46.72	Y	-	Y	Good casing loose Dead Tubing	20.14
	G6M-04-13X	0837	13.14	41.70	Y	-	Y	Good dead Tubing	15.18
	G6M-04-15X	0926	41.12	80.80	Y	-	Y	Good dead Tubing	43.04
1	G6M-04-22X	0906	45.13	63.84	Y	-	Y	Good dead tubing	46.57
	G6M-04-31X	0920	44.66	80.38	Y	-	Y	dead tubing Riser pipe loose	51.29
	G6M-07-02X	0814	13.09	29.64	Y	-	Y	dead BT	14.58
	G6M-13-05X	0720	13.49	56.18	Y	-	Y	dead tubing	14.97
	G6M-13-06X	0730	12.75	61.79	Y	-	Y	dead tubing	14.42
	G6M-95-19X	0759	11.09	58.67	Y	-	Y	dead tubing	13.04
	G6M-95-20X	0806	11.47	24.65	Y	-	Y	dead tubing	13.62
	30PZ-19-05	1015	9.81	28.75	-	Y	Y	Good	11.08
	30PZ-19-01	1030	15.55	30.40	Y	-	Y	Good	17.65
	50PZ-19-01	1105	41.80	54.61	Y	-	Y	OK	42.10
	G6P-97-05X	1040	25.18	44.16	Y	-	Y	Good	26.00
	MW-7 (IT)	1046	25.44	33.83	N	-	Y	Good no locks	N/A
	G6M-02-01X	1120	53.15	89.37	-	Y	Y	Roach Box no threads	55.19
2	G6M-04-01X	1130	51.25	75.79	-	Y	Y	Dead tubing OK	52.88

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
2	G6M-04-03X	1149	55.50	92.84	-	Y	Y	Old tubing poor drainage	57.46
	50PZ-19-02	1106	57.23	66.66	-	Y	Y	good	57.90
	30PZ-19-02	1215	60.12	79.96	-	Y	Y	good	60.88
	30PZ-19-03	1227	62.80	73.66	-	Y	Y	good	64.65
	30PZ-19-04	1240	62.01	76.10	-	Y	Y	good RB poor drainage	64.25
									57.70
3	G6M-03-07X								60.67
	G6M-04-02X								58.80
	G6M-04-04X								58.85
	G6M-13-03X								N/A
	50PZ-19-03								N/A
	50PZ-19-04								58.15
4	G6M-02-03X								60.13
	G6M-02-04X								61.63
	G6M-02-13X								60.73
	G6M-06-01X								62.43
	G6M-13-02X								N/A
	G6M-97-28X								66.89
50PZ-19-07								N/A	
31PZ-19-01								N/A	
50PZ-19-05								N/A	
50PZ-19-06								9.37	
G6M-02-06X								10.23	
G6M-02-07X								61.97	
G6M-02-11X								60.65	
G6M-02-12X								56.88	
G6M-03-08X								57.27	
G6M-03-09X								64.07	
G6M-03-10X									

U6A plot 2

DP = derrick pump
DT = derrick tubing

U6A

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
	G6M-04-03X								57.46
	50PZ-19-02							MS	57.90
	30PZ-19-02						60.88		
	30PZ-19-03						64.65		
	30PZ-19-04						64.25		
3	G6M-03-07X	723	55.48	88.67		1/3	✓		DP 1/3 ears on RB
	G6M-04-02X	725	58.81	92.45	✓		✓	DT	60.67
	G6M-04-04X	732	56.30	104.68		1/2	✓	DT 1/2 ears on RB	58.80
	G6M-13-03X	711	56.61	90.11	N/A	1/2	✓	D.T	58.85
	50PZ-19-03	850	43.58	51.97	✓		✓		N/A
	50PZ-19-04	840	51.03	57.88	✓		✓		N/A
4	G6M-02-03X	739	56.68	104.42		2/2	✓	DT	58.15
	G6M-02-04X	745	58.62	107.78	✓		✓	DT	60.13
	G6M-02-13X	821	57.72	120.09		2/2	✓	DP	61.63
	G6M-06-01X	750	58.57	127.44		2/2	F	Injection cap stuck in pipe	
	G6M-13-02X	809	57.81	126.01		3/3	✓	DT	60.73
	G6M-97-28X	742	59.46	107.43	✓		✓	DT	62.43
5	50PZ-19-07	858	67.52	75.05	✓		✓		N/A
	31PZ-19-01	903	64.68	78.53	✓		✓	1" Rayer cover cracked.	66.89
	50PZ-19-05	1131	43.64	51.83	✓		✓		N/A
	50PZ-19-06	846	47.90	62.08		2/2	✓		N/A
	G6M-02-06X	BA							9.37
	G6M-02-07X	BA							10.23
	G6M-02-11X	1021	58.48	138.22	✓		✓	DP	61.97
	G6M-02-12X	1028	57.11	134.94	X		✓	DT Rayer ear broken	60.65
	G6M-03-08X	1042	53.38	140.28	✓		✓	DT	56.88
	G6M-03-09X	1031	53.67	141.43	✓		✓	DP	57.27
	G6M-03-10X	1046	60.53	126.25	✓		✓	DP	64.07

WBA p 2 of 2

DP = Dedicated Pump
DT = Dedicated Tubing

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
5	G6M-04-05X	1038	52.97	112.74	✓		✓	DP	56.48
	G6M-04-06X	1053	59.54	106.48	✓		✓	DP	63.27
	G6M-04-07X	1057	59.53	132.62	✓		✓	DP	63.14
	G6M-13-01X	938	61.17	137.20	✓		✓	DT	64.93
	G6M-13-04X	942	60.76	138.17	✓		✓	DT	64.25
	G6M-97-05B	930	63.18	137.98	✓		✓	DT	66.64
	MW-3	954	60.16	138.11	✓		✓	DP	64.12
	MW-7	958	59.38	135.27	✓		✓	DT	62.64
	XSA-12-95X	1104 1104	65.37	131.57			✓	DP	74.34
	G6M-18-01	1116	58.64	126.47		2/2	✓	DT	57.0
	G6M-18-02								62.2
	XSA-12-96X								69.57
	XSA-12-97X								74.28
XSA-12-98X								3.04	
31PZ-19-02S								N/A	
31PZ-19-02D								N/A	
Nashua River	G6M-04-08X								63.27
	G6M-04-14X								20.42
	NRSG-01								

BA

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
	G6M-04-03X								57.46
									57.90
	50PZ-19-02								60.88
	30PZ-19-02								64.65
	30PZ-19-03								64.25
	30PZ-19-04								57.70
3	G6M-03-07X								60.67
	G6M-04-02X								58.80
	G6M-04-04X								58.85
	G6M-13-03X								N/A
	50PZ-19-03								N/A
	50PZ-19-04								58.15
4	G6M-02-03X								60.13
	G6M-02-04X								61.63
	G6M-02-13X								
	G6M-06-01X								60.73
	G6M-13-02X								62.43
	G6M-97-28X								N/A
	50PZ-19-07								66.89
	31PZ-19-01								N/A
	50PZ-19-05								N/A
	50PZ-19-06								N/A
	G6M-02-06X	1028	5.30	66.68	Y	-	Y	Good, 2" PVC SW Tubing	9.37
	G6M-02-07X	1011	6.48	40.28	Y	-	Y	Good, 2" PVC SW Tubing	10.23
	G6M-02-11X								61.97
	G6M-02-12X								60.65
	G6M-03-08X								56.88
	G6M-03-09X								57.27
	G6M-03-10X								64.07

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
5	G6M-04-05X								56.48
	G6M-04-06X								63.27
	G6M-04-07X								63.14
	G6M-13-01X								64.93
	G6M-13-04X								64.25
	G6M-97-05B								66.64
	MW-3								64.12
	MW-7								62.64
	XSA-12-95X								74.34
	G6M-18-01								57.0
	G6M-18-02	1120	63.67	137.24	Y	-	Y	Good, 2" PVC S/U, tubing	62.2
	XSA-12-96X	1059	65.80	131.47	N	-	Y	Good, 1.5" steel S/U Ded. pump tubing	69.57
	XSA-12-97X	1047	66.38	132.65	N	-	Y	Good, 1.5" steel S/U Ded BP (microw)	74.28
	XSA-12-98X	1017	2.88	72.95	Y	-	Y	Good, 5/8" steel S/U Ded tubing	3.04
	31PZ-19-02S	1002	5.90	15.90	Y	-	Y	Good, 1" PVC S/U	N/A
31PZ-19-02D	1000	5.54	72.35	Y	-	Y	Good, 1" PVC S/U	N/A	
Nashua River	G6M-04-08X	0800	4.98	92.12	Y	-	Y	Good, 2" PVC S/U Tubing	63.27
	G6M-04-14X	0754	9.01	92.44	Y	-	Y	Good, 2" PVC S/U Tubing	20.42
	NRSG-01	0955	202	.	.	-	-		

S/U = Stickup
easy



Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - Area 3 Synoptic (PFAS RI)
 Field Team Member: BA
 Water Level Meter Model: Heron Sunny Dipper T

Date: 4/27/2020
 Weather: Rain, 37°F

Area	Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Historical DTW
AOC 20	MW-01A	0845	14.63	30.78	Y	-	Y	Good, 2" PVC Stickup	-
	MW-02A	0810	18.65	34.50	Y	-	Y	Good, 2" PVC Stickup	-
	MW-04	0744	9.25	24.72	Y	-	Y	Good, 2" PVC Stickup	-
	MW-06	0727	11.83	31.43	Y	-	Y	Good, 2" PVC Stickup	-
	MW-07	0718	22.65	37.78	Y	-	Y	Good, 2" PVC Stickup	-
	MW-WC1A	0820	5.35	20.58	Y	-	N	Good, 2" PVC Stickup	-
	MW-WC2	0830	7.56	21.80	Y	-	N	Good, 2" PVC Stickup	-
	PZ-1	0902	62.73	77.85	N	-	N	Good, 1" PVC Stickup	-
	PZ-2	0900	DRY	57.51	N	-	N	Good, 1" PVC Stickup	-
	PZ-5	0840	19.23	31.88	Y	-	N	Good, 1" PVC Stickup	-
	PZ-6	0735	17.94	22.68	Y	-	N	Good, 1" PVC Stickup	-
	WWTMW-02	0915	-	-	-	-	-	Well is grouted to ground surface w/in PVC	-
Nashua River	G6M-04-08X	0800	4.98	92.12	Y	-	Y	Good, 2" PVC Stickup, tubing	-
	NRSG-01	0955	2.02	-	-	-	-	Good, Flagged + labeled	-
	G6M-04-14X	0754	9.01	92.44	Y	-	Y	Good, 2" PVC Stickup, Tubing	-



APPENDIX C VERTICAL PROFILING FIELD SHEETS

Vertical Profile Field Sheets

AOC 20

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Peas Boring No.: 20VP-19-06 Date: 8/2/19
 Project No.: PTAS RT Drilling Co.: TDS
 Address: Apex 3 Driller: Alfred Allen Depth to Water: 61'
 Logger: VWL Drilling Method: DPT Pump type: water
 Total Boring Depth: 156' Drilling Equip: beoprobe 7822 (SP22) Tubing: HDPE
 Turbidimeter (model/serial number): Lanette 2020W 5083-5014 YSI (model/serial number): YSI 650XL 11810156

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
8/2 ✓ 63-67	0.18	1.0	16.47	7.21	1997	4.28	2.9	2280	1130	20VP-19-06-63-67	water
73-77	0.48	1.0	17.50	7.16	2031	3.97	3.7	2400	1310	20VP-19-06-73-77	water
83-87	0.78	1.0	17.31	7.21	2087	4.07	4.9	74,000	855	20VP-19-06-83-87	water
8/5 ✓ 93-97	1.08	2.0	17.87	7.30	2120	4.21	6.3	74,000	1130	20VP-19-06-93-97 ^{MS/MSD}	water
103-107	1.38	2.0	17.79	7.23	2160	4.09	7.1	74,000	1340	20VP-19-06-103-107	water
113-117	1.68	2.5	16.12	7.37	1917	1.39	-21.7	74,000	835	20VP-19-06-113-117	water
8/6 ✓ 123-127	1.98	3.0	17.07	7.29	1971	1.89	-41.6	74,000	1115	20VP-19-06-123-127	water
133-137	2.28	3.5	17.21	7.28	1987	1.80	-52.6	74,000	1145	20VP-19-06-133-137	water
8/7 ✓ 143-147	2.58	3.5	17.56	6.95	1893	1.40	-45.5	74,000	1130	20VP-19-06-143-147	water
8/8 ✓ 152-156	2.88	4.0	17.21	7.11	1837	1.59	-50.6	74,000	1000	20VP-19-06-152-156	water

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

★ Retest @ 156'



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devers PFAS RI	Boring No.: 20VP-19-07	Date: 7/25, 7/26, 7/29
Project No.: PFAS RI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: 63'
Logger: IGA/MM	Drilling Method: DPT	Pump type: water
Total Boring Depth: 157'	Drilling Equip: beoprobe 7822 (SP22)	Tubing: HDPE
Turbidimeter (model/serial number): Lymoche 2020VE 5083-5014	YSI (model/serial number): YSI 650XL 118100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7/25 63-67	0.12	2.0	19.48	8.13	1874	1.20	-46.6	74,000	1420	20VP-19-07-63-67	water
7/26 73-77	0.42	2.5	17.33	8.57	1624	1.04	-21.8	2263	0955	20VP-19-07-73-77	water
(MM) 83-87	0.72	3.25	19.24	8.55	1935	1.83	-37.7	886	1150	20VP-19-07-83-87	water
7/29 93-97	1.02	3.75	insufficient recharge for parameters					74,000	945	20VP-19-07-93-97	water
(MM) 103-107	1.32	4.25	20.96	7.01	1198	6.45	-22.2	74,000	1225	20VP-19-07-103-107	water
7/30 113-117	1.62	3.0	20.88	7.04	1862	9.70	-40.6	74,000	1125	20VP-19-07-113-117	water
123-127	1.92	3.0	21.12	7.19	1841	8.70	-38.1	74,000	1425/1430	20VP-19-07-123-127 / A3-VP-19-07-123-127	water
7/31 133-137	2.22	2.75	18.36	6.86	1797	3.94	-53.5	74,000	1250	20VP-19-07-133-137	water
8/1 143-147	2.52	3.0	17.97	6.99	1820	3.87	-61.1	74,000	845	20VP-19-07-143-147	water
153-157	2.82	3.0	18.91	6.87	1802	4.71	-58.7	74,000	1240	20VP-19-07-153-157 (very dark grey / heavy silt)	water

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (62)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: (53-57) Dry
 ☆ after 107' interval (hole collapsed) offset and re-billed
 ☆ after 147' interval (hole collapsed) offset and re-billed.

157' assumed refusal (discussed w/Russ)



AOC 21

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: DIVERS	Boring No.: 21VP-19-01	Date: 7/23/19
Project No.: PFAS RI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: 21'
Logger: VWA	Drilling Method: DPT	Pump type: geotech/water
Total Boring Depth: 95'	Drilling Equip: 7822 SP22	Tubing: HDPE
Turbidimeter (model/serial number): Lanette 20 LOVE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
23-27	0.18	1.0	16.20	7.89	2267	0.69	-31.7	42-31	840	21VP-19-01-23-27	geotech
33-37	0.48	1.5	16.22	7.70	2161	1.49	-17.0	121	930	21VP-19-01-33-37	geotech
43-47	0.78	1.5	16.30	7.73	2179	1.37	-16.0	237	1050	21VP-19-01-43-47	geotech
53-57	1.08	1.5	16.21	7.70	2192	1.20	-17.3	490	1200/1205	21VP-19-01-53-57 / A3-VP-D	geotech
63-67	1.38	2.0	16.33	7.63	2163	1.03	-15.2	521	1315	21VP-19-01-63-67	geotech
73-77	1.68	2.0	16.30	7.50	2130	1.60	-21.7	74,000	1440	21VP-19-01-73-77	geotech
83-87	1.98	2.5	16.71	7.43	2156	2.07	-18.6	74,000	1035	21VP-19-01-83-87	geotech
91-95	2.28	3.0	16.89	7.60	2173	2.31	-16.0	74,000	1425	21VP-19-01-91-95	geotech

7/23

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X)
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (X)

Notes:

(13-17) Dry
 95' refusal



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 21VP-19-02	Date: 7/24/19
Project No.: 1082	Drilling Co.: TDS	
Address: AOC 21	Driller: Jay Jumanville	Depth to Water: 13.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic/waterco
Total Boring Depth:	Drilling Equip: Geoprobe 6712 DT/SP22 tooling	Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020.ve 1828-0412	YSI (model/serial number): 650 MDS/4268	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
13-17	0.12	0.50	16.44	5.72	284	6.90	168.2	1254	1215	21VP-19-02-13-17	peristaltic
23-27	0.42	0.75	17.08	5.68	837	6.35	156.5	6.0	1330	21VP-19-02-23-27	
33-37	0.72	1.00	18.35	5.53	1747	5.14	143.3	1345	1431	21VP-19-02-33-37	
43-47	1.02	1.50	17.54	6.44	1923	4.58	121.8	>4000	842	21VP-19-02-43-47	
53-57	1.32	2.00	18.31	6.64	1692	4.18	-25.9	>4000	1000	21VP-19-02-53-57	ms/msd (waterco)
63-67	1.62	2.25	20.23	7.19	1745	2.02	-191.4	>4000	1130	21VP-19-02-63-67	A3-VP-DUP-R2-072519 @ 1135
73-77	1.92	2.50	18.21	6.95	1838	4.29	-123.8	>4000	1358	21VP-19-02-73-77	
83-87	2.22	2.75	19.4	7.10	1674	1.46	-185.8	>4000	902	21VP-19-02-83-87	
93-97	2.52	3.00	21.5	7.09	1688	6.29	-84.5	>4000	1127	21VP-19-02-93-97	
103-107	2.82	3.25	21.5	7.31	1794	1.49	-193.2	>4000	1330	21VP-19-02-103-107	
Post Cal. Check Variance Observed (Y/N):											

Notes: SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot



AOC 30

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-04	Date: 7/9/19
Project No.: PEAS RI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~68'
Logger: VBA	Drilling Method: DPT	Pump type: w/tern
Total Boring Depth: 135'	Drilling Equip: bio probe 7822 DT (SP22)	Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020-E 5983-504	YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
73-77	0.27	1.5	15.59	7.52	61	9.97	59.8	74,000	950/955	30VP-19-04-73-77/A3-VP-DVP-RI-7/9/19	
79 83-87	0.57	1.5	18.86	6.03	64	5.83	51.2	74,000	1235	30VP-19-04-83-87	water
93-97	0.87	1.5	18.69	6.19	71	4.21	69.7	74,000	1430	30VP-19-04-93-97	water
710 103-107	1.17	3.0	14.93	7.09	60	3.42	36.7	74,000	1025*	30VP-19-04-103-107	water SP22
113-117	1.47	2.0	15.89	7.07	58	3.37	35.1	74,000	1340	30VP-19-04-113-117	water
714 123-127	1.77	2.0	16.97	7.00	56	3.67	41.0	74,000	955	30VP-19-04-123-127	water
131-135	2.07	2.5	16.99	7.18	55	3.79	46.1	74,000	1335	30VP-19-04-131-135	water

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot X

Notes:

* Refusal @ 135'



AOC 31

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Page (1 of 2) ~~1~~

Project: Devers	Boring No.: 31VP-19-01	Date: 9/3/19
Project No.: PEAS RI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: 62'
Logger: VGA/MAM	Drilling Method: DPT	Pump type: water
Total Boring Depth: 145.5	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: FIDPE
Turbidimeter (model/serial number): LaMotte 2020WE 5087-5014	YSI (model/serial number): YSI 630XL 118100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
63-67	0.15	2.0	15.51	7.10	106	8.94	83.0	840	935	31VP-19-01-63-67	water
73-77	0.45	1.5	14.61	6.55	101	7.56	75.6	690	1105	31VP-19-01-73-77	water
83-87	0.75	2.0	14.95	6.17	114	5.31	82.3	74,000	1240	31VP-19-01-83-87	water
93-97	1.05	2.0	15.07	6.18	121	5.07	91.6	74,000	1445	31VP-19-01-93-97	water
103-107	1.35	2.0	15.20	6.30	127	4.89	93.7	74,000	850	31VP-19-01-103-107	water
113-117	1.65	2.5	15.17	6.27	130	4.47	87.9	74,000	1100	31VP-19-01-113-117	*MS/MSD water
123-127	1.95	2.5	15.09	6.24	123	4.59	89.1	74,000	1300	31VP-19-01-123-127	water
133-137	2.25	* minimal recharge / direct sample							1035	31VP-19-01-133-137	water
143-147	2.55	3.0	15.49	6.39	149	5.07	99.9	74,000	1350	31VP-19-01-143-147	(A3-VP-DVP RI-9519 @ 135')
153-157	2.85	3.0	15.66	6.66	169	2.90	83.7	74,000	1020	31VP-19-01-153-157	water

9/3
9/4
9/5
9/16

Post Cal. Check Variance Observed (Y/N):

Notes: SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (62)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (X)

hole collapsed @ ~ 145/150'
will offset and re-drill tomorrow



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: FT DEWENZ RI	Boring No.: 31VP-19-04	Date: 8-5-14
Project No.: 1082	Drilling Co.: TDS	
Address: ADC 34 - Airfield	Driller: Jay Jumanville	Depth to Water: 69.00' bgs 57.16' (PK)
Logger: C Harbuckle/D. Kortjohn	Drilling Method: OPT 6712	Pump type: hntera
Total Boring Depth: 132 ft. bgs (refusal)	Drilling Equip: Geo Probe	Tubing: ITOPE
Turbidimeter (model/serial number): LAMORTE 2000 SN-5083	YSI (model/serial number): YSI DSS/18L 100145	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µg/cm³)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
69-73	0.5	0.5	17.4	6.88	0.164	5.21	7.40	633.4	10:30	31VP-19-04-69-73	
79-83	0.5	1.5	21.7	6.71	0.168	5.23	-45.9	824.5	12:15	31VP-19-04-79-83	
89-93	0.5	2	21.6	6.70	0.155	3.29	-68.6	2350.7	14:20	31VP-19-04-89-93	
99-103	1.38	2.25	23.0	6.80	0.088	7.29	7.3	2354	9:50	31VP-19-04-99-103	
109-113	1.68	2.50	19.0	6.68	0.092	6.77	-7.6	>4000	12:58	31VP-19-04-109-113	A3-VP-DUP-R2-080619 @ 1302
119-123	1.98	2.50	20.1	6.34	0.149	7.01	17.6	>4000	13:20	31VP-19-04-119-123	
128-132	2.25	2.50	21.7	7.39	0.222	1.18	-197.8	>4000	11:30	31VP-19-04-128-132	

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
~~Driller went too deep on first boring. First interval was planned for 59-63' but had to adjust to 69-73. Driller will stop off to collect sample from 59-63' (PK)~~



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devos	Boring No.: 31VP-19-06	Date: 9/24/19
Project No.: PFAS RI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~12'
Logger: WAT	Drilling Method: DPI	Pump type: geotech
Total Boring Depth: 87'	Drilling Equip: Geo Probe 7822 (SP22)	Tubing: HDPE
Turbidimeter (model/serial number): Lynette 2014E 6083-5014	YSI (model/serial number): YSI 650XL 118109186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
13-17	0.15	0.5	12.11	7.58	292	9.77	37.7	1282	1030 ^{hrs}	31VP-19-06-13-17 / AS-VP-DVT-RI-19-06	geotech
23-27	0.45	1.0	11.79	6.07	398	9.18	31.9	659	1120	31VP-19-06-23-27	geotech
33-37	0.75	1.0	11.80	6.13	420	9.00	30.6	437	1210	31VP-19-06-33-37	geotech
43-47	1.05	1.5	11.97	6.20	437	8.29	28.9	35.37	1350 ^{hrs}	31VP-19-06-43-47	*MS/MSD geotech
53-57	1.35	2.0	10.88	7.09	390	8.07	33.4	12.71	905	31VP-19-06-53-57	geotech
63-67	1.65	2.5	11.02	6.49	370	7.93	34.9	10.90	1040	31VP-19-06-63-67	geotech
73-77	1.95	2.5	11.18	6.66	347	7.80	37.8	259	1305	31VP-19-06-73-77	geotech
83-87	2.25	2.5	11.09	6.50	387	6.49	47.1	1247	1045	31VP-19-06-83-87	geotech

9/24
9/25
9/26

Post Cal. Check Variance Observed (Y/N):
 Notes: SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

* 87' refusal



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devos	Boring No.: 31VP-19-07	Date: 9/26/19
Project No.: PFAS RI	Drilling Co.: TDS	
Address: A103	Driller: Alfred Allen	Depth to Water: ~10'
Logger: VWA	Drilling Method: DPT	Pump type: geotech
Total Boring Depth: 92'	Drilling Equip: beeprobl 7822 (SP22)	Tubing: HDPE
Turbidimeter (model/serial number): LAMORTE LAMORTE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
8-12	0.06	2.5	14.22	7.16	234	5.69	17.2	9.15	1350	31VP-19-07-8-12	geotech
18-22	0.36	2.0	10.65	7.05	59	8.70	12.5	139	855	31VP-19-07-18-22	geotech
28-32	0.66	1.5	11.03	7.11	119	6.90	11.6	19.27	955	31VP-19-07-28-32	geotech
38-42	0.96	1.5	11.20	7.06	139	6.80	19.7	7.69	1115	31VP-19-07-38-42	geotech
48-52	1.26	2.0	10.71	6.39	436	3.12	45.9	28.65	905	31VP-19-07-48-52	geotech
58-62	1.56	2.0	10.90	6.66	378	3.97	38.6	23.90	1025	31VP-19-07-58-62	geotech
68-72	1.86	2.0	11.07	6.70	380	3.20	42.1	19.20	1155	31VP-19-07-68-72	geotech
78-82	2.16	2.5	10.69	6.80	399	4.11	29.7	23.04	830/835	31VP-19-07-78-82 / A3	VP-DUP-RI-9019
88-92	2.46	3.0	10.55	6.93	327	4.90	31.7	74.000	1045	31VP-19-07-88-92	geotech

9/26/19
A103
9/30
19/1

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Retest @ 92'



EB1055

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: <u>Devers</u>	Boring No.: <u>31VP-19-08</u>	Date: <u>10/2/19</u>
Project No.: <u>PEAS RE</u>	Drilling Co.: <u>TDS</u>	
Address: <u>Area 3</u>	Driller: <u>Alfred Allen</u>	Depth to Water: <u>19' ^{open hole}</u>
Logger: <u>WGA + Kristen Escer</u>	Drilling Method: <u>DPT</u>	Pump type: <u>geotech</u>
Total Boring Depth: <u>90.5' bgs</u>	Drilling Equip: <u>GeoProbe 7822 (SP22)</u>	Tubing: <u>HDPE</u>
Turbidimeter (model/serial number): <u>Lamotte 2310E 5083 5014</u>	YSI (model/serial number): <u>YSI 650XL 11B100186</u>	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
13-17	0.24	2.0	14.69	6.88	436	1.76	46.4	1232	1150	31VP-19-08-13-17	geotech
23-27	0.54	1.5	14.06	6.39	662	1.34	56.6	1400	1320	31VP-19-08-23-27	geotech
33-37	0.84	1.5	13.97	6.57	1200	2.43	58.9	74000	1405	31VP-19-08-33-37	geotech
43-47	1.14	2.0	11.90	7.30	1225	1.40	21.9	29.68	930	31VP-19-08-43-47	geotech
53-57	1.44	2.5	12.09	6.89	1460	3.07	70.3	19.73	1100	31VP-19-08-53-57	geotech
63-67	1.74	2.5	11.79	6.80	1396	2.89	91.6	1130	1235	31VP-19-08-63-67	geotech
73-77	2.04	2.5	12.2	5.02	1.151	3.70	196.2	9.80	0930	31VP-19-08-73-77	
83-87	2.34	2.5	12.4	7.54	1.1570	2.97	118.4	15.70	1140	31VP-19-08-83-87	

10/2
10/3
10/4

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X)

SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (X)

Notes: Hit refusal @ 90.5' bgs

SP16 casing inside 22 casing



AOC 50

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: DeWens PFAS RI	Boring No.: 50 VP-19-01	Date: 8/28/19 + 8/29/19
Project No.: 1082	Drilling Co.: TDS	
Address: AOC 50	Driller: Jay Jomonville	Depth to Water: 10.0' bgs
Logger: Kristen Ether	Drilling Method: DPT	Pump type: Peristaltic / Waterra
Total Boring Depth: 72' bgs	Drilling Equip: Geoprobe 6712 DT / SP22 tooling	Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020w2 1828-0412	YSI (model/serial number): Pro DSS/18L100145	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ⁹)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
9-13	0.15	0.25	20.3	5.67	0.223	3.05	32.1	1233	1028	50VP-19-01-09-13	Field dup taken
19-23	0.45	0.60	17.10	5.78	0.760	2.60	5.3	overrange >4000	1133	50VP-19-01-19-23	
9-13	0.15	0.25	20.3	5.67	0.223	3.05	32.1	1233	1033	A3-VP-DUP-R2-082319	Field Dup for 50VP-19-01-09-13
29-33	0.75	1.00	19.5	5.50	0.459	3.44	106.5	15.58	1300	50VP-19-01-29-33	
39-43	1.05	1.10	17.8	5.71	0.189	3.01	67.4	618	1419	50VP-19-01-39-43	
49-53	1.35	1.50	20.1	5.27	0.487	2.80	11.2	684	0920	50VP-19-01-49-53	
59-63	1.65	1.75	16.2	5.51	1.372	2.63	87.4	3433	1150	50VP-19-01-59-63	Waterra
69-72	1.95	2.10	19.0	6.45	1.511	2.62	52.7	3161	1348	50VP-19-01-69-72	Waterra Hit refusal @ 72' bgs

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot x2
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Field Dup @ 9-13' bgs
 Hit refusal @ 72 FT bgs



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: <u>REVEN'S PFAS RI</u>	Boring No.: <u>50VP-19-02</u>	Date: <u>8/26/19</u> <u>+8/27/19</u>
Project No.: <u>1082</u>	Drilling Co.: <u>TDS</u>	
Address: <u>AOC 50</u>	Driller: <u>Jay Jumanville</u>	Depth to Water: <u>10.2 ft bgs</u>
Logger: <u>Kristen Eller</u>	Drilling Method: <u>DPT</u>	Pump type: <u>peristaltic Waterra</u>
Total Boring Depth: <u>58' bgs</u>	Drilling Equip: <u>Geoprobe 6712/SP22 tooling</u>	Tubing: <u>HDPE</u>
Turbidimeter (model/serial number): <u>La Motte 2020 w2 1823-0412</u>	YSI (model/serial number): <u>Pro DFF/182100145</u>	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
9-13	0.15	0.4	18.1	5.08	0.132	3.22	42.2	1426	1238	50VP-19-02-09-13	
19-23	0.45	0.6	16.7	5.76	0.120	4.83	57.8	overrange 74000	1358	50VP-19-02-19-23	
29-33	0.75	1.0	11.7	5.55	0.119	6.52	64.5	3060	0841	50VP-19-02-29-33	
39-43	1.05	1.2	14.4	5.91	0.076	5.16	52.1	730	1014	50VP-19-02-39-43	
49-53	1.35	1.5	15.7	6.31	0.608	3.03	-8.6	643	1205	50VP-19-02-49-53	
54-63	1.65									50VP-19-02-54-63	MS/MSD (K)
54-58	1.5	1.6	20.6	7.01	0.689	4.31	3.4	overrange 74000	1430	50VP-19-02-54-58	MS/MSD Refusal @ 58' bgs Waterra

8/27
8/27

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot x 2
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 58' bgs
MS/MDS taken at 54-58' bgs



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devers	Boring No.: 50VP-19-05	Date: 10/18/19
Project No.: PFAS RE	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~61'
Logger: WA	Drilling Method: DPT	Pump type: 50/109
Total Boring Depth: 107'	Drilling Equip: beoprobe 7822 (SP22)	Tubing: PIDPE
Turbidimeter (model/serial number): 69MTRP 2020MIS 5083-5014	YSI (model/serial number): YSI 650 XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ⁹)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
63-67	0.18	1.5	13.40	5.99	552	4.23	32.9	1902	900	50VP-19-05-63-67	MS/MSD water
73-77	0.48	1.5	13.26	6.13	1524	5.72	69.0	74,000	1040/1045	50VP-19-05-73-77/A3-VP-DVP-RI-101817	
83-87	0.78	1.5	13.19	6.07	1769	4.97	83.1	74,000	1330	50VP-19-05-83-87	water
93-97	1.08	2.5	13.07	6.11	1470	4.21	99.7	74,000	840	50VP-19-05-93-97	water
103-107	1.38	2.5	13.29	6.18	1639	3.97	126.1	74,000	1040	50VP-19-05-103-107	water

10/18

Post Cal. Check Variance Observed (Y/N):

Notes: SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (X)

~~Tool~~ tool bit deflected / refusal after 107' sample (107' Final depth)
~~SP-16~~ inside SP-22 casing



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Dennis Boring No.: 50VP-19-07 Date: 10/7/19, 10/8/19
 Project No.: PFAS RI Drilling Co.: TDS
 Address: Area 3 Driller: Alfred Allyn Depth to Water: ~ 62'
 Logger: WA/MM Drilling Method: DPT Pump type: water
 Total Boring Depth: 164' Drilling Equip: Geoquip 7822 (SP22) Tubing: MIDPE
 Turbidimeter (model/serial number): Lynite 2020V2 5083-5014 YSI (model/serial number): YSI 650 XL 11800186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
10/7/19 63-67	0.15	1.5	15.90	7.28	111	9.78	77.5	74,000	1040	50VP-19-07-63-67	water
73-77	0.45	3.0	14.14	6.54	242	9.30	76.0	74,000	1205	50VP-19-07-73-77	water
83-87	0.75	2.0	14.30	6.67	269	8.70	79.6	74,000	1330	50VP-19-07-83-87	water
10/8/19 93-97	1.05	2.0 1.25	minimal		recharge	e. Direct Sample			1050	50VP-19-07-93-97	water
103-107	1.35	2.00	14.39	6.84	296	6.60	50.0	74,000	1410	50VP-19-07-103-107	water
10/9 113-117	1.65	3.0	14.11	6.63	238	7.80	67.1	74,000	945/1000	50VP-19-07-113-117 / A3-VP-DUP-RI-109/19	water
123-127	1.95	3.0	14.26	7.11	299	7.30	74.1	74,000	1300	50VP-19-07-123-127	water
10/10 133-137	2.25	3.0	14.49	6.79	320	6.97	81.7	74,000	1100	50VP-19-07-133-137	water
143-147	2.55	3.0	14.11	6.60	301	6.77	79.2	74,000	1410/1000	50VP-19-07-143-147	water
10/14 153-157	2.85	3.0	14.50	6.80	389	7.03	91.6	74,000	1125	50VP-19-07-153-157 / A3-VP-DUP-RI-1010/19	water

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

★ deflection @ 155' unable to sample. will offset and try new hole to 157' next day

★ SP16 inside SP22 casing



9/11

160-164	3.15	2.0	14.71	6.97	421	6.50	102.6	74,000	955/1000	50VP-19-07-160-164 / A3-VP-DUP-RI-1015/19	
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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: DAMS	Boring No.: 50VP-19-08	Date: 9/16/19 9/16/19
Project No.: PEAS RI	Drilling Co.: TPS	
Address: Area 3	Driller: Jay (9/10 mnt)	Depth to Water: 8'
Logger: VBA	Drilling Method: DPT 67160	Pump type: geotech
Total Boring Depth: 83'	Drilling Equip: broport 67120T (SP22)	Tubing: HDPE
Turbidimeter (model/serial number): Lanette 2020WE 5083-5014	YSI (model/serial number): YSI 650 XL 118100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
9-13	0.15	1.0	12.79	6.97	191	1.97	-56.6	29.08	830	50VP-19-08-9-13	geotech
19-23	0.45	1.0	12.38	5.69	1544	2.10	1.2	64.3	915	50VP-19-08-19-23	geotech
29-33	0.75	1.0	13.05	5.54	1784	3.12	-2.0	37.90	1010	50VP-19-08-29-33	geotech
39-43	1.05	1.5	13.68	6.73	1788	3.53	5.1	29.68	1115	50VP-19-08-39-43	geotech
49-53	1.35	2.0	14.27	7.08	1828	3.28	7.0	12.00	1230	50VP-19-08-49-53	geotech
59-63	1.65	2.0	14.31	7.00	1839	3.17	6.9	28.60	1345	50VP-19-08-59-63	geotech
69-73	1.95	2.0	14.01	7.09	1721	3.01	7.9	74.000	935	50VP-19-08-69-73	geotech
79-83	2.25	2.5	13.92	7.11	1703	2.96	8.1	74.000	1135	50VP-19-08-79-83	geotech

9/6
9/10

Post Cal. Check Variance Observed (Y/N):
 SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot *2
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot *

Notes: **Stopper @ 83' due to nearby 80-90' screened well**



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 50VP-19-09-	Date: 8/16/19
Project No.: PFAJRI	Drilling Co.: TDS	
Address: Area 3	Driller: Alfred Allen	Depth to Water: 92'
Logger: WGA	Drilling Method: DPT	Pump type: water
Total Boring Depth: 107.5'	Drilling Equip: geo probe 7822 (SP22)	Tubing: MIDPE
Turbidimeter (model/serial number): LaMotte 2020P 5083-5014	YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ^o)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks	
8/16 53-57	0.45	1.5	15.32	7.83	77	1.60	16.9	2200	1135/1140	50VP-19-09-53-57/A3-VP	water	
8/19 63-67	0.75	1.5	13.67	6.94	70	3.97	17.3	1930	855	50VP-19-09-63-67	water	
73-77	1.05	2.5	14.97	7.03	68	2.96	18.0	74,000	1030	50VP-19-09-73-77	water	
83-87	1.35	3.0	14.87	6.00	64	1.21	45.3	74,000	1220	50VP-19-09-83-87	water	
8/19 93-97	—	none	no water recovery, extremely fine sediment clogging screen / unable to sample									water
103-107	1.95	2.0	15.21	6.31	63	1.87	59.0	74,000	1210	50VP-19-09-103-107	water	
43-47	0.15	1.5	6.07	7.09	84	2.63	12.9	384	1035	50VP-19-09-43-47	water	

Post Cal. Check Variance Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (X)

Notes:

• offset for 43-47' interval
★ Refusal @ 107.5'



1305

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: <u>Devers</u>	Boring No.: <u>50VP-19-11</u>	Date: <u>8/23/19 - 8/26/19</u>
Project No.: <u>PEAS RI</u>	Drilling Co.: <u>TDS</u>	<u>8/27/19 - 8/28/19</u>
Address: <u>Area 3</u>	Driller: <u>Alfred Allen</u>	Depth to Water: <u>~41'</u>
Logger: <u>WHA / CV</u>	Drilling Method: <u>DPT</u>	Pump type: <u>water</u>
Total Boring Depth: <u>115' 136S</u>	Drilling Equip: <u>Geo probe 7822 (SP22)</u>	Tubing: <u>HDPPE</u>
Turbidimeter (model/serial number): <u>Lanotech 2020E 9081-1014</u>	YSI (model/serial number): <u>YSI 650XL 11B100186</u>	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
<u>8/23</u> 43-47	<u>0.18</u>	<u>2.0</u>	<u>17.68</u>	<u>8.01</u>	<u>48</u>	<u>9.78</u>	<u>15.8</u>	<u>2046</u>	<u>1235</u>	<u>50VP-19-11-43-47</u>	<u>water</u>
<u>8/26</u> 53-57	<u>0.50</u>	<u>2.5</u>	<u>13.33</u>	<u>8.02</u>	<u>42</u>	<u>9.88</u>	<u>63.8</u>	<u>(overrange) +++</u>	<u>0930</u>	<u>50VP-19-11-53-57</u>	<u>brown/opaque</u>
63-67	<u>0.82</u>	<u>2.5</u>	<u>15.52</u>	<u>5.68</u>	<u>53.0</u>	<u>7.87</u>	<u>53.0</u>	<u>(overrange) +++</u>	<u>1125</u>	<u>50VP-19-11-63-67</u>	<u>gray/brown/opaque</u>
73-77	<u>1.14</u>	<u>2.5</u>	<u>16.62</u>	<u>5.61</u>	<u>44</u>	<u>3.32</u>	<u>38.0</u>	<u>(overrange) +++</u>	<u>1525</u>	<u>50VP-19-11-73-77</u>	<u>gray/brown/opaque</u>
<u>8/27</u> 83-87	<u>1.46</u>	<u>2.5</u>	<u>14.12</u>	<u>8.20</u>	<u>40</u>	<u>9.91</u>	<u>76.2</u>	<u>(overrange) +++</u>	<u>0940</u>	<u>50VP-19-11-83-87</u>	<u>dark brown/opaque</u>
93-97	<u>1.78</u>	<u>3.0</u>	<u>15.40</u>	<u>6.57</u>	<u>44</u>	<u>9.63</u>	<u>42.1</u>	<u>(overrange) +++</u>	<u>1220</u>	<u>50VP-19-11-93-97</u>	<u>dark brown/opaque</u>
<u>8/28</u> 103-107	<u>2.10</u>	<u>3.0</u>	<u>15.91</u>	<u>7.34</u>	<u>145</u>	<u>1.63</u>	<u>47.6</u>	<u>(overrange) +++</u>	<u>0945</u>	<u>50VP-19-11-103-107</u>	<u>light gray/brown/opaque</u>
111-115	<u>2.36</u>	<u>3.5</u>	<u>18.26</u>	<u>7.61</u>	<u>156</u>	<u>4.94</u>	<u>24.1</u>	<u>(overrange) +++</u>	<u>1230</u>	<u>50VP-19-11-111-115</u>	<u>light gray/white</u>

Post Cal. Check Variance Observed (Y/N):

Notes: 8/28/19: hit refusal @ 115' 136S

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
 SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: DWERS PNASRI	Boring No.: 50VP-17-12	Date: 8/19/19
Project No.: PNASRI	Drilling Co.: TDS	
Address: Acey 3	Driller: Alfred Allen	Depth to Water: 452
Logger: KLA	Drilling Method: DPT	Pump type: water
Total Boring Depth: 97.5'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: MDPE
Turbidimeter (model/serial number): Lanette 2020VE 5283-5014	YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
53-57	0.15	0.75	17.29	7.38	80	9.80	21.8	74,000	1135	50VP-19-12-53-57	water
63-67	0.45	1.5	16.44	6.26	66	9.70	33.0	74,000	1335	50VP-19-12-63-67	water
73-77	0.75	1.5	15.76	6.88	92	8.54	26.9	74,000	900	50VP-19-12-73-77	water
83-87	1.05	2.5	16.07	6.73	94	8.37	25.1	74,000	1145	50VP-19-12-83-87	water
93-97	1.35	2.5	16.47	6.86	99	8.19	23.1	74,000	1340/1145	50VP-19-12-93-97/A3-VP-DUP-R1-812M	

8/12

Post Cal. Check Variance Observed (Y/N):

Notes: **SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (62)**
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

★ Refusal @ 97.5'



KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RT	Boring No.: 50VP-19-13	Date: 8/12/19
Project No.: 1082	Drilling Co.: TDS	
Address: AOC50	Driller: Jay Jomonville	Depth to Water: 69.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: waterco
Total Boring Depth: 181 ft. bgs (refusal)	Drilling Equip: Geoprobe 6712PT / SP22 tooling	Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): Pro DSS / 17401163 (2B) 18L100145	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
69-73	0.15	0.50	17.1	5.96	49	8.13	69.8	2454	849	50VP-19-13-69-73	
79-83	0.45	1.00	19.7	5.94	40	8.49	113.5	3125	1120	50VP-19-13-79-83	
89-93	0.75	1.25	19.1	5.83	87	7.72	100.0	919	1342	50VP-19-13-89-93	
99-103	1.05	1.50	18.4	6.12	191	7.85	85.8	691	917	50VP-19-13-99-103	
109-113	1.35	1.50	19.2	6.84	328	3.96	27.0 72	>4000	1145	50VP-19-13-109-113	
119-123	1.65	2.00	19.1	7.09	321	1.80	-76.2	>4000	1400	50VP-19-13-119-123	
129-133	1.95	2.25	18.3	7.23	285	4.51	54.7	2411	940	50VP-19-13-129-133	A3-VP-DUP-A2 081519 @ 945
139-143	2.25	2.50	18.9	7.09	256	2.52	-89.2	>4000	1350	50VP-19-13-139-143	MS/MSO
154-158	2.70	3.00	19.8	7.32	355	2.25	-37.7	>4000	1223	50VP-19-13-154-158	

Post Cal. Check Variance Observed (Y/N):

Notes: SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot



**KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log**

Project: Devens - AOC 50 Western Plume Delineation	Boring No.: G6M-18- 01	Date: 10/24/2018
Project No.: 1082-0005-005	Drilling Co.: Cascade	
Address: Former Moore Army Airfield, Devens MA	Driller: Christopher Aldrich	Depth to Water: 57 ft BGS
Logger: C.V.	Drilling Method: Direct Push	Pump type: Hydrolift II Waterra
Total Boring Depth: 104 ft BGS	Drilling Equip: Geoprobe Rig 7822, 0.625 and 1.5 inch diameter tooling; stainless steel screen	Tubing: 3/8x1/2 inch HDPE
Turbidimeter (model/serial number): 5086 - 5014	YSI (model/serial number): 0642823AL	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
60-64	0.22	0.50	11.98	6.55	93	6.02	0.4	1567	0830	G6M-18-01-GW-60-64	60'-64' DTW: 57ft
70-74	0.52	1.00	12.38	6.07	87	5.05	21.7	2935	0945	G6M-18-01-GW-70-74	70'-74' DTW: 57ft
80-84	0.22 0.44	1.50	11.28	5.97	145	4.50	124.4	2385	1115	G6M-18-01-GW-80-84	^{FEB} 80'-84' DTW: 61ft
90-94	1.06	2.00	12.19	6.11	76	5.27	60.0	overrange ^{###}	1410	G6M-18-01-GW-90-94	90'-94' DTW: 61ft
100-104	1.38	2.50	12.28	6.33	157	4.25	326	overrange ^{###}	1545	G6M-18-01-GW-100-104	^{FD} 100'-104' DTW: 61ft

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot

SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

(double ~~the~~ of 2 well volumes)
purging a bit extra as it is extremely silty and a slow flow rate would allow silt to partially settle and clog tubing/valve.



KOMAN Government Solutions, LLC
293 Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

~~3 PFAS~~
~~9408~~
~~3 VOC 9408 on COL~~

Project: Devens - AOC 50 Western Plume Delineation	Boring No.: G6M-18-02	Date: 10/22/2018, 10/23/18
Project No.: 1082-0005-005	Drilling Co.: Cascade	
Address: Former Moore Army Airfield, Devens MA	Driller: Christopher Aldrich	Depth to Water: 62.6
Logger: L.K. C.V	Drilling Method: Direct Push	Pump type: Hydrolift II Waterra
Total Boring Depth: 128 ft BGS	Drilling Equip: Geoprobe Rig 7822/0.625 and 1.5 inch diameter tooling; stainless steel screen	Tubing: 3/8x1/2 inch HDPE
Turbidimeter (model/serial number):	YSI (model/serial number): 0642823AL	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm ²)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
60-64	NA	-	-	-	-	-	-	-	1100	18-02-60-64	DTW: 62.6
64-68	0.96 gal	1.90 gal	14.63	6.34	80	7.32	137	785	1253	18-02-64-68	DTW: 63.8
74-78	0.80 gal	1.0 gal	14.58	6.27	116	4.19	-8.3	3025	1430	18-02-74-78	DTW: 63.9 TB Sample
84-88	0.82 gal	1.0 gal	14.24	6.16	308	6.28	107.6	1718	1530	18-02-84-88	DTW: 64.0
94-98	1.14 gal	2.0 gal	10.35	5.94	390	6.12	71.7	625	0915	18-02-94-98	DTW: 62.0 MS/MSD
104-108	1.46 gal	2.0 gal	12.84	6.21	687	6.22	64.7	overrange: 1044	1045	18-02-104-108	DTW: 62.0 FRB
114-118	1.78 gal	2.5 gal	12.69	6.20	838	4.54	30.9	3322	1205	18-02-114-118	DTW: 62.0 FD
124-128	2.10 gal	3.0 gal	12.91	6.42	705	5.20	17.2	3025	1445	18-02-124-128	DTW: 62.0 EB & Retained
VANVOS											

10/22/18
10/23/18

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: 60-64 DTW: 62.6 DTB: 64.1 } not enough water to extract; 2 attempts
 - overpurged 64-68 74-78: thought we were to make sure sand/silt gets purged (and the rest)

10/23/18 sand clogging lines, took extra time to sample



Calibration Sheets



Field Instrument Calibration Log

Date: 10/22/18 **Weather:** Sunny
Project/Site Name: AOC 50 Vertical Profiling **Instrument:** YSI 556 MPS
Calibrated By: Chris Vignola **Serial Number:** 0642823AL

Parameters	Solution Expiration Date	Morning Calibration		Cal. Temperature °C	Afternoon Calibration		Cal. Temperature °C	Post Cal. Criteria
		Time	Value		Time	Value		
Specific Conductivity (1.413 μS/cm ^o)	12/31/2019	<u>0850</u>	1,413 1,413 μS/cm ^o	19.23	1,504 1,413 μS/cm ^o	1700	18.56	±10 μS/cm
pH (7)	02/29/2020		6.85	19.18	7.13	7.00	18.19	± 0.3 pH *
pH (4)	09/30/2019		3.92	19.21	4.00	4.00	17.85	± 0.3 pH *
pH (10)	12/31/2019		10.04	19.19	9.99	10.00	18.65	± 0.3 pH *
ORP (240 mv)	10/31/2022		242.8	19.11	242.2	240.0	18.27	±10 mv
Dissolved Oxygen (%)	-		102.4	-	87.6	100	-	-
Dissolved Oxygen (mg/L)	-		10.1	-	8.92	8.99	-	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-		768	-	768	768	-	-

Notes: * pH Unit with pH 7 Buffer **Variance Noted:**

Signature:  **Date:** 10/22/18



Field Instrument Calibration Log

Date: 10/23/18

Weather: 45° F Partly Cloudy, afternoon rain


Project/Site Name: AOC 50 Vertical Profiling

Instrument: YSI 536 MPS

Calibrated By: Chris Vignola

Serial Number: 0642823AL

Parameters	Solution Expiration Date	Morning Calibration		Cal. Temperature °C	Afternoon Calibration		Cal. Temperature °C	Post Cal. Criteria
		Time <u>0545</u>			Time <u>1730</u>			
Specific Conductivity (1.413 μS/cm°)	12/31/2018	1,416 μS/cm°	1,413 μS/cm°	20.67	1,418 μS/cm°	1,413 μS/cm°	14.35	±10 μS/cm
pH (7)	02/29/2020	7.03	7.00	20.65	7.05	7.00	14.67	± 0.3 pH *
pH (4)	09/30/2019	3.99	4.00	20.56	3.98	4.00	14.77	± 0.3 pH *
pH (10)	12/31/2019	9.93	10.00	20.68	10.01	10.00	14.71	± 0.3 pH *
ORP (240 mv)	10/31/2022	235.8	240.0	20.68	244.3	240.0	14.78	±10 mv
Dissolved Oxygen (%)	—	100 86.8	100	—	80.4	100	—	—
Dissolved Oxygen (mg/L)	—	8.15	8.89	—	8.57	8.89	—	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	768	768	—	768	768	—	—
Notes: * pH Unit with pH 7 Buffer								Variance Noted:

Signature: 

Date: 10/23/18



Field Instrument Calibration Log

Date: 10/24/18

Weather: 50° Partly Sunny, some light rain

Project/Site Name: AOC Vertical Profiling

Instrument: YSI 536

Calibrated By: Chris Vignola

Serial Number: 06142823AL

Parameters	Solution Expiration Date	Morning Calibration		Cal. Temperature °C	Afternoon Calibration		Cal. Temperature °C	Post Cal. Criteria
		Time	Value		Time	Value		
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	12/31/2018	0645	1,477 $\mu\text{S}/\text{cm}^\circ$	14.24	1700	1,413 $\mu\text{S}/\text{cm}^\circ$	12.11	$\pm 10 \mu\text{S}/\text{cm}$
pH (7)	02/29/2020		6.98	15.05		7.00	11.98	$\pm 0.3 \text{ pH}^*$
pH (4)	09/30/2019		3.94	14.03		4.00	11.78	$\pm 0.3 \text{ pH}^*$
pH (10)	12/31/2019		9.96	14.65		10.00	12.02	$\pm 0.3 \text{ pH}^*$
ORP (240 mv)	10/31/2022		246.1	14.82		240.0	12.09	$\pm 10 \text{ mv}$
Dissolved Oxygen (%)	-		98.6	-		100	-	-
Dissolved Oxygen (mg/L)	-		10.5	-		8.83	-	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-		760	-		760	-	-

Notes:

Variance Noted:

* pH Unit with pH 7 Buffer

Signature: 

Date: 10/24/18



Field Instrument Calibration Log

Date: 10/25/18

Weather: cloudy, 34°F

Project/Site Name: ACCSD PFAS Vertical Profiling

Instrument: ~~YSI~~ YSI 556MPS

Calibrated By: B.A.

Serial Number: _____

Parameters	Solution Expiration Date	Morning Calibration		Cal. Temperature °C	Afternoon Calibration		Cal. Temperature °C	Post Cal. Criteria
		Time <u>0430</u>	Time		Time <u>1230</u>	Time		
Specific Conductivity (1.413 ^{mS} µS /cm)	12/31/2018	1.362	1.413	14.15	14.12	14.13	9.72	±10 µS/cm
pH (7)	2/29/2020	7.02	7.00	14.05	7.01	7.00	9.84	± 0.3 Ph *
pH (4)	9/31/2019	4.00	4.00	14.03	3.98	4.00	9.76	± 0.3 Ph *
pH (10)	12/31/2019	9.96	9.99	14.11	10.00	10.00	9.78	± 0.3 Ph *
ORP (240 mv)	10/31/2022	237.5	240.0	14.15	239.3	240.0	9.41	±10 mv
Dissolved Oxygen (%)	—	85.9	100.0	10.22	98.6	100.0	9.21	-
Dissolved Oxygen (mg/L)	—	9.78	11.29	10.22	10.74	10.81	9.21	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	768	—	10.22	768	—	9.21	-

Notes:

Variance Noted:

* Ph Unit with Ph 7 Buffer

Signature: *Beth Curt*

Date: 10/25/18



Instrument Calibration Log

Project/Site Name: AOC 50 Drilling

Calibrated By: Chris Vignola

Instrument/Serial Number	Pre-Cal 0-AM (NTU)	Pre-Cal 0-PM (NTU)	Pre-Cal 10-AM (NTU)	Pre-Cal 10-PM (NTU)	Post-Cal 0-AM (NTU)	Post-Cal 0-PM (NTU)	Post-Cal 10-AM (NTU)	Post-Cal 10-PM (NTU)	Date
5086-5014	0.05	0.06	9.87	9.81	0.00	0.00	10.0	10.0	10/22/18
5086-5014	0.07	0.08	9.85	9.90	0.01	0.01	10.0	10.0	10/23/18
5086-5014	0.07	0.09	9.83	9.87	0.01	0.01	9.99	10.0	10/24/18
"	0.06	0.08	9.84	9.88	0.01	0.01	9.98	10.0	10/25/18

Signature:

Date: 10/22, 23, 24/18
10/25/18



Field Instrument Calibration Log

Date: 7/1/19

Weather: 80's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: MA

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm ^o)	<u>1/1/19</u>	<u>1.439</u>	<u>1.413</u>	<u>22-19°</u>	<u>1.418</u>	<u>22.87°</u>	±10 µS/cm	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.46</u>	<u>7.00</u>	<u>22-27°</u>	<u>7.06</u>	<u>22.41°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.18</u>	<u>4.00</u>	<u>22-13°</u>	<u>4.11</u>	<u>22.21°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.70</u>	<u>10.00</u>	<u>22-09°</u>	<u>9.97</u>	<u>22.07°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>249.7</u>	<u>240.0</u>	<u>22-18°</u>	<u>237.7</u>	<u>22.06°</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>MA</u>	<u>109.7%</u>	<u>100.0%</u>	<u>22-00°</u>	<u>101.6%</u>	<u>22.07°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>MA</u>	<u>10.39</u>	<u>10.00</u>	<u>21-78°</u>	<u>9.97</u>	<u>22.01°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>MA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/1/19



Field Instrument Calibration Log

Date: 7/2/19

Weather: 80's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: R VBA

Serial Number: 11 B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1.401</u>	<u>1.413</u>	<u>21.78°</u>	<u>1.418</u>	<u>20.31°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.31</u>	<u>7.00</u>	<u>21.69°</u>	<u>7.11</u>	<u>20.21°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.29</u>	<u>4.00</u>	<u>21.54°</u>	<u>4.00</u>	<u>20.20°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>10.31</u>	<u>10.00</u>	<u>21.45°</u>	<u>10.01</u>	<u>20.33°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>246.7</u>	<u>240.0</u>	<u>21.67°</u>	<u>241.1</u>	<u>20.47°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>92.6%</u>	<u>100.0%</u>	<u>21.30°</u>	<u>98.2%</u>	<u>20.51°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.62</u>	<u>10.00</u>	<u>21.20°</u>	<u>9.90</u>	<u>20.01°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 7/2/19



Field Instrument Calibration Log

Date: 7/8/19

Weather: 70's

Project/Site Name: Devers

Instrument: YSI 650 XL

Calibrated By: VGA

Serial Number: 11B190186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/19	1.397	1.413	22.07°	1.418	23.07°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/20	6.87	7.00	22.37°	7.07	23.01°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/20	4.31	4.00	22.30°	4.07	23.00°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/20	9.72	10.00	22.21°	9.89	22.90°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/22	252.1	240.0	22.17°	241.7	22.93°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	131.6%	100.0%	22.19°	107.6%	22.90°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	22.10°	9.80	22.79°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 7/8/19



Field Instrument Calibration Log

Date: 7/19/19

Weather: 80's

Project/Site Name: Devans

Instrument: YSI 650XL

Calibrated By: VGA

Serial Number: 11 B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:05</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1:50</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	<u>6/1/19</u>	<u>1.403</u>	<u>1.413</u>	<u>22-10°</u>	<u>1.419</u>	<u>21.70°</u>	±10 µS/cm	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.11</u>	<u>7.00</u>	<u>22-18°</u>	<u>7.01</u>	<u>21.50°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.03</u>	<u>4.00</u>	<u>22-27°</u>	<u>4.06</u>	<u>21.47°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.97</u>	<u>10.00</u>	<u>22-27°</u>	<u>10.00</u>	<u>21.57°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>247.1</u>	<u>240.0</u>	<u>21.71°</u>	<u>241.7</u>	<u>21.60°</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>92.6%</u>	<u>100.0%</u>	<u>21.77°</u>	<u>92.6%</u>	<u>21.55°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.90</u>	<u>10.00</u>	<u>21.39°</u>	<u>9.99</u>	<u>21.30°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	760 <u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 7/19/19



Field Instrument Calibration Log

Date: 7/16/19

Weather: 80's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: KGA

Serial Number: 118100 186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1440</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>6/19</u>	<u>1.378</u>	<u>1.413</u>	<u>21.70°</u>	<u>1.411</u>	<u>20.17°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>✓</u>
pH (7)	<u>10/20</u>	<u>7.21</u>	<u>7.00</u>	<u>21.67°</u>	<u>7.00</u>	<u>20.20°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.11</u>	<u>4.00</u>	<u>21.80°</u>	<u>4.03</u>	<u>20.17°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.90</u>	<u>10.00</u>	<u>21.73°</u>	<u>10.00</u>	<u>20.20°</u>	$\pm 0.3 \text{ Ph}^*$	<u>✓</u>
ORP (240 mv)	<u>10/22</u>	<u>249.7</u>	<u>240.0</u>	<u>21.56°</u>	<u>237.7</u>	<u>20.19°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>119.7%</u>	<u>100.0%</u>	<u>21.78°</u>	<u>96.1%</u>	<u>20.20°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.62</u>	<u>10.00</u>	<u>21.30°</u>	<u>9.93</u>	<u>20.03°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes: _____ (Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/16/19



Field Instrument Calibration Log

Date: 7/11/19

Weather: 80's

Project/Site Name: Deltas

Instrument: YSI 650XL

Calibrated By: KLGA

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1445</u>		Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1.439</u>	<u>1.413</u>	<u>22.03°</u>	<u>1.412</u>	<u>21.03°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>	
pH (7)	<u>10/20</u>	<u>7.13</u>	<u>7.00</u>	<u>22.00°</u>	<u>7.11</u>	<u>21.00°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
pH (4)	<u>3/20</u>	<u>4.11</u>	<u>4.00</u>	<u>21.93°</u>	<u>4.01</u>	<u>20.87°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
pH (10)	<u>2/20</u>	<u>9.93</u>	<u>10.00</u>	<u>21.90°</u>	<u>9.83</u>	<u>20.77°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
ORP (240 mv)	<u>10/22</u>	<u>237.1</u>	<u>240.0</u>	<u>21.87°</u>	<u>242.7</u>	<u>20.66°</u>	$\pm 10 \text{ mv}$	<u>N</u>	
Dissolved Oxygen (%)	<u>NA</u>	<u>101.6%</u>	<u>100.0%</u>	<u>20.92°</u>	<u>101.7%</u>	<u>20.50°</u>	-	<u>N</u>	
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>9.90</u>	<u>10.00</u>	<u>20.81°</u>	<u>9.97</u>	<u>20.41°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>	
Barometric Pressure (mmHg)	<u>NA</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/11/19



Field Instrument Calibration Log

Date: 7/12/19

Weather: 80's

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: VAT

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1345</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1.409</u>	<u>1.413</u>	<u>24.02°</u>	<u>1.407</u>	<u>22.91°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>Y</u>
pH (7)	<u>10/20</u>	<u>6.87</u>	<u>7.00</u>	<u>24.36°</u>	<u>7.03</u>	<u>22.80°</u>	$\pm 0.3 \text{ Ph}^*$	<u>Y</u>
pH (4)	<u>3/20</u>	<u>4.39</u>	<u>4.00</u>	<u>24.20°</u>	<u>4.06</u>	<u>22.79°</u>	$\pm 0.3 \text{ Ph}^*$	<u>Y</u>
pH (10)	<u>4/20</u>	<u>9.39</u>	<u>10.00</u>	<u>24.30°</u>	<u>10.11</u>	<u>22.67°</u>	$\pm 0.3 \text{ Ph}^*$	<u>Y</u>
ORP (240 mv)	<u>10/22</u>	<u>244.3</u>	<u>240.0</u>	<u>24.42</u>	<u>237.1</u>	<u>22.69°</u>	$\pm 10 \text{ mv}$	<u>Y</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>98.2%</u>	<u>190.0%</u>	<u>23.97°</u>	<u>102.1%</u>	<u>22.62°</u>	-	<u>Y</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.20</u>	<u>10.00</u>	<u>23.77°</u>	<u>9.87</u>	<u>22.79°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>Y</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>Y</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/12/19



Turbidity Instrument Calibration Log

Project/Site Name: Dennis

Instrument: Lanotte 2000E

Calibrated By: VA

Serial Number: 5083 5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
7/11/19	0.17	0.00	9.71	10.00	0.06	10.03	N
7/12/19	0.03	0.00	10.01	10.00	0.09	9.87	N
7/8/19	0.09	0.00	9.80	10.00	0.10	9.97	N
7/9/19	0.17	0.00	9.92	10.00	0.03	10.01	N
7/10/19	0.06	0.00	9.93	10.00	0.02	10.10	N
7/11/19	0.09	0.00	9.90	10.00	0.09	10.11	N
7/12/19	0.11	0.00	10.47	10.00	0.02	10.03	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]

Date: 7/12/19



Field Instrument Calibration Log

Date: 7/16/19

Weather: 80's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: ~~Ag~~ MA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>1/19</u>	<u>1.439</u>	<u>1.413</u>	<u>22.17°</u>	<u>1.410</u>	<u>22.61°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.31</u>	<u>7.00</u>	<u>22.47°</u>	<u>7.03</u>	<u>22.79°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.18</u>	<u>4.00</u>	<u>22.59°</u>	<u>3.93</u>	<u>22.81°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.87</u>	<u>10.00</u>	<u>22.47°</u>	<u>10.11</u>	<u>22.71°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>229.7</u>	<u>240.0</u>	<u>22.30°</u>	<u>232.6</u>	<u>22.67°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>87.6%</u>	<u>100.0%</u>	<u>22.27°</u>	<u>92.1%</u>	<u>22.99°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.71</u>	<u>10.00</u>	<u>22.03°</u>	<u>9.79</u>	<u>22.01°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature:

Date: 7/16/19



Field Instrument Calibration Log

Date: 7/17/19

Weather: 80's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: PLA

Serial Number: 11B190186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>1/1/19</u>	<u>6.397</u>	<u>6.413</u>	<u>21.70°</u>	<u>6.407</u>	<u>20.97°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>6.71</u>	<u>7.00</u>	<u>21.89°</u>	<u>7.07</u>	<u>20.87°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.20</u>	<u>4.00</u>	<u>21.67°</u>	<u>4.01</u>	<u>20.79°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.90</u>	<u>10.00</u>	<u>21.73°</u>	<u>9.90</u>	<u>20.83°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>230.6</u>	<u>240.0</u>	<u>21.69°</u>	<u>242.7</u>	<u>20.72°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>91.6%</u>	<u>100.0%</u>	<u>20.97°</u>	<u>97.1%</u>	<u>20.81°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>10.47</u>	<u>10.00</u>	<u>20.67°</u>	<u>9.87</u>	<u>20.21°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 7/17/19



Field Instrument Calibration Log

Date: 7/18/19

Weather: ~~70s~~ 70s

Project/Site Name: Devers

Instrument: PH YSI 650XL

Calibrated By: WBF

Serial Number: 11B60186

Parameters	Solution Expiration Date	AM Calibration Time <u>615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/19</u>	<u>1.436</u>	<u>1.413</u>	<u>22.78°</u>	<u>1.407</u>	<u>20.03°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.21</u>	<u>7.00</u>	<u>22.69°</u>	<u>7.03</u>	<u>19.76°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.00</u>	<u>4.00</u>	<u>22.63°</u>	<u>4.01</u>	<u>19.69°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>4/20</u>	<u>10.03</u>	<u>10.00</u>	<u>22.71°</u>	<u>9.93</u>	<u>19.71°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>227.1</u>	<u>240.0</u>	<u>22.76°</u>	<u>242.2</u>	<u>19.79°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>96.6%</u>	<u>100%</u>	<u>22.11°</u>	<u>96.1%</u>	<u>19.70°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>10.47</u>	<u>10.00</u>	<u>22.01°</u>	<u>9.88</u>	<u>19.21°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>769</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/18/19



Field Instrument Calibration Log

Date: 7/19/19

Weather: 90's

Project/Site Name: Devas

Instrument: YSI 650XL

Calibrated By: P/BA

Serial Number: 11B100156

Parameters	Solution Expiration Date	AM Calibration Time <u>620</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1300</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>6/19</u>	<u>1.521</u>	<u>1.413</u>	<u>23.19°</u>	<u>1.407</u>	<u>21.16°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.31</u>	<u>7.00</u>	<u>23.21°</u>	<u>7.03</u>	<u>21.21°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.19</u>	<u>4.00</u>	<u>23.10°</u>	<u>4.00</u>	<u>21.13°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>10.47</u>	<u>10.00</u>	<u>23.21°</u>	<u>10.01</u>	<u>21.02°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>249.7</u>	<u>240.0</u>	<u>23.07°</u>	<u>241.1</u>	<u>21.00°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>123.3%</u>	<u>100.0%</u>	<u>23.00°</u>	<u>92.1%</u>	<u>20.97°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>7.57</u>	<u>10.00</u>	<u>22.87°</u>	<u>9.99</u>	<u>20.81°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>		<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/19/19



Field Instrument Calibration Log

Date: 7/17/19

Weather: 75°F, cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)	
		Time	Value						
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.398 ^{1.43} <u>1.413</u> ^(OK)	1.413	28.84	1420	1.407	28.50	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/2020	6.98	7.00	26.08	7.02	28.34	$\pm 0.3 \text{ Ph}^*$		N
pH (4)	3/2020	3.71	3.95	26.63	3.92	28.22	$\pm 0.3 \text{ Ph}^*$		N
pH (10)	2/2020	9.81	10.00	25.83	9.95	28.03	$\pm 0.3 \text{ Ph}^*$		N
ORP (240 mv)	1/2023	254.2	240.0	28.00	242.3	28.09	$\pm 10 \text{ mv}$		N
Dissolved Oxygen (%)	-	127.3	100.0	28.07	102.3 ^{107.3} <u>107.3</u> ^(OK)	28.52	-		N
Dissolved Oxygen (mg/L)	-	9.95	7.17	28.07	7.49	28.52	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value		N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-		N

Notes: _____
* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: *Dave Kortjohn*

Date: 7/17/19



Field Instrument Calibration Log

Date: 7/18/19

Weather: 65°F, cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MOS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>745</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1.411</u>	<u>1.413</u>	<u>23.90</u>	<u>1.409</u>	<u>23.27</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>3/2020</u>	<u>6.98</u>	<u>7.00</u>	<u>24.70</u>	<u>7.03</u>	<u>23.98</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2020</u>	<u>4.07</u>	<u>4.01</u>	<u>22.98</u>	<u>4.03</u>	<u>23.29</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2020</u>	<u>10.08</u>	<u>10.00</u>	<u>23.39</u>	<u>10.02</u>	<u>23.45</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>1/2023</u>	<u>237.6</u>	<u>240.0</u>	<u>24.10</u>	<u>238.2</u>	<u>23.94</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>82.8</u>	<u>100.0</u>	<u>21.82</u>	<u>98.3</u>	<u>22.12</u>	<u>-</u>	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>7.24</u>	<u>8.76</u>	<u>21.82</u>	<u>8.44</u>	<u>22.12</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Dave Kortjohn

Date: 7/18/19



Field Instrument Calibration Log

Date: 7/19/19

Weather: 85°F, partly cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>745</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1320</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.388	1.413	23.17	1.409	26.48	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/2020	7.06	7.00	22.83	7.02	26.34	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2020	4.21	4.03	22.81	4.10	26.83	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.91	10.00	22.38	9.98	26.45	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	236.6	240.0	23.16	239.3	26.48	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	84.1	100.0	22.98	99.3	28.56	-	N
Dissolved Oxygen (mg/L)	-	7.23	8.58	22.98	8.43	28.56	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Dave Kortjohn

Date: 7/19/19



Field Instrument Calibration Log

Date: 7/22/19

Weather: 80°F, muggy/cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>800</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1435</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.427	1.413	28.68	1.414	28.52	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/2020	7.03	7.00	28.49	7.01	28.59	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	1/2021	3.62	4.00	27.60	3.89	28.29	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.91	10.00	27.29	10.02	28.35	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	229.0	240.0	28.06	235.6	28.42	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	142.2	100.0	25.85	114.5	25.92	-	Y
Dissolved Oxygen (mg/L)	-	11.55	8.13	25.85	10.68	25.92	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Dave Kortjohn

Date: 7/22/19



Field Instrument Calibration Log

Date: 7/23/19

Weather: 65°F, rainy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>740</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	11/2019	1.368	1.413	21.90	1.413	22.54	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/2020	7.07	7.00	22.20	7.03	22.59	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2020	3.71	3.97	22.18	3.92	22.39	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.96	10.00	22.06	9.93	22.48	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	251.2	240.1	22.10	245.2	22.51	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	122.4	100.0	21.09	103.6	21.39	-	N
Dissolved Oxygen (mg/L)	-	10.87	8.90	21.09	9.32	21.39	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 7/23/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020we
YSI 650 MDS (PK)

Calibrated By: Dave Kortjohn

Serial Number: 42 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
7/10/19	0.04	0.03	8.75	10.00	0.03	9.93	
7/11/19	0.04	0.04	9.83	10.00	0.03	9.73	
7/12/19	0.03	0.03	9.72	10.00	0.03	9.92	
7/17/19	0.03	0.03	9.53	10.00	0.02	9.86	
7/18/19	0.00	0.00	10.06	10.00	0.00	10.09	
7/19/19	0.01	0.01	10.12	10.00	0.01	10.03	
7/22/19	0.00	0.00	9.59	10.00	0.00	9.79	
7/23/19	0.01	0.01	9.85	10.00	0.01	9.93	
					Post Calibration Criteria		
					-	±0.5	

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 7/23/19



Field Instrument Calibration Log

Date: 7/22/19

Weather: 80's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: VJA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>620</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1.379</u>	<u>1.413</u>	<u>22.21°</u>	<u>1.407</u>	<u>20.15°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>6.81</u>	<u>7.00</u>	<u>22.31°</u>	<u>7.11</u>	<u>20.20°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.39</u>	<u>4.00</u>	<u>22.18°</u>	<u>4.02</u>	<u>20.18°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.62</u>	<u>10.00</u>	<u>22.19°</u>	<u>10.03</u>	<u>20.14°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>259.7</u>	<u>240.0</u>	<u>22.07°</u>	<u>240.3</u>	<u>20.18°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>118.6%</u>	<u>100.0%</u>	<u>21.70°</u>	<u>91.6%</u>	<u>19.27°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>10.17</u>	<u>10.00</u>	<u>21.68°</u>	<u>9.90</u>	<u>19.30°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 7/22/19



Field Instrument Calibration Log

Date: 7/23/19

Weather: 70's Heavy Rain

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: VGA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>6.432</u>	<u>6.413</u>	<u>21.31°</u>	<u>6.407</u>	<u>19.78°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.30</u>	<u>7.00</u>	<u>21.20°</u>	<u>7.00</u>	<u>19.67°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.19</u>	<u>4.00</u>	<u>21.17°</u>	<u>4.03</u>	<u>19.73°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>10.40</u>	<u>10.00</u>	<u>21.40°</u>	<u>10.15</u>	<u>19.80°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>227.1</u>	<u>240.0</u>	<u>21.37°</u>	<u>241.1</u>	<u>19.77°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>87.1%</u>	<u>100.0%</u>	<u>21.01°</u>	<u>109.1%</u>	<u>19.73°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.47</u>	<u>10.00</u>	<u>20.97°</u>	<u>9.79</u>	<u>19.51°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/23/19



Field Instrument Calibration Log

Date: 7/24/19

Weather: 70's

Project/Site Name: Devms

Instrument: YSI 650xl

Calibrated By: WA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:15</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>15:00</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>4/19</u>	<u>1.381</u>	<u>1.413</u>	<u>21.70°</u>	<u>1.411</u>	<u>19.90°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.46</u>	<u>7.00</u>	<u>21.63°</u>	<u>7.02</u>	<u>19.87°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.31</u>	<u>4.00</u>	<u>21.58°</u>	<u>4.01</u>	<u>19.93°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>10.21</u>	<u>10.00</u>	<u>21.68°</u>	<u>10.00</u>	<u>19.87°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>253.7</u>	<u>240.0</u>	<u>21.72°</u>	<u>240.3</u>	<u>19.86°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>M/A</u>	<u>121.6%</u>	<u>100.0%</u>	<u>21.30°</u>	<u>100.2%</u>	<u>19.31°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>M/A</u>	<u>9.52</u>	<u>10.00</u>	<u>21.27°</u>	<u>10.01</u>	<u>19.20°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>M/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/24/19



Field Instrument Calibration Log

Date: 7/25/19

Weather: Clear

Project/Site Name: Devos

Instrument: YI 650XL

Calibrated By: VM

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/19</u>	<u>1.451</u>	<u>1.413</u>	<u>19.21°</u>	<u>1.420</u>	<u>20.18°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.21</u>	<u>7.00</u>	<u>19.19°</u>	<u>7.03</u>	<u>20.17°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.13</u>	<u>4.00</u>	<u>19.17°</u>	<u>4.01</u>	<u>20.39°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.90</u>	<u>10.00</u>	<u>19.27°</u>	<u>10.01</u>	<u>20.41°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>236.6</u>	<u>240.0</u>	<u>19.29°</u>	<u>237.1</u>	<u>20.32°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>92.1%</u>	<u>100.0%</u>	<u>19.07°</u>	<u>101.6%</u>	<u>20.00°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.63</u>	<u>10.00</u>	<u>19.00°</u>	<u>9.81</u>	<u>19.92</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/25/19



Field Instrument Calibration Log

Date: 7/26/19

Weather: 70°F Sunny ^{Devens, MA}

Project/Site Name: Devens MA PFAS RI

Instrument: VSI 650 XL

Calibrated By: Melissa Miller

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>710</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	11/19	1410	1413	18.98	1411	24.16	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/20	6.98	7.00	19.05	6.98	24.13	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/20	3.97	4.00	19.10	3.99	23.98	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/20	9.95	10.00	19.07	9.98	23.89	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/22	232.5	240.0	19.20	235.2	23.92	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	95.3	100%	18.75	96.8	33.00	-	1
Dissolved Oxygen (mg/L)	NA	9.78	10.00	18.75	9.55	33.00	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	1
Barometric Pressure (mmHg)	NA	—	760	—	—	760	-	1

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Melissa Miller

Date: 7/26/19



Turbidity Instrument Calibration Log

Project/Site Name: Deves

Instrument: Lynette 2020 v1e

Calibrated By: WGL/MM

Serial Number: 5083-524

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
7/22	0.30	0.00	10.29	10.00	0.09	10.03	N
7/23	0.27	0.00	10.27	10.00	0.07	10.01	N
7/24	0.19	0.00	9.80	10.00	0.10	10.03	N
7/25	0.07	0.00	9.93	10.00	0.06	10.10	N
7/26/19	0.25	0.00	9.56	9.97	0.05	10.13	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]

Date: 7/25/19
7/26/19



Field Instrument Calibration Log

Date: 07/29/19

Weather: 70°E-90°^{DeWens,}F

Project/Site Name: DeWens, MA PFAS RT

Instrument: YSI 650XL

Calibrated By: Melissa Miller

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0655</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1405</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/19	1346	1413	27.79	1410	32.47	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/20	7.65	7.00	27.62	6.91	32.67	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/20	4.08	4.00	28.10	3.98	32.59	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/20	10.00	10.00	27.97	9.89	32.65	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/22	232.6	240.0	28.18	234.0	32.61	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	94.2	100.0	27.87	96.0	34.18	-	N
Dissolved Oxygen (mg/L)	NA	7.60	8.02	27.87	7.98	34.18	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	753.7	27.87	—	758.9	-	NA

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller

Date: 7/29/19



Field Instrument Calibration Log

Date: 7/30/19

Weather: 80's

Project/Site Name: Davis

Instrument: YSI 650XL

Calibrated By: [Signature]

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>715</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>11/19</u>	<u>1.397</u>	<u>1.413</u>	<u>24.21°</u>	<u>1.421</u>	<u>23.16°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/20</u>	<u>7.18</u>	<u>7.00</u>	<u>24.30°</u>	<u>7.11</u>	<u>23.18°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20</u>	<u>4.16</u>	<u>4.00</u>	<u>24.32°</u>	<u>4.00</u>	<u>23.21°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/20</u>	<u>9.90</u>	<u>10.00</u>	<u>24.29°</u>	<u>10.11</u>	<u>23.07</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/22</u>	<u>226.3</u>	<u>240.0</u>	<u>24.18°</u>	<u>241.1</u>	<u>23.00°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>90.2%</u>	<u>100.0%</u>	<u>24.03°</u>	<u>102.6%</u>	<u>23.00°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>8.99</u>	<u>10.00</u>	<u>24.19°</u>	<u>9.90</u>	<u>22.62°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/30/19



Field Instrument Calibration Log

Date: 7/31/19

Weather: 80's

Project/Site Name: Devon

Instrument: YSI 650XL

Calibrated By: VMA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.400</u>	<u>1.413</u>	<u>19.97°</u>	<u>1.420</u>	<u>22.60°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.31</u>	<u>7.00</u>	<u>20.18°</u>	<u>7.03</u>	<u>22.58°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.18</u>	<u>4.00</u>	<u>20.41°</u>	<u>4.07</u>	<u>22.63°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.46</u>	<u>10.00</u>	<u>20.20°</u>	<u>10.11</u>	<u>22.57°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>221.7</u>	<u>240.0</u>	<u>20.13°</u>	<u>241.7</u>	<u>22.53°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>89.7%</u>	<u>100.0%</u>	<u>19.41°</u>	<u>118.6%</u>	<u>22.30°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.66</u>	<u>10.00</u>	<u>19.31°</u>	<u>9.87</u>	<u>22.27°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 7/31/19



Field Instrument Calibration Log

Date: 8/1/19

Weather: 70's

Project/Site Name: Deers

Instrument: YSI 650XL

Calibrated By: LEA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.429</u>	<u>1.413</u>	<u>21.16°</u>	<u>1.410</u>	<u>22.71°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.21</u>	<u>7.00</u>	<u>21.20°</u>	<u>7.03</u>	<u>22.68°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.18</u>	<u>4.00</u>	<u>21.29°</u>	<u>4.00</u>	<u>22.63°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.13</u>	<u>10.00</u>	<u>21.30°</u>	<u>10.01</u>	<u>22.81°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>242.7</u>	<u>240.0</u>	<u>21.23°</u>	<u>237.6</u>	<u>22.74°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>91.1%</u>	<u>100.0%</u>	<u>21.01°</u>	<u>101.6%</u>	<u>22.30°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.90</u>	<u>10.00</u>	<u>20.97°</u>	<u>9.97</u>	<u>22.47°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/1/19



Field Instrument Calibration Log

Date: 8/2/19

Weather: De 80's

Project/Site Name: Davis

Instrument: YSI 650XL

Calibrated By: VA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.432	1.413	19.21°	1.420	18.37°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.31	7.00	19.17°	7.03	18.60°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.26	4.00	19.16°	4.09	18.47°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.03	10.00	19.37°	10.07	18.37°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	243.7	240.0	19.32°	240.6	18.27°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	103.2%	100.0%	19.21°	101.1%	18.19°	-	N
Dissolved Oxygen (mg/L)	N/A	9.97	10.00	19.17°	9.98	18.26°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/2/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: Lamotte 2020 wc

Calibrated By: MM / 106A

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
MM 07/29/19	0.0	0.0	9.94	10.0	0.03	9.90	N
7/30/19	0.19	0.00	10.15	10.00	0.09	10.18	N
7/31/19	0.20	0.00	9.87	10.00	0.00	10.07	N
8/1/19	0.17	0.00	9.97	10.00	0.20	10.17	N
8/2/19	0.20	0.00	10.10	10.00	0.13	10.31	N

Notes: Mark Noted Variances on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]

Date: 07/29/19

8/2/19



Field Instrument Calibration Log

Date: 7/24/19

Weather: 78°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MOS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>930</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1450</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1.410</u>	<u>1.413</u>	<u>25.21</u>	<u>1.412</u>	<u>25.69</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>3/2020</u>	<u>7.17</u>	<u>7.00</u>	<u>23.68</u>	<u>7.10</u>	<u>25.34</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/20 1/2021</u>	<u>3.62</u>	<u>4.00</u>	<u>25.20</u>	<u>3.90</u>	<u>25.31</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2020</u>	<u>9.68</u>	<u>10.00</u>	<u>24.75</u>	<u>9.83</u>	<u>25.26</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>1/2023</u>	<u>238.1</u>	<u>240.0</u>	<u>25.54</u>	<u>239.3</u>	<u>25.39</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>101.0</u>	<u>100.0</u>	<u>24.97</u>	<u>79.3</u>	<u>26.83</u>	<u>-</u>	<u>Y</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>8.39</u>	<u>8.28</u>	<u>24.97</u>	<u>6.73</u>	<u>26.83</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>Y</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 7/24/19



Field Instrument Calibration Log

Date: 7/25/19

Weather: 75°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Dave Kortjohn

Serial Number: 4268

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.407	1.413	20.38	1.413	22.38	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/2020	6.88	7.00	20.61	7.09	22.24	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	1/2021	3.63	3.95	21.11	3.83	22.31	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.82	10.00	20.81	9.89	22.51	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	244.8	240.0	20.79	242.3	22.42	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	64.0	100.0	20.07	98.0	23.58	-	N
Dissolved Oxygen (mg/L)	-	5.85	9.10	20.07	8.30	23.58	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 7/25/19



Field Instrument Calibration Log

Date: 7/26/19

Weather: 80°F, sunny

Project/Site Name: Devers PFAS RT

Instrument: YSI Pro DDS ~~186~~ 626910-10

Calibrated By: Dave Kortjohn

Serial Number: ~~186100145~~ ^{5F} 17L101163

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	<u>730</u>					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^2$)	11/2019	1.393	1.410	23.25	1.411	24.10	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/2021	7.06	7.00	23.50	7.01	24.20	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.91	4.00	23.00	3.98	24.10	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.08	10.00	23.25	10.03	24.30	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	234.2	240.0	22.60	239.6	24.10	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.4	100.0	21.60	100.3	23.10	-	N
Dissolved Oxygen (mg/L)	-	8.91	8.94	21.60	8.95	23.10	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 7/26/19



Field Instrument Calibration Log

Date: 7/29/19

Weather: 85°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1410</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1.409</u>	<u>1.413</u>	<u>26.9</u>	<u>1.412</u>	<u>27.9</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/2021</u>	<u>7.18</u>	<u>7.00</u>	<u>27.0</u>	<u>7.03</u>	<u>27.9</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2021</u>	<u>4.19</u>	<u>4.01</u>	<u>26.8</u>	<u>4.02</u>	<u>28.3</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>9.78</u>	<u>9.98</u>	<u>26.7</u>	<u>9.97</u>	<u>27.8</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>226.6</u>	<u>240.0</u>	<u>26.5</u>	<u>236.7</u>	<u>28.1</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>99.5</u>	<u>8.10</u>	<u>25.8</u>	<u>99.8</u>	<u>26.3</u>	<u>-</u>	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>100.0</u>	<u>8.12</u>	<u>25.8</u>	<u>8.12</u>	<u>26.3</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>755.9</u>	<u>-</u>	<u>-</u>	<u>755.9</u>	<u>-</u>	<u>-</u>	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 7/29/19



Field Instrument Calibration Log

Date: 7/30/19

Weather: 85°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro D65

Calibrated By: Dave Kortjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.410	1.413	26.7	1.413	27.8	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/2021	7.12	7.00	27.1	7.02	27.5	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.17	4.00	27.1	4.03	27.9	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	9.93	10.00	26.9	9.99	27.5	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	229.3	240.0	27.2	239.6	27.9	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	98.6	100.0	25.9	100.2	26.3	-	N
Dissolved Oxygen (mg/L)	-	8.09	8.13	25.9	8.10	26.3	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760.3	-	-	760.3	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 7/30/19



Field Instrument Calibration Log

Date: 7/31/19

Weather: 80°F, sunny - 90°F

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn


Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.377	1.413	30.3	1.413	30.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/2021	6.90	7.00	30.0	6.98	30.7	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.03	4.00	30.3	4.02	30.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	9.92	10.00	30.5	9.98	30.6	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	218.2	240.0	30.3	238.1	30.9	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.5	99.8	27.5	100.7	28.7	-	N
Dissolved Oxygen (mg/L)	-	7.77	7.83	27.5	8.03	28.7	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	756.7	-	-	756.7	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 7/31/19



Field Instrument Calibration Log

Date: 8/6/19

Weather: 80°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: ~~186100145~~^{DP} 17401163

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.621	1.413	23.0	1.415	22.8	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.02	7.00	21.4	7.00	22.3	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.73	4.00	22.4	3.98	22.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.24	10.02	22.6	10.02	22.7	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	249.0	240.0	23.1	242.3	23.2	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	101.1	100.0	19.5	99.6	20.2	-	N
Dissolved Oxygen (mg/L)	-	9.18	9.00	19.2	8.95	20.2	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	753.6	-	-	753.6	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/6/19



Field Instrument Calibration Log

Date: 8/7/19

Weather: 83°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Korfjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.371	1.413	25.5	1.412	25.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.00	7.00	26.1	7.02	25.8	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.71	4.00	25.8	3.99	26.1	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.23	9.99	26.0	10.00	26.3	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	234.8	240.0	25.6	239.4	26.2	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	100.6	99.9	23.7	100.8	23.9	-	N
Dissolved Oxygen (mg/L)	—	8.41	8.46	23.7	8.40	23.9	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	751.6	—	—	751.5	—	-	—

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/7/19



Field Instrument Calibration Log

Date: 8/8/19

Weather: 85°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.401	1.413	25.5	1.414	26.3	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.07	7.00	25.3	7.03	26.1	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.82	4.01	25.4	4.00	25.9	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.23	10.00	25.4	10.01	26.3	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	237.2	240.0	25.6	239.3	26.1	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	98.5	100.0	24.2	98.9	25.3	-	N
Dissolved Oxygen (mg/L)	-	8.24	8.38	24.2	8.29	25.3	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	747.4	-	-	748.2	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/8/19



Field Instrument Calibration Log

Date: 8/12/19

Weather: 75°F, sunny

Project/Site Name: Devens PFAS AF

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.394	1.413	21.8	1.410	24.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.02 ^{6.89}	7.00	21.6	7.01	25.4	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.78	4.00	21.5	3.98	25.3	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.24	10.02	21.3	10.13	25.6	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	245.1	240.0	21.6	241.3	25.2	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	97.6	99.2	20.3	100.7	24.1	-	N
Dissolved Oxygen (mg/L)	-	8.95	8.96	20.3	8.47	23.9	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	753.7	-	-	752.1	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/12/19



Field Instrument Calibration Log

Date: 8/13/19

Weather: 80°F, cloudy/rainy

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn


Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.409	1.413	27.7	1.411	27.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.94	7.00	26.7	6.98	27.6	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	3.86	4.01	27.2	3.98	27.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.27	10.00	27.3	10.03	27.4	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	225.6	240.0	26.8	238.6	27.3	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	97.4	99.7	25.8	99.6	26.2	-	N
Dissolved Oxygen (mg/L)	—	7.99	8.01	25.8	8.04	26.2	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	750.0	—	—	751.3	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/13/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020 wp

Calibrated By: Dave Kortjohn

Serial Number: 1028-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
7/29/19	0.01	0.01	9.82	10.00	0.01	9.95	
7/30/19	0.01	0.01	9.54	10.00	0.01	9.81	
7/31/19	0.00	0.00	10.42	10.00	0.00	10.13	
8/6/19	0.03	0.03	10.14	10.00	0.02	10.09	
8/7/19	0.01	0.01	10.19	10.00	0.01	10.08	
8/8/19	0.01	0.01	10.11	10.00	0.01	10.21	
8/12/19	0.03	0.03	8.31	10.00	0.03	9.58	
8/13/19	0.02	0.02	9.43	10.00	0.02	9.87	
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria		
					-	±0.5	

Signature: 

Date: 8/13/19



Field Instrument Calibration Log

Date: 8/1/14

Weather: SUNNY 80°

Project/Site Name: Owens

Instrument: YSI PRO 095

Calibrated By: GH

Serial Number: 18L00145

Parameters	Solution Expiration Date	AM Calibration Time <u>6:16</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>03/2020</u>	<u>1.251</u>	<u>1.413</u>	<u>24.7</u>	<u>1.412</u>	<u>27.2</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/2021</u>	<u>7.01</u>	<u>7.00</u>	<u>24.5</u>	<u>6.97</u>	<u>26.8</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>03/2021</u>	<u>4.00</u>	<u>4.00</u>	<u>24.2</u>	<u>4.02</u>	<u>26.8</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>10.01</u>	<u>10.4</u>	<u>24.4</u>	<u>9.95</u>	<u>26.3</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2014</u>	<u>238</u>	<u>240</u>	<u>24.3</u>	<u>246.0</u>	<u>27.0</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)		<u>99.5</u>	<u>99.5</u>	<u>25.2</u>	<u>99.8</u>	<u>26.9</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)		<u>8.77</u>	<u>8.77</u>	<u>25.2</u>	<u>7.96</u>	<u>26.9</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)		<u>757.0</u>	<u>756.5</u>	<u>25.2</u>	<u>756.7</u>	<u>27.1</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Handwritten Signature]

Date: 8-1-2014



Field Instrument Calibration Log

Date: 8-5-2019

Weather: Sunny 80°

Project/Site Name: Ft. DeLeon RI

Instrument: XSI 005

Calibrated By: GH

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	3/2020	1.377	1.413	21.0	1.479	26.5 26.5 (GH)	$\pm 10 \mu\text{S}/\text{cm}$	Y
pH (7)	2/2021	7.08	7.01	21.1	7.04	26.6	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	2/2021	4.09	4.00	21.1	3.98	26.6	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	9.99	10.01	21.0	10.09	26.4	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	238.2	240.0	21.1	238.5	26.0	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	97.3	99.6	21.8	98.2	28.1 99.6 (GH)	-	N
Dissolved Oxygen (mg/L)	-	8.79	8.76	21.8	8.82	28.1 8.76 (GH)	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	755.3	755.9	21.8	756.1	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: *Grant Hesse*

Date: 8-5-19



Field Instrument Calibration Log

Date: 8/5/19

Weather: 80's

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11 B1 00186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.392	1.413	18.16°	1.420	18.47°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.26	7.00	18.18°	7.06	18.49°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.21	4.00	18.30°	4.00	18.50°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.31°	10.00	18.27°	9.90	18.47°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	249.7	240.0	18.26°	236.3	18.44°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	M/A	87.6%	100.0%	18.40°	93.1%	18.40°	-	N
Dissolved Oxygen (mg/L)	M/A	10.29	10.00	18.18°	10.10	18.20°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	M/A	-	760	-	760	18.15°	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/5/19



Field Instrument Calibration Log

Date: 8/6/19

Weather: 80's

Project/Site Name: Davis

Instrument: YSI 650XL

Calibrated By: MA

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.451	1.413	19.92°	1.420	20.13°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.30	7.00	19.96°	6.87	20.18°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.11	4.00	19.91°	4.09	20.20°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.80	10.00	19.97°	9.79	20.17°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	246.1	240.0	19.58°	231.1	20.11°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	103.3%	100.0%	19.40°	89.6%	20.00°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	19.32°	9.81	19.97°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/6/19



Field Instrument Calibration Log

Date: 8/7/19

Weather: 70's Heavy Later Rain / Thunder

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: WBL

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.387</u>	<u>1.413</u>	<u>21.16°</u>	<u>1.409</u>	<u>18.60°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>6.87</u>	<u>7.00</u>	<u>21.19°</u>	<u>7.11</u>	<u>18.57°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.13</u>	<u>4.00</u>	<u>21.17°</u>	<u>4.00</u>	<u>18.42°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.90</u>	<u>10.00</u>	<u>21.02°</u>	<u>10.11°</u>	<u>18.39°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>252.6</u>	<u>240.0</u>	<u>21.03°</u>	<u>242.6</u>	<u>18.37°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>100.0%</u>	<u>100.0%</u>	<u>21.10°</u>	<u>92.1%</u>	<u>18.36°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.72</u>	<u>10.00</u>	<u>20.97°</u>	<u>9.90</u>	<u>18.11°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>18.13°</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/7/19



Field Instrument Calibration Log

Date: 8/8/19

Weather: 70's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: WGA

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variences Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.382</u>	<u>1.413</u>	<u>18.63°</u>	<u>1.403</u>	<u>19.87°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.18</u>	<u>7.00</u>	<u>18.79°</u>	<u>7.02</u>	<u>19.96°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.12</u>	<u>4.00</u>	<u>18.69°</u>	<u>4.02</u>	<u>20.31°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.27</u>	<u>10.00</u>	<u>18.73°</u>	<u>10.06</u>	<u>20.26°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>231.6</u>	<u>240.0</u>	<u>18.82°</u>	<u>237.2</u>	<u>20.24°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>100.9%</u>	<u>100.0%</u>	<u>18.71°</u>	<u>111.1%</u>	<u>20.03°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.97</u>	<u>10.00</u>	<u>18.37°</u>	<u>10.07</u>	<u>20.09°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/8/19



Field Instrument Calibration Log

Date: 8/9/19

Weather: 80's

Project/Site Name: Doves

Instrument: YST 650XL

Calibrated By: VGA

Serial Number: 11 B109186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check		Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varienec Noted (Y/N)
		Time	Value		Time	Value			
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.431	1.413	20.06°	1.422	20.19°	$\pm 10 \mu\text{S}/\text{cm}$	N	
pH (7)	2/21	7.16	7.00	20.13°	7.10	20.01°	$\pm 0.3 \text{ Ph}^*$	N	
pH (4)	3/21	4.09	4.00	20.20°	4.03	19.77°	$\pm 0.3 \text{ Ph}^*$	N	
pH (10)	2/21	10.18	10.00	20.14°	10.01	19.86°	$\pm 0.3 \text{ Ph}^*$	N	
ORP (240 mv)	6/19	241.1	242.0	20.18°	239.0	19.89°	$\pm 10 \text{ mv}$	N	
Dissolved Oxygen (%)	N/A	127.6%	100.0%	19.79°	106.9%	19.50°	-	N	
Dissolved Oxygen (mg/L)	N/A	10.40	10.00	19.96°	10.03	19.40°	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N	
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Form

Signature: [Signature]

Date: 8/9/19



Turbidity Instrument Calibration Log

Project/Site Name: Delors

Instrument: LaMotte 2020E

Calibrated By: W

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
★ 8/5/19	0.09	0.00	10.07	10.00	0.11	10.02	N
8/6/19	0.31	0.00	9.91	10.00	0.22	10.18	N
8/7/19	0.18	0.00	10.02	10.00	0.03	10.09	N
8/8/19	0.12	0.00	10.27	10.00	0.06	10.02	N
8/9/19	0.09	0.00	10.13	10.00	0.00	10.21	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: W

Date: 8/9/19

★ SN = 1828-0412



Field Instrument Calibration Log

Date: 8/14/19

Weather: 75°F, cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 17401163

Parameters	Solution Expiration Date	AM Calibration Time <u>740</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.408	1.413	24.1	1.413	24.3	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.41	7.00	23.8	7.10	24.2	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.43	4.00	24.3	4.08	24.3	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	9.87 10.42 9.87	10.00	25.1	9.98	24.6	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	246.4	240.0	24.2	241.2	24.8	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	98.9	99.9	21.5	98.8	22.6	-	N
Dissolved Oxygen (mg/L)	-	8.73	8.73	21.5	8.70	22.6	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	751.8	-	-	751.9	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/14/19



Field Instrument Calibration Log

Date: 8/15/19

Weather: 75° F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn


Serial Number: ~~17401163~~^{DP} 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1420</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1413 $\mu\text{S}/\text{cm}^\circ$)	<u>11/2019</u>	<u>1.393</u>	<u>1.413</u>	<u>23.5</u>	<u>1.414</u>	<u>25.5</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>10/2020</u>	<u>6.64</u>	<u>7.00</u>	<u>24.1</u>	<u>6.96</u>	<u>25.3</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2021</u>	<u>4.17</u>	<u>4.00</u>	<u>23.5</u>	<u>4.03</u>	<u>25.3</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>9.47</u>	<u>10.01</u>	<u>23.8</u>	<u>9.94</u>	<u>25.6</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/2019</u>	<u>237.5</u>	<u>240.0</u>	<u>23.5</u>	<u>238.6</u>	<u>25.5</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>98.9</u>	<u>99.5</u>	<u>21.7</u>	<u>99.6</u>	<u>24.3</u>	<u>-</u>	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>8.74</u>	<u>8.74</u>	<u>21.7</u>	<u>8.79</u>	<u>24.3</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>755.7</u>	<u>-</u>	<u>-</u>	<u>756.3</u>	<u>-</u>	<u>-</u>	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: 

Date: 8/15/19



Field Instrument Calibration Log

Date: 8/16/19

Weather: 75 - 80°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.417	1.413	24.3	1.415	26.8	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.87	7.00	24.6	6.99	27.3	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	10.08	10.00	24.6	10.03	27.1	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	4.11	4.00	24.2	4.03	26.9	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	237.0	240.0	24.3	239.3	26.9	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	98.4	99.6	22.8	99.7	24.1	-	N
Dissolved Oxygen (mg/L)	—	8.63	8.63	22.8	8.68	24.1	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	757.0	—	—	757.3	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature:

Date: 8/16/19



Field Instrument Calibration Log

Date: 8/19/19

Weather: 80-85°F, sunny

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro PSS

Calibrated By: Dave Kortjohn

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.403	1.413	28.1	1.413	30.7	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.86	7.00	27.5	6.94	30.4	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.14	4.01	27.8	4.03	30.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.01	10.00	27.6	10.00	30.6	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	229.7	240.0	27.9	239.6	30.5	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.2	100.0	26.9	99.7	29.3	-	N
Dissolved Oxygen (mg/L)	-	7.95	7.97	26.9	7.86	29.3	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	754.3	-	-	754.8	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Dave Kortjohn

Date: 8/19/19



Field Instrument Calibration Log

Date: 8/21/19

Weather: 80°F, sun cloudy / rainy

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1240</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.411	1.413	26.5	1.412	27.6	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.89	7.00	26.7	7.01	27.7	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.11	4.00	26.5	4.02	27.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.06	10.00	26.6	10.00	27.7	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	232.4	240.0	26.3	238.3	27.7	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.3	100.0	24.5	99.8	25.9	-	N
Dissolved Oxygen (mg/L)	-	7.98	8.03	24.5	8.00	25.9	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	753.2	-	-	753.2	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Dave Kortjohn

Date: 8/21/19



Field Instrument Calibration Log

Date: 8/23/19

Weather: 75°F, cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Dave Kortjohn

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>745</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1420</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>10/2019</u>	1.406	1.413	24.9	1.423	26.1	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	<u>10/2020</u>	6.82	7.00	25.3	6.89	25.9	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	<u>3/2021</u>	4.09	4.01	24.9	4.12	25.7	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	<u>2/2021</u>	10.02	10.00	24.9	10.12	25.8	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	<u>10/2019</u>	241.0	240.0	25.0	238.4	26.0	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	97.3	99.4	22.9	99.6	24.1	—	N
Dissolved Oxygen (mg/L)	—	8.55	8.55	22.9	9.01	24.1	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	755.3	—	—	755.1	—	—	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: *Dave Kortjohn*

Date: 8/23/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020we

Calibrated By: Dave Kortjohn

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
8/14/19	0.01	0.01	10.13	10.00	0.01	10.03	
8/15/19	0.00	0.00	8.42	10.00	0.00	9.58	
8/16/19	0.00	0.00	9.56	10.00	0.00	9.91	
8/19/19	0.01	0.01	9.84	10.00	0.01	10.11	
8/21/19	0.01	0.01	10.12	10.00	0.01	9.96	
8/23/19	0.02	0.02	10.93	10.00	0.01	8.99	
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 8/23/19



Field Instrument Calibration Log

Date: 8/12/19

Weather: 80's

Project/Site Name: DACS

Instrument: YSI 650XL

Calibrated By: VMA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 µS/cm°)	3/20	1.397	1.413	18.71°	1.404	18.99°	±10 µS/cm	N
pH (7)	2/21	7.36	7.00	18.62°	7.07	19.07°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	18.59°	4.00	19.11°	± 0.3 Ph *	N
pH (10)	2/21	10.07	10.00	18.70°	10.13	19.08°	± 0.3 Ph *	N
ORP (240 mv)	10/19	241.3	240.0	18.63°	237.1	19.13°	±10 mv	N
Dissolved Oxygen (%)	N/A	121.0%	100.0%	18.30°	91.1%	19.18°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	18.07°	10.09	19.41°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: A

Date: 8/12/19



Field Instrument Calibration Log

Date: ~~8/14/19~~ 8/14/19

Weather: 80's

Project/Site Name: JARS

Instrument: YSI 650XL

Calibrated By: VBT

Serial Number: 11B109186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	6:15	1.382	20.03°	1:50	18.78°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21		7.49	20.18°		18.60°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21		4.02	20.17°		18.71°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21		10.11	20.30°		18.63°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19		237.1	20.18°		18.59°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	MA		100.1%	20.03°		18.41°	-	N
Dissolved Oxygen (mg/L)	MA		10.16	19.97		18.39°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	MA		760	—		—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature:

Date: 8/14/19



Field Instrument Calibration Log

Date: 8/15/19

Weather: 70's

Project/Site Name: Ducks

Instrument: YSI 650XL

Calibrated By: VKL

Serial Number: 113100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1420</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.432</u>	<u>1.413</u>	<u>19.07°</u>	<u>1.410</u>	<u>17.31°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.20</u>	<u>7.00</u>	<u>19.13°</u>	<u>7.02</u>	<u>17.26°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.18</u>	<u>4.00</u>	<u>19.18°</u>	<u>4.01</u>	<u>17.36°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.73</u>	<u>10.00</u>	<u>19.03°</u>	<u>10.03</u>	<u>17.40°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>256.7</u>	<u>240.0</u>	<u>19.09°</u>	<u>241.1</u>	<u>17.27°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>NA</u>	<u>109.2%</u>	<u>100.0%</u>	<u>19.00°</u>	<u>101.2%</u>	<u>17.23°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>10.07</u>	<u>10.00</u>	<u>18.97°</u>	<u>9.97</u>	<u>17.18°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>NA</u>	<u>-</u>	<u>760</u>		<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/15/19



Field Instrument Calibration Log

Date: 8/16/19

Weather: 80's

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: WGA

Serial Number: 11B500186

Parameters	Solution Expiration Date	AM Calibration Time <u>615</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 μS/cm ²)	<u>3/20</u>	<u>1.378</u>	<u>1.413</u>	<u>21.17°</u>	<u>1.410</u>	<u>20.03°</u>	±10 μS/cm	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.21</u>	<u>7.00</u>	<u>21.30°</u>	<u>7.03</u>	<u>20.09°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.06</u>	<u>4.00</u>	<u>21.13°</u>	<u>4.06</u>	<u>20.18°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.01</u>	<u>10.00</u>	<u>21.16°</u>	<u>10.11</u>	<u>20.27°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>252.6</u>	<u>240.0</u>	<u>21.21°</u>	<u>241.1</u>	<u>20.13°</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>M/A</u>	<u>131.7%</u>	<u>100.0%</u>	<u>21.20°</u>	<u>107.1%</u>	<u>19.78°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>M/A</u>	<u>9.87</u>	<u>10.00</u>	<u>21.01°</u>	<u>9.92</u>	<u>19.21°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>M/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/16/19



Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: Lapporte 2020E

Calibrated By: VIA

Serial Number: 5044 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
8/12/19	0.31	0.00	9.70	10.00	0.04	10.11	N
8/13/19	0.20	0.00	10.03	10.00	VIA		
8/14/19	0.11	0.00	9.90	10.00	0.13	9.90	N
8/15/19	0.23	0.00	10.11	10.00	0.10	9.97	N
8/16/19	0.19	0.00	10.21	10.00	0.07	10.03	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]

Date: 8/16/19



Field Instrument Calibration Log

Date: 8/19/19

Weather: 80's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: KA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.437	1.413	20.15°	1.410	19.70°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.21	7.00	20.18°	7.03	19.68°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.03	4.00	20.19°	4.11	19.60°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	9.60	10.00	20.09°	10.09	19.73°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	231.2	240.0	20.17°	247.7	19.71°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	109.6%	100.0%	20.00°	91.6%	19.40°	-	N
Dissolved Oxygen (mg/L)	N/A	10.37	10.00	19.93°	10.07	19.50°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	769	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: KA

Date: 8/19/19



Field Instrument Calibration Log

Date: 8/20/19

Weather: 80's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: [Signature]

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.432</u>	<u>1.413</u>	<u>20.19°</u>	<u>1.411</u>	<u>22.60°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.21</u>	<u>7.00</u>	<u>20.37°</u>	<u>7.00</u>	<u>22.77°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.06</u>	<u>4.00</u>	<u>20.41°</u>	<u>4.11</u>	<u>22.80°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.20</u>	<u>10.00</u>	<u>20.40°</u>	<u>9.87</u>	<u>22.69°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>227.1</u>	<u>240.0</u>	<u>20.39°</u>	<u>241.1</u>	<u>22.70°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>91.6%</u>	<u>100.0%</u>	<u>20.01°</u>	<u>93.2%</u>	<u>22.10°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.63</u>	<u>10.00</u>	<u>20.13°</u>	<u>9.80</u>	<u>22.03°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/20/19



Field Instrument Calibration Log

Date: 8/21/19

Weather: 70's heavy rain

Project/Site Name: Devers

Instrument: YIE 650XL

Calibrated By: RLA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.430	1.413	17.89°	1.410	16.97°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.09	7.00	18.03°	7.02	17.11°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.16	4.00	18.11°	4.01	17.27°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.16	10.00	18.40°	10.15	17.80°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	253.1	240.0	18.24°	241.7	17.63°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	MA	91.0%	100.0%	18.12°	107.6%	17.30°	-	N
Dissolved Oxygen (mg/L)	MA	10.47	10.00	18.17°	9.90	17.20°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	MA	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/21/19



Field Instrument Calibration Log

Date: 8/22/19

Weather: 80's

Project/Site Name: Dover

Instrument: YSI 650x

Calibrated By: WA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>620</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1330</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.432</u>	<u>1.413</u>	<u>22.16°</u>	<u>1.403</u>	<u>24.18°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.18</u>	<u>7.00</u>	<u>22.30°</u>	<u>7.20</u>	<u>24.21°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.21</u>	<u>4.00</u>	<u>22.46°</u>	<u>4.09</u>	<u>24.30°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.36</u>	<u>10.00</u>	<u>22.38°</u>	<u>9.89</u>	<u>24.27°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>251.7</u>	<u>240.0</u>	<u>22.21°</u>	<u>243.7</u>	<u>24.23°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>89.1%</u>	<u>100.0%</u>	<u>22.01°</u>	<u>96.1%</u>	<u>24.02°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.47</u>	<u>10.00</u>	<u>22.11°</u>	<u>9.82</u>	<u>24.11</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/22/19



Field Instrument Calibration Log

Date: 8/23/19

Weather: 80's

Project/Site Name: Dennis

Instrument: YSI 650XL

Calibrated By: MA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>620</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1345</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.447</u>	<u>1.413</u>	<u>21-16°</u>	<u>1.420</u>	<u>15.98°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.38</u>	<u>7.00</u>	<u>21.33°</u>	<u>7.11</u>	<u>15.87°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.11</u>	<u>4.00</u>	<u>21.39°</u>	<u>4.18</u>	<u>15.84°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.72</u>	<u>10.00</u>	<u>21.19°</u>	<u>9.90</u>	<u>15.93°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>231.6</u>	<u>240.0</u>	<u>21.47°</u>	<u>246.1</u>	<u>15.82°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>MA</u>	<u>39.2%</u>	<u>100.0%</u>	<u>21.00°</u>	<u>97.1%</u>	<u>15.71°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>MA</u>	<u>9.47</u>	<u>10.00</u>	<u>20.92°</u>	<u>9.90</u>	<u>15.32°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>MA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/23/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: L9 Mark 2020E

Calibrated By: WA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
8/19/19	0.13	0.00	9.97	10.00	0.03	9.70	N
8/20/19	0.27	0.00	9.99	10.00	0.00	10.03	N
8/21/19	0.09	0.00	10.14	10.00	0.07	10.01	N
8/22/19	0.31	0.00	9.80	10.00	0.20	10.15	N
8/23/19	0.29	0.00	10.16	10.00	0.03	10.02	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature:

Date: 8/23/19



Field Instrument Calibration Log

Date: 8/26/19

Weather: Sunny, 60's-70's (°F)

Project/Site Name: Dovms PFAS; Rig #1

Instrument: YSI 650 MDS

Calibrated By: CV

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1,419	1,413	17.98	1,419	22.30	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.21	7.21 7.00	17.61	6.82	21.68	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.00	4.00	17.70	4.10	22.15	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.09	10.00	17.81	10.15	23.19	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	231.6	240.0	18.08	231.7	22.71	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	113.2	99.9	17.50	93.5	19.01	-	—
Dissolved Oxygen (mg/L)	—	11.01	10.21	17.50	9.99	19.01	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	—

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Handwritten Signature]

Date: 8/26/19



Field Instrument Calibration Log

Date: 8/27/19

Weather: Sunny, 70's (°F)

Project/Site Name: Devens PFAS RI ; Rig #1

Instrument: YSI 650 MDS

Calibrated By: CV

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1,425	1,413	18.21	1,404	21.56	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.89	7.00	18.25	6.94	21.24	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	3.85	4.00	18.15	4.12	22.01	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	9.86	10.00	18.08	9.94	21.41	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	255.9	240.0	18.10	231.1	22.12	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	96.9	100.0	17.21	102.2	21.49	—	—
Dissolved Oxygen (mg/L)	—	8.99	9.68	17.21	8.28	21.49	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	—	—

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/27/19



Field Instrument Calibration Log

Date: 8/28/19

Weather: Sunny 70's - 80's

Project/Site Name: Darius PFAS RI: R. 1 #1

Instrument: YSI 650 MOS

Calibrated By: CV

Serial Number: 113100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0625</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1,442	1,413	21.10	1,405	24.80	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.40	7.00	21.01	6.88	24.29	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.16	4.00	21.23	3.99	24.33	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.04	10.00	20.99	9.85	24.71	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	235.1	240.0	21.53	231.5	24.80	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	100.9	100.0	20.90	101.5	22.71	-	-
Dissolved Oxygen (mg/L)	-	9.19	8.89	20.90	8.98	22.71	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/28/19



Field Instrument Calibration Log

Date: 8/29/19

Weather: 70'-80's Sunny

Project/Site Name: Devens MA PFAS RI Rtg # 1

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0736</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1415</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/26</u>	<u>1427</u>	<u>1,413</u>	<u>20.75</u>	<u>1410</u>	<u>24.87</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>6.98</u>	<u>7.00</u>	<u>21.00</u>	<u>6.98</u>	<u>24.83</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>3.99</u>	<u>4.00</u>	<u>20.89</u>	<u>3.90</u>	<u>24.79</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.89</u>	<u>10.00</u>	<u>21.05</u>	<u>9.89</u>	<u>24.95</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>2425</u>	<u>240.0</u>	<u>21.10</u>	<u>235.3</u>	<u>25.00</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>100.8</u>	<u>100.0</u>	<u>20.50</u>	<u>101.0</u>	<u>22.57</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>8.10</u>	<u>8.85</u>	<u>20.50</u>	<u>8.99</u>	<u>22.57</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/29/19



Field Instrument Calibration Log

Date: 9/3/19

Weather: 70's - 80's Sunny (°F)

Project/Site Name: Dems PFAS RI Rlg 2

Instrument: YSI PRO OSS

Calibrated By: CV

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0845</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 μS/cm°)	11/2019	1,506	1,413	21.3	1,419	23.1	±10 μS/cm	N
pH (7)	2/2021	6.78	7.00	21.4	7.21	22.7	± 0.3 Ph *	N
pH (4)	3/2021	4.28	4.00	21.5	3.75	22.5	± 0.3 Ph *	N
pH (10)	2/2021	10.05	10.00	21.6	10.25	22.8	± 0.3 Ph *	N
ORP (240 mv)	10/2019	225.5	240.0	21.8	248.3	22.9	±10 mv	N
Dissolved Oxygen (%)	-	96.0	100.0	20.1	98.6	22.5	-	-
Dissolved Oxygen (mg/L)	-	8.78	8.88	20.1	8.76	22.5	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes: Calibration solutions very dirty; will change 9/4/19

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/3/19



Field Instrument Calibration Log

Date: 9/4/19

Weather: Sunny 70's - 80's (°F)

Project/Site Name: Dams PFAS RI R1, 2

Instrument: YSI Pro DSS

Calibrated By: CV

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1445</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm ^o)	11/2019	1,547	1,413	20.8	1,404	23.4	±10 µS/cm	N
pH (7)	10/2020	6.78	7.00	21.2	7.01	23.3	± 0.3 Ph *	N
pH (4)	2/2020	3.08	4.00	21.2	4.01	22.9	± 0.3 Ph *	N
pH (10)	7/2020	10.62	10.00	21.4	10.00	22.8	± 0.3 Ph *	N
ORP (240 mv)	01/2023	257.8	240.0	20.9	237.7	23.7	±10 mv	N
Dissolved Oxygen (%)	-	98.6	100.0	21.2	99.6	22.5	-	-
Dissolved Oxygen (mg/L)	-	8.85	8.85	21.2	8.65	22.5	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes: Changed pH buffer solutions and ORP/spCond calibrating solutions

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/4/19



Field Instrument Calibration Log

Date: 9/5/19

Weather: Sunny 70's - 80's (°F)

Project/Site Name: Dwms PFAS RI; Rig 2

Instrument: YSI Pro DSS

Calibrated By: CV

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^2$)	11/2019	1,410	1,413	20.2	1,422	19.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.98	7.00	21.3	7.08	20.2	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	02/2020	4.03	4.00	21.1	4.12	20.1	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	07/2020	10.06	10.00	20.7	10.06	20.0	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	01/2023	240.0	240.0	20.6	241.3	20.2	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	99.1	100.0	20.5	100.9	20.0	-	-
Dissolved Oxygen (mg/L)	-	9.08	9.09	20.5	9.06	20.0	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/5/19



Field Instrument Calibration Log

Date: 9/3/19

Weather: 70's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:10</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>15:00</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.429</u>	<u>1.413</u>	<u>21.60°</u>	<u>1.409</u>	<u>22-16°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.31</u>	<u>7.00</u>	<u>21.57°</u>	<u>7.01</u>	<u>22.21°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.50</u>	<u>4.00</u>	<u>21.74°</u>	<u>4.03</u>	<u>22-40°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.39</u>	<u>10.00</u>	<u>21.39°</u>	<u>10.01</u>	<u>22-30°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>251.7</u>	<u>240.0</u>	<u>21.68°</u>	<u>237.9</u>	<u>22.29°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>127.1%</u>	<u>100.0%</u>	<u>21.69°</u>	<u>96.7%</u>	<u>22-40°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>10.73</u>	<u>10.00</u>	<u>21.30°</u>	<u>9.91</u>	<u>22-37</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:
 * Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/3/19



Field Instrument Calibration Log

Date: 9/4/19

Weather: 70's

Project/Site Name: Daves

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11B10186

Parameters	Solution Expiration Date	AM Calibration Time <u>645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1340</u>		Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.439</u>	<u>1.413</u>	<u>22.49°</u>	<u>1.408</u>	<u>20.06°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>	
pH (7)	<u>2/21</u>	<u>7.27</u>	<u>7.00</u>	<u>22.57°</u>	<u>7.07</u>	<u>20.11°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
pH (4)	<u>3/21</u>	<u>3.80</u>	<u>4.00</u>	<u>22.59°</u>	<u>4.00</u>	<u>20.19°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
pH (10)	<u>2/21</u>	<u>10.13</u>	<u>10.00</u>	<u>22.78°</u>	<u>10.02</u>	<u>20.01°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>	
ORP (240 mv)	<u>10/19</u>	<u>221.1</u>	<u>240.0</u>	<u>22.91°</u>	<u>236.6</u>	<u>20.50°</u>	$\pm 10 \text{ mv}$	<u>N</u>	
Dissolved Oxygen (%)	<u>N/A</u>	<u>140.1%</u>	<u>100.0%</u>	<u>22.70°</u>	<u>101.1%</u>	<u>19.97°</u>		<u>N</u>	
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.61</u>	<u>10.00</u>	<u>22.50°</u>	<u>9.97</u>	<u>19.87°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>	
Barometric Pressure (mmHg)	<u>N/A</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>		<u>N</u>	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/4/19



Field Instrument Calibration Log

Date: 9/5/19

Weather: 70's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: VGA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1435</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.437</u>	<u>1.413</u>	<u>19.20°</u>	<u>1.420</u>	<u>19.50°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.26</u>	<u>7.00</u>	<u>19.40°</u>	<u>7.03</u>	<u>19.47°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.15</u>	<u>4.00</u>	<u>19.37°</u>	<u>4.09</u>	<u>19.68°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.62</u>	<u>10.00</u>	<u>19.31°</u>	<u>10.00</u>	<u>19.79°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>263.1</u>	<u>240.0</u>	<u>19.18°</u>	<u>247.1</u>	<u>19.39°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>NA</u>	<u>87.1%</u>	<u>100.0%</u>	<u>19.07°</u>	<u>87.6%</u>	<u>19.21°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>9.47</u>	<u>10.00</u>	<u>19.14°</u>	<u>9.77</u>	<u>19.02°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>NA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/5/19



Field Instrument Calibration Log

Date: 9/6/19

Weather: 60's

Project/Site Name: Divers

Instrument: YSI 650XL

Calibrated By: WJ

Serial Number: 11 B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:05</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.427	1.413	17.97°	1.410	18.11°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.19	7.00	17.86°	7.08	18.14°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.18	4.00	17.93°	4.09	18.21°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	9.70	10.00	17.61°	9.97	18.09°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	259.7	240.0	17.69°	241.6	18.11°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	81.6%	100.0%	17.30°	96.2%	18.00°	-	N
Dissolved Oxygen (mg/L)	NA	9.47	10.00	17.01°	9.90	18.09	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/6/19



Turbidity Instrument Calibration Log

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: [Signature]

Serial Number: 113100186

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/3/19	0.00	0.00	9.93	10.00	9.07	10.11	N
9/4/19	0.17	0.00	10.40	10.00	0.13	9.70	N
9/5/19	0.09	0.00	10.30	10.00	0.09	9.92	N
9/6/19	0.11	0.00	10.40	10.00	0.11	9.97	N
Notes: Mark Noted Variances on Field Forms					Post Calibration Criteria		
					-	± 0.5	

Signature: [Signature]

Date: 9/6/19



Field Instrument Calibration Log

Date: 9/10/19

Weather: 70's

Project/Site Name: DAAS

Instrument: YSI 650XL

Calibrated By: WJA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	6:25	1.382	17.99°	1:30	16.92°	$\pm 10 \mu\text{S}/\text{cm}$	Y
pH (7)	2/21		7.26	18.32°		17.31°	$\pm 0.3 \text{ Ph}^*$	Y
pH (4)	3/21		4.21	18.13°		17.40°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21		9.70	18.26°		17.37°	$\pm 0.3 \text{ Ph}^*$	Y
ORP (240 mv)	10/19		230.1	18.32°		17.56°	$\pm 10 \text{ mv}$	Y
Dissolved Oxygen (%)	N/A		92.6%	18.21°		17.29°	-	N
Dissolved Oxygen (mg/L)	N/A		9.60	18.00°		17.40°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A		760	-		-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: WJA

Date: 9/10/19



Field Instrument Calibration Log

Date: 9/11/19

Weather: 80's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: VVA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	6:05	1.472	18.47°	1:50	17.97°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21		7.19	18.49°		18.09°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21		4.19	18.56°		18.11°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	10/21 2/21		10.20	18.63°		18.21°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19		227.1	18.51°		18.09°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A		82.6%	18.20°		18.01°	-	N
Dissolved Oxygen (mg/L)	N/A		9.42	18.11°		17.92°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A		760	-		-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/11/19



Field Instrument Calibration Log

Date: 9/12/19

Weather: 70's Rain

Project/Site Name: Devos

Instrument: YSI 650XL

Calibrated By: VJA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>610</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.429</u>	<u>1.413</u>	<u>19.03°</u>	<u>1.413</u>	<u>17.92°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.23</u>	<u>7.00</u>	<u>19.15°</u>	<u>7.02</u>	<u>17.81°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.18</u>	<u>4.00</u>	<u>19.01°</u>	<u>4.01</u>	<u>17.77°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.21</u>	<u>10.00</u>	<u>18.97°</u>	<u>10.09</u>	<u>17.83°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>253.7</u>	<u>240.0</u>	<u>18.91°</u>	<u>243.1</u>	<u>17.90°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>91.1%</u>	<u>100.0%</u>	<u>18.78°</u>	<u>96.7%</u>	<u>17.47°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.60</u>	<u>10.00</u>	<u>18.69°</u>	<u>9.90</u>	<u>17.20°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/12/19



Field Instrument Calibration Log

Date: 9/13/19

Weather: 60's

Project/Site Name: Dever

Instrument: YSI 650XL

Calibrated By: KLN

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:0</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>15:00</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.439</u>	<u>1.413</u>	<u>16.97°</u>	<u>1.403</u>	<u>17.92°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.37</u>	<u>7.00</u>	<u>16.82°</u>	<u>7.11</u>	<u>17.91°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.26</u>	<u>4.00</u>	<u>16.80°</u>	<u>4.02</u>	<u>18.10°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.15</u>	<u>10.00</u>	<u>16.92°</u>	<u>10.23</u>	<u>18.09°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>259.7</u>	<u>240.0</u>	<u>16.80°</u>	<u>231.9</u>	<u>18.21°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>NA</u>	<u>122.26</u>	<u>100.0%</u>	<u>16.39°</u>	<u>91.60%</u>	<u>18.00°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>9.42</u>	<u>10.00</u>	<u>16.42°</u>	<u>9.80</u>	<u>18.03°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>NA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/13/19



Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020E

Calibrated By: VGA

Serial Number: 5083-594

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/10/19	0.25	0.00	9.70	10.00	0.03	10.26	N
9/11/19	0.11	0.00	10.15	10.00	0.02	10.11	N
9/12/19	0.27	0.00	9.97	10.00	0.09	9.97	N
9/13/19	0.40	0.00	10.53	10.00	0.11	9.79	N
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria		
					-	± 0.5	

Signature: [Handwritten Signature]

Date: 9/13/19



Field Instrument Calibration Log

Date: 9/16/19

Weather: 60's

Project/Site Name: Devas

Instrument: YSI 650XL

Calibrated By: VIA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.479</u>	<u>1.413</u>	<u>15.92°</u>	<u>1.407</u>	<u>17.22°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.23</u>	<u>7.00</u>	<u>16.21°</u>	<u>7.00</u>	<u>17.31°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.39</u>	<u>4.00</u>	<u>16.18°</u>	<u>4.07</u>	<u>17.46°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.27</u>	<u>10.00</u>	<u>16.09</u>	<u>10.02</u>	<u>17.38°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>227.6</u>	<u>249.0</u>	<u>16.23°</u>	<u>241.7</u>	<u>17.33°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>VIA</u>	<u>91.1%</u>	<u>100.0%</u>	<u>15.87°</u>	<u>91.6%</u>	<u>16.97°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>VIA</u>	<u>9.47</u>	<u>10.00</u>	<u>15.80°</u>	<u>9.81</u>	<u>16.81°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>VIA</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/16/19



Field Instrument Calibration Log

Date: 9/17/19

Weather: 70's

Project/Site Name: Doas

Instrument: YSI 650XL

Calibrated By: VM

Serial Number: 11810186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.437</u>	<u>1.413</u>	<u>16.03°</u>	<u>1.413</u>	<u>17.40°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.20</u>	<u>7.00</u>	<u>16.11°</u>	<u>7.11</u>	<u>17.49°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.47</u>	<u>4.00</u>	<u>16.03°</u>	<u>4.11</u>	<u>17.61°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.19</u>	<u>10.00</u>	<u>16.27°</u>	<u>10.02</u>	<u>17.50°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>231.1</u>	<u>240.0</u>	<u>16.18°</u>	<u>231.7</u>	<u>17.59°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>129.7%</u>	<u>100.0%</u>	<u>15.97°</u>	<u>92.6%</u>	<u>17.40°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>10.40</u>	<u>10.00</u>	<u>15.41°</u>	<u>9.90</u>	<u>17.29°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes: _____

* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 9/17/19



Field Instrument Calibration Log

Date: 09/19/19 MM

Weather: 40°F

Project/Site Name: PFAS RI - Devens MA

Instrument: YSI 650 XL

Calibrated By: Melissa Miller

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>0725</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1421	1413	15.99	1410	17.47	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	7.13	7.00	15.90	6.96	17.51	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.05	4.00	15.93	3.99	17.32	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.08	10.0	15.95	9.84	17.29	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	232.7	240.0	15.89	235.3	17.20	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	111%	100%	15.39	91.6	17.13	-	N
Dissolved Oxygen (mg/L)	NA	10.20	10.00	15.39	9.92	17.13	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	-	760	15.39	760	17.13	-	N

Notes: * Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: Melissa Miller

Date: 09/19/19 MM



Field Instrument Calibration Log

Date: 09/20/19

Weather: 38°F

Project/Site Name: PFAS RI - Devens, MA

Instrument: YSI 650 XL

Calibrated By: Melissa

Serial Number: 11B100185

Parameters	Solution Expiration Date	AM Calibration Time <u>0700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1300</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1410	1413	15.90	1420	18.0 18.0	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.98	7.0	15.84	6.83	19.13	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	3.99	4.0	15.86	3.91	19.20	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.02	10.0	15.80	9.87	19.27	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	233.5	240.0	15.79	245	19.35	$\pm 10 \text{ mv}$	
Dissolved Oxygen (%)	NA	108.9	100%	15.30	92.5	28.5	-	Y
Dissolved Oxygen (mg/L)	NA	10.10	10.00	15.30	9.50	28.5	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	NA	-	760	15.30	760	28.5 28.5	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Melissa

Date: 09/20/19



Turbidity Instrument Calibration Log

Project/Site Name: Delers

Instrument: LaMotte 2020E

Calibrated By: WJA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/16/19	0.27	0.00	9.73	10.00	0.02	10.11	Y
9/17/19	0.19	0.00	10.15	10.00	0.03	10.03	Y
9/19/19	0.18	0.00	10.10	10.0	0.02	10.01	N
9/20/19	0.10	0.00	9.98	10.00	0.07	10.4	N
Notes: Mark Noted Variences on Field Forms					Post Calibration Criteria		
					-	± 0.5	

Signature: [Handwritten Signature]

Date: 09/18/19 - 09/20/19



Field Instrument Calibration Log

Date: 9/24/19

Weather: 80's

Project/Site Name: Dams

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>6:10</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	<u>3/20</u>	<u>1.459</u>	<u>1.413</u>	<u>23.70°</u>	<u>1.420</u>	<u>19.27°</u>	±10 µS/cm	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.31</u>	<u>7.00</u>	<u>23.41°</u>	<u>7.00</u>	<u>19.11°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.11</u>	<u>4.00</u>	<u>23.69°</u>	<u>4.03</u>	<u>19.71°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.67</u>	<u>10.00</u>	<u>23.58°</u>	<u>9.90</u>	<u>19.68°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>221.7</u>	<u>240.0</u>	<u>23.59°</u>	<u>242.2</u>	<u>19.57°</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>83.7%</u>	<u>100.0%</u>	<u>23.20°</u>	<u>102.6%</u>	<u>19.70°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.90</u>	<u>10.00</u>	<u>23.17°</u>	<u>9.90</u>	<u>19.40°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:
 * Ph Unit with Ph 7 Buffer (Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/24/19



Field Instrument Calibration Log

Date: 9/25/19

Weather: 70°

Project/Site Name: Pavas

Instrument: YSI 650XL

Calibrated By: VBA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1500</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	<u>3/20</u>	<u>1.471</u>	<u>1.413</u>	<u>21.70°</u>	<u>1.403</u>	<u>18.79°</u>	±10 µS/cm	<u>Y</u>
pH (7)	<u>2/21</u>	<u>7.27</u>	<u>7.00</u>	<u>21.77°</u>	<u>7.11</u>	<u>18.69°</u>	± 0.3 Ph *	<u>Y</u>
pH (4)	<u>3/21</u>	<u>4.11</u>	<u>4.00</u>	<u>21.69°</u>	<u>4.03</u>	<u>18.47°</u>	± 0.3 Ph *	<u>Y</u>
pH (10)	<u>2/21</u>	<u>10.47</u>	<u>10.00</u>	<u>21.73°</u>	<u>10.00</u>	<u>18.61°</u>	± 0.3 Ph *	<u>Y</u>
ORP (240 mv)	<u>10/19</u>	<u>238.6</u>	<u>240.0</u>	<u>21.68°</u>	<u>241.1</u>	<u>18.50°</u>	±10 mv	<u>Y</u>
Dissolved Oxygen (%)	<u>NA</u>	<u>96.1%</u>	<u>100.0%</u>	<u>21.30°</u>	<u>102.2%</u>	<u>18.21°</u>	-	<u>Y</u>
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>10.11</u>	<u>10.00</u>	<u>21.18°</u>	<u>10.30</u>	<u>18.40°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>Y</u>
Barometric Pressure (mmHg)	<u>NA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>Y</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/25/19



Field Instrument Calibration Log

Date: 9/26/19

Weather: 70's

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11B109186

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 μ S/cm ^o)	<u>3/20</u>	<u>1.380</u>	<u>1.413</u>	<u>22.60°</u>	<u>1.419</u>	<u>19.20°</u>	$\pm 10 \mu$ S/cm	<u>N</u>
pH (7)	<u>2/21</u>	<u>6.86</u>	<u>7.00</u>	<u>22.70°</u>	<u>7.11</u>	<u>19.38°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/21</u>	<u>3.72</u>	<u>4.00</u>	<u>22.50°</u>	<u>4.20</u>	<u>19.27°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.70</u>	<u>10.00</u>	<u>22.49°</u>	<u>10.03</u>	<u>19.09°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>229.7</u>	<u>240.0</u>	<u>22.47°</u>	<u>238.7</u>	<u>19.18°</u>	± 10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>131.6</u>	<u>100.0%</u>	<u>22.20°</u>	<u>111.1%</u>	<u>19.20°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.37</u>	<u>10.00</u>	<u>22.17°</u>	<u>9.90</u>	<u>19.03°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/26/19



Field Instrument Calibration Log

Date: 9/27/19

Weather: 70's

Project/Site Name: Dennis

Instrument: YSI 650XL

Calibrated By: VJA

Serial Number: 11B100/86

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1200</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.497</u>	<u>1.413</u>	<u>20.19°</u>	<u>1.420</u>	<u>18.60°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.30</u>	<u>7.00</u>	<u>20.39°</u>	<u>7.03</u>	<u>18.57°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.26</u>	<u>4.00</u>	<u>20.68°</u>	<u>4.01</u>	<u>18.59°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.78</u>	<u>10.00</u>	<u>20.57°</u>	<u>9.90</u>	<u>18.63°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>261.7</u>	<u>240.0</u>	<u>20.49°</u>	<u>247.7</u>	<u>18.70°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>MA</u>	<u>79.9%</u>	<u>90.0%</u>	<u>20.19°</u>	<u>91.6%</u>	<u>18.73°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>MA</u>	<u>9.80</u>	<u>10.00</u>	<u>20.21°</u>	<u>9.91</u>	<u>18.39°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>N</u>
Barometric Pressure (mmHg)	<u>MA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/27/19



Field Instrument Calibration Log

Date: 9/30/19

Weather: 60's

Project/Site Name: Davis

Instrument: YSI 650XL

Calibrated By: KGA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>3/20</u>	<u>1.437</u>	<u>1.413</u>	<u>22.20°</u>	<u>1.409</u>	<u>19.77°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.21</u>	<u>7.00</u>	<u>22.30°</u>	<u>7.11</u>	<u>18.69°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.23</u>	<u>4.00</u>	<u>22.18°</u>	<u>4.11</u>	<u>18.73°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.19</u>	<u>10.00</u>	<u>22.19°</u>	<u>10.01</u>	<u>18.60°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>231.7</u>	<u>240.0</u>	<u>22.36°</u>	<u>229.2</u>	<u>18.51°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>NA</u>	<u>111.1%</u>	<u>100.0%</u>	<u>21.97°</u>	<u>109.7%</u>	<u>18.30°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>NA</u>	<u>10.27</u>	<u>10.00</u>	<u>21.93°</u>	<u>9.79</u>	<u>18.01°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>NA</u>	<u>—</u>	<u>760</u>	<u>—</u>	<u>760</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 9/30/19



Field Instrument Calibration Log

Date: 10/1/19

Weather: 70's

Project/Site Name: Davers

Instrument: YSI 650XL

Calibrated By: WBA

Serial Number: 11860186

Parameters	Solution Expiration Date	AM Calibration Time <u>605</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	<u>3/20</u>	<u>1.392</u>	<u>1.413</u>	<u>18.61°</u>	<u>1.406</u>	<u>19.60°</u>	±10 µS/cm	<u>N</u>
pH (7)	<u>2/21</u>	<u>6.72</u>	<u>7.00</u>	<u>18.87°</u>	<u>7.11</u>	<u>19.47°</u>	± 0.3 Ph *	<u>N</u>
pH (4)	<u>3/21</u>	<u>3.68</u>	<u>4.00</u>	<u>18.79°</u>	<u>4.02</u>	<u>19.53°</u>	± 0.3 Ph *	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.77</u>	<u>10.00</u>	<u>18.83°</u>	<u>9.91</u>	<u>19.42°</u>	± 0.3 Ph *	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>229.6</u>	<u>240.0</u>	<u>18.91°</u>	<u>232.6</u>	<u>19.60°</u>	±10 mv	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>81.6%</u>	<u>100.0%</u>	<u>18.62°</u>	<u>91.1%</u>	<u>19.57°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.80</u>	<u>10.00</u>	<u>18.58°</u>	<u>9.89</u>	<u>19.41°</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: WBA

Date: 10/1/19



Field Instrument Calibration Log

Date: 10/2/19

Weather: 70's

Project/Site Name: Dover

Instrument: YSI 650M

Calibrated By: WMA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.468	1.413	20.32°	1.410	21.70°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.80	7.00	20.47°	7.11	21.47°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.37	4.00	20.42°	4.01	21.61°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.50	10.00	20.38°	10.10	21.40°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19	229.7	240.0	20.32°	240.7	21.38°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	82.6%	100.0%	20.19°	96.1%	21.19°	-	N
Dissolved Oxygen (mg/L)	N/A	10.39	10.00	20.09°	10.11	21.40°	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: WMA

Date: 10/2/19



Field Instrument Calibration Log

Date: 10/3/19

Weather: 60's

Project/Site Name: Darr

Instrument: YSI 650XL

Calibrated By: VLN

Serial Number: 11B00186

Parameters	Solution Expiration Date	AM Calibration Time <u>630</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1330</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 μ S/cm [°])	3/20	1.493	1.413	20.15	1.419	18.79°	$\pm 10 \mu$ S/cm	N
pH (7)	2/21	7.26	7.00	20.14	7.01	18.81°	± 0.3 Ph *	N
pH (4)	3/21	4.03	4.00	20.10	4.00	18.77°	± 0.3 Ph *	N
pH (10)	2/21	9.97	10.00	20.37	10.16	18.69°	± 0.3 Ph *	N
ORP (240 mv)	10/19	256.1	240.0	20.16	241.7	18.77°	± 10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	20.01	91.6%	18.37°	-	N
Dissolved Oxygen (mg/L)	N/A	10.00	10.00	19.79	9.90	18.69°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes: * Ph Unit with Ph 7 Buffer (Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/3/19



Turbidity Instrument Calibration Log

Project/Site Name: Daers

Instrument: La Motte 2020

Calibrated By: WA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/30/19	0.32	0.00	9.90	10.00	0.07	10.00	N
10/1/19	0.47	0.00	9.63	10.00	0.11	10.11	N
10/2/19	0.27	0.00	10.16	10.00	0.19	9.90	N
10/3/19	0.19	0.00	10.21	10.00	0.17	10.11	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variances on Field Forms

Signature: [Signature]

Date: 10/3/19



Field Instrument Calibration Log

Date: 6/17/19

Weather: 70's

Project/Site Name: Devos

Instrument: YSI 650XL

Calibrated By: WA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	6:00	1.501	22.39°	14:00	21.60°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21		7.39	22.46°		21.73°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21		4.50	22.51°		21.89°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21		10.19	22.39°		21.77°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/19		223.7	22.61°		21.60°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A		106.1%	22.91°		21.07°	-	N
Dissolved Oxygen (mg/L)	N/A		10.49	22.11°		21.30°	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A		760	-		-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 6/17/19



Field Instrument Calibration Log

Date: 10/8/19

Weather: 55°F overcast

Project/Site Name: Devens, MA

Instrument: VST 650XL

Calibrated By: Melissa Miller

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1,413 μS/cm ^o)	3/20	1427	1,413	20.10	1410	19.98	±10 μS/cm	N
pH (7)	2/21	7.13	7.00	20.15	6.98	19.90	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	20.14	3.99	19.92	± 0.3 Ph *	N
pH (10)	2/21	10.15	10.00	20.20	9.81	19.95	± 0.3 Ph *	N
ORP (240 mv)	10/19	235.7	240.0	20.17	243.7	19.89	±10 mv	N
Dissolved Oxygen (%)	NA	105.7	100.0	20.05	98.9	19.93	-	N
Dissolved Oxygen (mg/L)	NA	10.34	10.00	20.05	9.95	19.93	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	760	-	-	-	-	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller

Date: 10/8/19



Field Instrument Calibration Log

Date: 10/9/19

Weather: 50's

Project/Site Name: Davers

Instrument: YSI 650 XL

Calibrated By: KBA

Serial Number: 1113100186

Parameters	Solution Expiration Date	AM Calibration Time <u>650</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/20</u>	<u>1.503</u>	<u>1.413</u>	<u>19.71°</u>	<u>1.411</u>	<u>17.97°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.47</u>	<u>7.00</u>	<u>19.87°</u>	<u>7.27</u>	<u>17.83°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/21</u>	<u>4.60</u>	<u>4.00</u>	<u>19.97°</u>	<u>4.11</u>	<u>17.64°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>9.39</u>	<u>10.00</u>	<u>19.71°</u>	<u>9.92</u>	<u>17.70°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>10/19</u>	<u>263.1</u>	<u>240.0</u>	<u>19.61°</u>	<u>231.9</u>	<u>17.78°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>MIA</u>	<u>132.1%</u>	<u>100.0%</u>	<u>19.50°</u>	<u>89.7%</u>	<u>17.46°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>MIA</u>	<u>10.49</u>	<u>10.00</u>	<u>19.57°</u>	<u>9.60</u>	<u>17.63°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>MIA</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/9/19



Field Instrument Calibration Log

Date: 10/10/19

Weather: 50's

Project/Site Name: Dever

Instrument: YSI 650XL

Calibrated By: VGA

Serial Number: 11 B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Value					
Specific Conductivity (1.413 μS/cm°)	3/20	6:37.8	1.413	17.21°	1:42.0	16.97°	±10 μS/cm	N
pH (7)	2/21	6.90	7.00	17.39°	6.91	17.03°	± 0.3 Ph *	N
pH (4)	3/21	3.51	4.00	17.31°	4.03	17.02°	± 0.3 Ph *	N
pH (10)	2/4	10.32	10.00	17.19°	10.11	17.11°	± 0.3 Ph *	N
ORP (240 mv)	10/19	221.6	240.0	17.24°	242.6	17.24°	±10 mv	N
Dissolved Oxygen (%)	MA	107.6%	100.0%	17.02°	103.16	16.97°	-	N
Dissolved Oxygen (mg/L)	MA	9.42	10.00	16.90°	9.90	16.80°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	MA	-	760	-	760	-	-	N

Notes: _____

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: _____

Date: 10/10/19



Turbidity Instrument Calibration Log

Project/Site Name: Doras

Instrument: L91011R 202012

Calibrated By: VGA / MM

Serial Number: ~~5014-50~~ 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
10/7/19	0.47	0.00	10.47	10.00	0.13	9.78	N
10/8/19	0.37	0.00	10.32	10.00	0.17	9.83	N
10/9/19	0.22	0.00	10.87	10.00	0.20	10.11	N
10/10/19	0.30	0.00	10.72	10.00	0.11	9.70	N
10/11/19	0.49	0.00	10.70	10.00	0.11	9.70	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [Signature]
MM - 10/8/19

Date: 10/19/19



Field Instrument Calibration Log

Date: 10/14/19

Weather: 50°

Project/Site Name: Dover

Instrument: YSI 650XL

Calibrated By: KA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.497	1.413	18.56	1400	19.47	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.69	7.00	18.48	7.03	19.37	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.56	4.00	18.45	4.11	19.46	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	8.70	10.00	18.55	9.79	19.49	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	221.6	242.0	18.60	241.7	19.58	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	127.0	100.0%	17.00	91.6%	19.02	-	N
Dissolved Oxygen (mg/L)	NA	9.11	10.00	16.74	9.79	18.99	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	-	760	-	760	-	-	N

Notes: _____
* Ph Unit with Ph 7 Buffer (Mark Noted Variences on Field Forms)

Signature: KA

Date: 10/14/19



Field Instrument Calibration Log

Date: 10/15/19

Weather: 50's

Project/Site Name: Dover

Instrument: YSI 650XL

Calibrated By: PCA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check Time	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time					
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.437	1.413	18.47°	1300	17.91	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	3/21	7.11	7.00	18.39°	7.07	17.67	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.09	4.00	18.41°	4.11	17.69	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.29	10.00	18.47°	10.09	17.80	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	256.7	240.0	18.69°	231.1	17.77	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	N/A	12.1%	100.0%	18.21°	91.7%	16.97	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	17.97°	10.17	17.30	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/15/19



Field Instrument Calibration Log

Date: 10/18/17

Weather: 50's

Project/Site Name: Daaf

Instrument: YSI 650DL

Calibrated By: VWA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration		Cal. Temp. (°C)	PM Post Cal. Check		Post Cal. Check Criteria	Variance Noted (Y/N)
		Time	Time		Time	Temp (°C)		
Specific Conductivity (1.413 μS/cm°)	3/20	1.497	1.413	17.97	1.410	16.27°	±10 μS/cm	N
pH (7)	2/21	7.29	7.00	17.97	7.11	16.31°	± 0.3 Ph *	N
pH (4)	3/21	4.36	4.09	18.11	4.20	16.29°	± 0.3 Ph *	N
pH (10)	2/21	10.18	10.00	18.03	10.07	16.33°	± 0.3 Ph *	N
ORP (240 mv)	5/20	239.1	240.0	18.10	243.3	16.57°	±10 mv	N
Dissolved Oxygen (%)	N/A	121.6%	100.0%	18.00	91.7%	16.31°	-	N
Dissolved Oxygen (mg/L)	N/A	9.58	10.00	17.67	9.92	16.27	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/18/17



Field Instrument Calibration Log

Date: 10/21/19

Weather: 50's

Project/Site Name: Devers

Instrument: YSI 650XL

Calibrated By: MA

Serial Number: 118100186

Parameters	Solution Expiration Date	AM Calibration Time <u>700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.439	1.413	19.70°	1.407	18.79°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.80	7.00	19.47°	7.19	18.72°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	3.72	4.00	19.42°	3.87	18.64°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	10.18	10.00	19.50°	10.11	18.73°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	230.2	240.0	19.40°	232.6	18.69°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	MA	87.1%	100.0%	19.20°	91.7%	18.40°	-	N
Dissolved Oxygen (mg/L)	MA	9.60	10.00	19.13°	9.80	18.31°	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	MA	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 10/21/19



Field Instrument Calibration Log

Date: 10/23/19

Weather: 50% Rain

Project/Site Name: Devor

Instrument: YSI 650XL

Calibrated By: KA

Serial Number: 1180986

Parameters	Solution Expiration Date	AM Calibration Time <u>600</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1450</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	<u>3/12/0</u>	<u>1.452</u>	<u>1.413</u>	<u>18.79°</u>	<u>1.412</u>	<u>18.14°</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>7.39</u>	<u>7.00</u>	<u>19.02°</u>	<u>7.11</u>	<u>17.97°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/12/1</u>	<u>3.92</u>	<u>4.00</u>	<u>19.15°</u>	<u>4.00</u>	<u>17.82°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/21</u>	<u>10.18</u>	<u>10.00</u>	<u>19.21°</u>	<u>10.11</u>	<u>18.00°</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>5/12/0</u>	<u>247.6</u>	<u>240.0</u>	<u>19.19°</u>	<u>247.2</u>	<u>17.99°</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>— NA</u>	<u>138.7%</u>	<u>100.0%</u>	<u>19.01°</u>	<u>87.1%</u>	<u>18.01°</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>— NA</u>	<u>9.62</u>	<u>10.09</u>	<u>18.88°</u>	<u>10.20</u>	<u>17.47°</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>N</u>
Barometric Pressure (mmHg)	<u>— NA</u>	<u>—</u>	<u>769</u>	<u>—</u>	<u>769</u>	<u>—</u>	-	<u>N</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/23/19



Field Instrument Calibration Log

Date: 10/24/19

Weather: 50's

Project/Site Name: Devas

Instrument: yse 650xl

Calibrated By: VN

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time <u>650</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1.371	1.413	19.18°	1.410	18.11°	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.82	7.00	19.30°	7.11	18.27°	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.02	4.00	19.27°	4.11	18.19°	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/21	9.62	10.00	19.28°	10.01	18.31°	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	247.1	240.0	19.40°	241.7	18.27°	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	81.7%	100.0%	19.17°	92.2%	18.07°	-	N
Dissolved Oxygen (mg/L)	NA	9.47	10.00	19.17°	9.89	18.01°	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 10/24/19



Field Instrument Calibration Log

Date: 10/4/19

Weather: Cloudy slight prec. 49-59°F

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Kristen Esner

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1410</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.433	1.413	19.5	1.4980	18.9	$\pm 10 \mu\text{S}/\text{cm}$	Y
pH (7)	10/2020	7.14	7.00	18.8	6.80	18.3	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	7/2020	4.86	4.00	19.3	4.21	18.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.81	10.00	18.9	10.04	18.5	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	244.4	240.0	19.4	231.3	18.8	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	98.5	98.5	19.5	99.6	18.2	-	1
Dissolved Oxygen (mg/L)	-	9.09	9.08	19.5	9.53	18.2	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	752.3	752.3	19.5	758.8	18.2	-	1

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 10/4/19



Field Instrument Calibration Log

Date: 8/26/19

Weather: Clear, cool, 75° F

Project/Site Name: DeWens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Kristen Esser

Serial Number: 186100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0705</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1436</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm)	11/2019	1.402 <u>1.411</u>	7.04 <u>7.04</u>	16.6 <u>16.6</u>	1.385	22.8	±10 µS/cm	N
pH (7)	10/2020	6.77	7.04	16.6	7.02	21.7	± 0.3 Ph *	N
pH (4)	3/2021	4.14	4.01	16.7	4.21	21.8 <u>22.3</u> (VE)	± 0.3 Ph *	N
pH (10)	2/2021	10.07	10.08	16.0	10.07	21.0	± 0.3 Ph *	N
ORP (240 mv)	10/2019	251.8	240.5	16.1	240.2	21.7	±10 mv	N
Dissolved Oxygen (%)	-	97.8	100.0	13.3	103.8	20.8	-	-
Dissolved Oxygen (mg/L)	-	10.48	10.47	13.0	8.88	21.5	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	-	763.8	763.8	13.3	761.7	20.8	-	-

Notes:
 * Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: Kristen Esser

Date: 8/26/19



Field Instrument Calibration Log

Date: 8/27/19

Weather: Partly Cloudy, 51-75°F

Project/Site Name: Devens PFAF RI

Instrument: YSI Pro DSI

Calibrated By: Kristen Esser

Serial Number: 184100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0715</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1530</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.349	1.413	16.8	1.388	23.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.99	7.03	17.5	7.01	23.6	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/2021	4.28	4.05	17.2	4.00	23.8	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2021	10.15	10.09	17.3	10.02	23.1	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	10/2019	237.6	239.6	17.0	234.1	22.9	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	115.2	99.9	17.0	99.4	23.1	—	N
Dissolved Oxygen (mg/L)	—	9.66	9.67	17.0	8.67	23.2	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	—	759.4	759.4	17.0	755.6	23.1	—	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 8/27/19



Field Instrument Calibration Log

Date: 8/28/19

Weather: Partly cloudy, chance of PM showers 62-78

Project/Site Name: Dewens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Kristen Ecker

Serial Number: 186106145

Parameters	Solution Expiration Date	AM Calibration Time <u>0710</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1440</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.374	1.413	20.8	1.867	22.3	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	6.82	7.00	20.8	7.01	22.9	$\pm 0.3 \text{ Ph}^*$	2
pH (4)	3/2021	4.20	4.00	20.7	4.00	23.0	$\pm 0.3 \text{ Ph}^*$	2
pH (10)	2/2021	9.97	10.00	20.8	10.02	23.1	$\pm 0.3 \text{ Ph}^*$	2
ORP (240 mv)	10/2019	235.2	240.1	20.8	239.7	22.2	$\pm 10 \text{ mv}$	2
Dissolved Oxygen (%)	—	100	100	20.7	99.9	22.1	-	2
Dissolved Oxygen (mg/L)	—	8.93	8.92	20.7	8.74	22.2	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	2
Barometric Pressure (mmHg)	—	755.7	755.7	20.7	757.0	757.0	-	2

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/28/19



Field Instrument Calibration Log

Date: 8/29/19

Weather: Partly cloudy 66-82°F

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Kristen Esser

Serial Number: 1860100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)		1.589	1.413	20.1	1.434	25.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)		6.70	7.0 7.0	20.2	7.00	26.2	$\pm 0.3 \text{ Ph}^*$	N
pH (4)		4.34	4.00	20.1	4.01 4.01	25.0	$\pm 0.3 \text{ Ph}^*$	N
pH (10)		9.72	10.00	20.2	10.01	24.9	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)		242.4	240.0	20.1	234.4	25.0	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	98.9	98.9	20.2	98.9	26.2	-	—
Dissolved Oxygen (mg/L)	—	8.97	8.97	20.2	8.57	26.3	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	751.6	751.6	20.2	751.3	26.2	-	—

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [Signature]

Date: 8/29/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: La Motte 2020we

Calibrated By: Kristen Ecker

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
8/26/19	0.08	0.01	7.94	10.80	0.02	7.82	Y ^Y
8/27/19	0.05	0.00	7.94	7.17	0.00	7.70	Y
8/28/19	1.15	0.02	7.39	8.54	0.03	8.37	N
8/29/19	0.01	0.00	7.91	7.57	0.01	8.06	Y ^N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: 

Date: 8/29/19



Field Instrument Calibration Log

Date: 10/4/19

Weather: Cloudy slight prec. 49-59°F

Project/Site Name: Devens PFAS RI

Instrument: YSI Pro DSS

Calibrated By: Kristen Escher

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time <u>0645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1410</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 $\mu\text{S}/\text{cm}^\circ$)	11/2019	1.433	1.413	19.5	1.4980	18.9	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	10/2020	7.14	7.00	18.8	6.80	18.3	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	7/2020	4.86	4.00	19.3	4.21	18.5	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	2/2020	9.81	10.00	18.9	10.04	18.5	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	1/2023	244.4	240.0	19.4	231.3	18.8	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	-	98.5	98.5	19.5	99.6	18.2	-	1
Dissolved Oxygen (mg/L)	-	9.09	9.08	19.5	9.53	18.2	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	752.3	752.3	19.5	758.8	18.2	-	1

Notes: _____

(Mark Noted Variances on Field Forms)

Signature: [Signature]

Date: 10/4/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

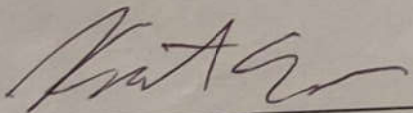
Instrument: LaMotte 2020we

Calibrated By: Kristen Esser

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/26/19	0.01	0.00	10.13	10.06	0.01	9.98	N
9/27/19	0.00	0.00	9.11	9.69	0.00	9.57	N
9/30/19	1.60	0.00	10.96	8.49	0.01	8.67	N
10/1/19	1.56	0.01	10.90	8.55	0.01	8.25	N
10/2/19	1.49	0.00	8.88	9.37	0.00	9.85	N
10/3/19	1.38	0.00	8.75	9.67	0.00	9.86	N
10/4/19	1.47	0.02	9.18	9.53	0.02	9.32	N
					Post Calibration Criteria		
					-	±0.5	

Notes: Mark Noted Variances on Field Forms

Signature: 

Date: _____



APPENDIX D SOIL BORING LOGS

AOC 20

KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd
4/7/2020
LAW

Project: Devers PFAS Soil Borings	Boring No.: 205B-19-01
Project No.: 10820011-533	Drilling Co.: TDS
Address: AOC-20 - 21	Driller: Jay Timerville
Logger: Don Melcher	Drilling Method: Geoprobe (Direct Push)
Date: 10/18/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15'	Static Water: NA

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	36" (3')	0-9" 9-36"	NA SW NA SW	dry, dark brown, fine to medium SAND, some coarse Gravel, trace organics dry, light brown, medium to coarse SAND, some fine to coarse Gravel	Soil sample @ 0-0.5' collected 0855 Soil sample @ 0.5-3' collected 0900
5-10'	38"	0-9" 9-38"	NA SP NA SW	dry, light grayish brown, fine to medium SAND, trace fine Gravel dry, light brown, medium to coarse SAND, some fine to coarse Gravel	Soil sample @ 3-7' collected 0905
5-15'	32"	0-12" 12-17"	NA SP SP NA	dry, light grayish brown, fine to medium SAND, trace fine Gravel dry, light grayish brown, fine SAND, trace silt	Soil sample @ 7-15' collected 0910
		17-32"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	

Notes:



KOMAN Government Solutions, LLC 293
Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 20SB-19-02	Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 20	Driller: Jay Jumonville	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">LJW</div>
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/22/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 60 ft. bgs	Static Water: 54 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PH (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.4/5.0	0-0.5'	SP	Dry, brown, poorly graded, fine SAND, trace rounded gravel	20SB-19-02-0.5-0.5 @ 115 20SB-19-02-0.5-3 @ 1120
		0.5-4'	SW	Dry, tan, well graded, coarse SAND, some subangular gravel little	
		4-5'	SP	Dry, tan, poorly graded, medium SAND	
5-10'	2.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subangular gravel	20SB-19-02-3-7 @ 1125 20SB-19-02-7-15 @ 1130
10-15'	2.4/5.0	10-11'	SP	same as 5-10' bgs	
		11-15'	SW	Dry, tan, well graded, coarse SAND, little subangular gravel	
15-20'	3.0/5.0	15-20'	SP	Dry, brown to tan, poorly graded, fine to medium SAND, little subangular gravel	

Notes:

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-02	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">(JW)</div>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/22/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 60 ft. bgs	Static Water: 54 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PID (ppm)	GEOLOGIC LOG	REMARKS
20-25'	2.3/5.0	20-25'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	
25-30'	2.4/5.0	25-30'	SP	Dry, tan, poorly graded, fine SAND	
30-35'	2.7/5.0	30-35'	SP	Dry, tan, poorly graded, fine SAND, little medium sand	
35-40'	3.0/5.0	35-40'	SP	Dry, tan, poorly graded, fine SAND	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-02	Page 3 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">(Signature)</div>
Address:	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/22/19	Drilling Equip: Geoprobe 67120T	
Total Boring Depth: 60 ft. bgs	Static Water: 54 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS -PID (ppm)	GEOLOGIC LOG	REMARKS
40-45'	3.1/5.0	40-45'	SP	Dry, tan, poorly graded, fine SAND, trace silt	
45-50'	4.2 3.2 /5.0 (Signature)	45-48'	SM	Dry, tan, fine silty SAND	
		48-50'	SP	Dry, tan, poorly graded, fine SAND	
50-55'	3.1/5.0	50- 54 ⁵⁴ (Signature)	SP	to moist Dry, tan, poorly graded, fine SAND	20SB-19-02-52-54 @ 1430
		54-55'	SP	wet, tan, poorly graded, fine SAND	
55-60'	3.7/5.0	55-60'	SP	wet, tan, poorly graded, fine to medium SAND	

Notes:




KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd
4/17/2020
LW

Project: <i>Revers PPA's Soil Borings</i>	Boring No.: <i>20 SB-19-03</i>
Project No.: <i>10820011-533</i>	Drilling Co.: <i>TDS</i>
Address: <i>ACC-20, 21</i>	Driller: <i>Jay Jumenille</i>
Logger: <i>Don Melcher</i>	Drilling Method: <i>Direct Push</i>
Date: <i>10/18/19</i>	Drilling Equip: <i>Geoprobe 6712 DT</i>
Total Boring Depth: <i>15'</i>	Static Water: <i>NA</i>

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
<i>0-5'</i>	<i>32"</i>	<i>0-7"</i>	<i>NA SW</i>	<i>dry, dark brown, fine to medium SAND, some fine gravel, trace Organics</i>	<i>Sampled @ 1015 (0-0.5')</i> <i>Sample @ 1020 (0.5-3')</i>
		<i>7-32"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel</i>	
<i>5-10'</i>	<i>36"</i>	<i>0-36"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel</i> <i>AM18</i>	<i>Sampled @ 1020/1025 (3-7')</i>
<i>10-15'</i>	<i>44"</i>	<i>0-12"</i>	<i>NA SP</i>	<i>dry, light grayish brown, fine to medium SAND, trace silt</i>	<i>Sampled @ 1030 (4-15')</i>
		<i>12-44"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel</i>	

Notes:	 KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA
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**KOMAN Government Solutions, LLC
SOIL BORING LOG**

QC
4/2/2020
[Signature]

Project: <i>Revers PTHs Soil Borings</i>	Boring No.: <i>20 SB- 19- 04</i>	
Project No.: <i>10820011-533</i>	Drilling Co.: <i>TDS</i>	
Address: <i>AOC-20, 21</i>	Driller: <i>Jay Junenille</i>	
Logger: <i>Pon Melker</i>	Drilling Method: <i>Direct Push</i>	
Date: <i>10/18/19</i>	Drilling Equip: <i>Geoprobe 6712 DT</i>	
Total Boring Depth: <i>15'</i>	Static Water: <i>NA</i>	

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
<i>0-5'</i>	<i>32"</i>	<i>0-6"</i>	<i>NA SW</i>	<i>dry, dark brown, fine to medium SAND, some fine to coarse Gravel, trace Organics</i>	
		<i>6-36"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel</i>	
<i>5-10'</i>	<i>44"</i>	<i>0-12"</i>	<i>NA SP</i>	<i>dry, grayish brown, medium SAND, trace fine Gravel</i>	
		<i>12-24"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel</i>	
<i>10-15'</i>	<i>40"</i>	<i>0-12"</i>	<i>NA SP</i>	<i>dry, grayish brown, fine SAND, trace silt, trace fine Gravel</i>	
		<i>12-40"</i>	<i>NA SW</i>	<i>dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel</i>	

Notes:
*Samples collected @ 0-0.5' interval (1135),
 0.5-3.0' (1140), 3-7' (1145), 7-15' (1150),
 & 7-5' Duplicate (1155)*



KOMAN Government Solutions, LLC
SOIL BORING LOG

QC
4/17/2020
LBN

Project: <i>Devers PFAS Soil Boring</i>	Boring No.: <i>20 SB - 19-05</i>
Project No.: <i>10820011-533</i>	Drilling Co.: <i>TDS</i>
Address: <i>AOC-20, 21</i>	Driller: <i>Jay Jumentille</i>
Logger: <i>Don Melcher</i>	Drilling Method: <i>Direct Push</i>
Date: <i>10/18/19</i>	Drilling Equip: <i>Geoprobe 6.712 DT</i>
Total Boring Depth: <i>15'</i>	Static Water: <i>NA</i>

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	30"	0-5"	NA SP	dry, dark brown, fine to medium SAND, trace fine to coarse Gravel, trace organic	
		5-30"	NA SW	dry, light yellowish brown, medium to coarse SAND, some fine to coarse Gravel, Iron-staining @ 5" transition	
5-10'	39"	0-10"	NA SP	dry, grayish brown, fine to medium SAND, trace fine Gravel	
		10-39"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	
10-15'	33"	0-12"	NA SP	dry, grayish brown, fine to medium SAND, trace fine Gravel, trace silt	
		12-33"	NA SW	dry, light yellowish brown, medium to coarse SAND and fine to coarse Gravel, Iron-staining @ 12" transition	

Notes:

Samples collected @ 1340 (0-0.5' interval), 1345 (0.5-3.0'), 1350 (3.0-7.0'), & 1355 (7.0-15.0')



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KOMAN Government Solutions, LLC
SOIL BORING LOG

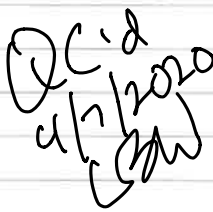
Project: Devens PFAS RI	Boring No.: 20SB-19-06	Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">LW</div>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 612DT	
Total Boring Depth: 60' bgs	Static Water: 54' bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.7/5.0	0-5'	SW	Dry, brown to tan, well graded, medium SAND, some gravel (subangular), little coarse sand	20SB-19-06-0-0.5 @ 1215 20SB-19-06-0.5-3 @ 1220
5-10'	3.6/5.0	5-7'	SP	Dry, tan, poorly graded, fine SAND, little subangular gravel	20SB-19-06-3-7 @ 1225
		7-8'	SW	Dry, tan, well graded, coarse SAND	
		8-10'	SP	Dry, tan, poorly graded, fine SAND	20SB-19-06-7-15 @ 1230 ↳ MS/MSD
10-15'	3.5/5.0	10-12'	SP	Dry, brown, poorly graded, fine to medium SAND, some subangular gravel	
		12-15'	SW	Dry, brown, well graded, coarse SAND, some subangular gravel	
15-20'	3.1/5.0	15-20'	SP	Dry, brown, poorly graded, fine SAND, some subangular GRAVEL, trace coarse sand	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 205B-19-06	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: A0C20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 60' bgs	Static Water: 54' bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PID (ppm)	GEOLOGIC LOG	REMARKS
20-25'	2.1/5.0	20-25'	SP	Dry, brown, poorly graded, fine to medium SAND, some subangular gravel	
25-30'	2.4/5.0	25-30'	SP	Dry, brown, poorly graded, fine to medium SAND, little subangular gravel	
30-35'	2.8/5.0	30-35'	SP	Dry, brown to tan, poorly graded, medium SAND, trace subangular gravel	
35-40'	1.0/5.0	35-40'	SP	Dry, tan, poorly graded, fine SAND, little subangular gravel	

Notes:

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 205B-19-06	Page 3 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">LW</div>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 54' bgs 60' bgs	Static Water: 54' bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppm)	GEOLOGIC LOG	REMARKS
40-45'	3.2/5.0	40-45'	SW 6W	Dry, brown to tan, well graded, coarse SAND, some subrounded gravel, few medium sand	
45-50'	2.7/5.0	45-50'	SP	Dry, tan, poorly graded, fine SAND, little silt	
50-55'	2.9/5.0	50-52'	SP	Dry, tan, poorly graded, fine SAND	205B-19-06-52-54 @ 1415
		52-54'	SP	Moist, tan, poorly graded, fine to medium SAND, trace subrounded gravel	
		54-55'	SP	Same as 52-54' but wet	
55-60'	2.1/5.0	55-60'	SP	Wet, tan, poorly graded, fine SAND	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-14-07	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">(Signature)</div>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/22/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	VSCS TD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.7/5.0	0-1'	SP	Dry, brown, poorly graded, medium SAND, few rounded gravel	20SB-14-07-0-0.5 @ 920 20SB-14-07-0.5-3 @ 925
		1-5'	SP	Dry, brown to tan, poorly graded, medium SAND, few subangular gravel, trace coarse sand	
5-10'	3.0/5.0	5-6'	SP	Dry, brown, poorly graded, fine to medium SAND, little subangular gravel	20SB-14-07-3-7 @ 930 A3-SB-DVFOI-102219 @ 935
		6-10'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	
10-15'	4.4/5.0	10-12'	SP	Dry, tan, poorly graded, medium SAND, trace subrounded gravel	20SB-14-07-7-15 @ 940
		12-15'	SW GW	Dry, tan, well graded, coarse SAND, trace ^{some} subrounded gravel (PB)	


Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-08	Page 1 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 20	Driller: Jay Jumonville	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">(GW)</div>
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 65' bgs	Static Water: 64' bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PT (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.7/5.0	0-1'	SP	Dry, brown, poorly graded, fine SAND, little rounded gravel, roots/organics	
		1-5'	SP	Dry, brown, poorly graded, fine SAND, trace subangular gravel, trace medium sand	20SB-19-08-0-0.5 @ 825 20SB-19-08-0.5-3 @ 830
5-10'	3.0/5.0	5-8'	SP	Dry, tan, poorly graded, fine SAND, little subangular gravel, trace coarse sand	20SB-19-08-3-7 @ 835
		8-10'	SW GW	Dry, tan, well graded, medium to coarse SAND, some subangular gravel	20SB-19-08-7-15 @ 840 A3-SB-DUP01-702119 @ 845
10-15'	3.3/5.0	10-15'	SW GW	Dry, tan to brown, well graded, medium to coarse coarse SAND, some subangular gravel	
15-20'	3.4/5.0	15-20'	SW GW	Dry, tan to brown, well graded, medium to coarse SAND and subangular GRAVEL	

Notes:	 <small>KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA</small>
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**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-08	Page 2 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	<i>QC'd 4/7/2020 LBN</i>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 65' bgs	Static Water: 64' bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PH (ppm)	GEOLOGIC LOG	REMARKS
20-25'	2.8/5.0	20-25'	SP	Dry, tan, poorly graded, medium SAND, trace subangular gravel	
25-30'	2.1/5.0	25-30'	SP	Dry, tan, poorly graded, medium SAND, trace subangular gravel, trace fine sand	
30-35'	2.2/5.0	30-35'	SP	Same as 25-30' bgs	
35-40'	0.5/5.0	35-40'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-08	Page 3 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">GOW</div>
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 65' bgs	Static Water: 64' bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PTD (ppm)	GEOLOGIC LOG	REMARKS
40-45'	2.9/5.0	40-45'	SP	Dry, tan, poorly graded, ^{fine SAND} trace subangular gravel	
45-50'	3.2/5.0	45-50'	SP	Dry, tan, poorly graded, fine SAND, little subrounded gravel, trace coarse sand	
50-55'	3.0/5.0	50-55'	SP	Dry, tan, poorly graded, medium SAND, trace subangular gravel	
55-60'	3.3/5.0	55-60'	SP	Same as 50-55' bgs	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 20SB-19-08	Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 LNW
Address: AOC 20	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 65' bgs	Static Water: 64' bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PIB (ppm)	GEOLOGIC LOG	REMARKS
60-65'	3.1/5.0	62 60-62 62	SP	Dry, tan to brown, poorly graded, medium SAND, trace subrounded gravel	20SB-19-08-62-64 @1020
		62-64 62	SP	Moist, tan, wet, poorly graded, medium SAND, trace fine sand	
		64-65'	SP	Wet brown, poorly graded, medium SAND, trace coarse sand, trace subrounded gravel	

Notes:

AOC 21

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 21SB-19-01	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/9/2020 SM
Address: AOC 21	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 11/14/19	Drilling Equip: Geoprobe 6712 DT	
Total Boring Depth: 15 ft. bgs	Static Water: 12 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PTD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	4.2/5.0	0-1.5' 0-2'	SW GW	Dry, Brown, well graded, coarse SAND and GRAVEL (subangular), organics/roots at	21SB-19-01-0-0.5 @ 1050 sur face
		2-5'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	21SB-19-01-0.5-3 @ 1055
5-10'	4.4/5.0	5-10'	SW	Dry, tan, well graded, medium and coarse SAND, few subangular gravel	21SB-19-01-3-7 @ 1100 A3-SB-DUP01-111419 @ 1105 21SB-19-01-7-10 @ 1110 MS/MSD
10-15'	3.8/5.0	10-12'	SP	Moist, (SW) brown, poorly graded, medium SAND, little subrounded gravel	
		12-15'	SP	Wet, brown, poorly graded, medium SAND	21SB-19-01-10-12 @ 1115

Notes: Drilled through plastic liner in ~~sludge~~ beds
(~~liner~~ approx. 2 ft bgs)
liner



KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 215B-19-02	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/9/2020 [Signature]
Address: AOC 21	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 11/14/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water: 13 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.6/5.0	0-1	SW	Dry, brown, well graded, medium SAND, trace subangular gravel, grass/roots at surface	
		1-3	SW	Dry, tan, well graded, coarse SAND, little subangular gravel	215B-19-02-0-0.5 @ 1220
		3-5	SM	Dry, tan, poorly graded, fine silty SAND	215B-19-02-0.5-3 @ 1225
5-10'	2.5/5.0	5-7	SP	Dry, tan, poorly graded, fine SAND, little subangular gravel	215B-19-02-3-7 @ 1230
		7-10	SW	Dry, tan, well graded, medium and coarse SAND, little subangular gravel	215B-19-02-7-11 @ 1235
10-15	3.0/5.0	10-13	SP	Moist, brown to tan, poorly graded, fine SAND, little subrounded gravel	
		13-15	SP	Wet, tan, poorly graded, fine SAND	

Notes: Drilled through ~~liner~~ ^{liner} in bed ≈ 2 ft. bgs



KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 215B-19-03	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<i>QC'd</i> <i>4/9/2020</i> <i>(signature)</i>
Address: AOC 21	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 11/14/19	Drilling Equip: Geoprobe 672DT	
Total Boring Depth: 15 ft. bgs	Static Water: 13 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PTD (ppmt)	GEOLOGIC LOG	REMARKS
0-5'	3.5/5.0	0-1' 0-2'	SP	Dry, brown, poorly graded, fine SAND, organics/roots at surface	215B-19-03-0-0.5 @1400
		1-3'	SW	Dry, brown/gray, well graded, subrounded gravel, some medium sand	
		3-5'	SM	Dry, tan, poorly graded, fine silty SAND	215B-19-03-0.5-3 @1405
5-10'	2.3/5.0	5-7	SM	Same as 3-5' bgs	215B-19-03-3-7 @1410
		7-10	SW	Dry, tan, well graded, medium SAND, little subrounded gravel	215B-19-03-7-11 @1415 A3-SB-DUP02-11419
10-15'	3.3/5.0	10-13'	SP	Moist, brown, poorly graded, fine SAND, few subrounded gravel	@1420
		13-15'	SP	Wet, tan, poorly graded, fine and medium SAND.	

Notes: Drilled through Plastic ~~liner~~ ^(circled) liner at 2 ft. bgs

AOC 30

KOMAN Government Solutions, LLC
SOIL BORING LOG

1/3

QC'd
4/17/2020
CDW

Project: Deven's PFAS RI	Boring No.: 305B-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jomonville
Logger: Dave Kortjohn	Drilling Method: OPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

Core Section	Recovery (ft)	Interval (ft)	VSCS - PIB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.5/5.0	0-4'	SP	Dry, brown, poorly graded, fine SAND, trace subrounded gravel, grass/roots at surface (0' bgs)	305B-19-01-0-0-5 @1205
		4-5'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	305B-19-01-0.5-3 @1210 1210
5-10'	2.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine SA to medium SAND, trace subangular gravel, trace silt	305B-19-01-3-7 @ 1210 1215
10-15'	2.3/5.0	10-15'	SP	Dry, tan, poorly graded, fine SAND, little silt	305B-19-01-7-15 @1220 ↳ MS/MSD
15-20'	2.6/5.0	15-20'	SP	Same as 10-15' bgs	
20-25'	2.4/5.0	20-25'	SM	Dry, tan, poorly graded, fine silty SAND, little medium sand	

Notes:



KOMAN Government Solutions, LLC 293
Boston Post Road, Marlborough, MA

QC'd
4/12/2020
GWS

Project: Devens PFAS RI	Boring No.: 30SB-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Junonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

Core Section	Recovery (ft)	Interval (ft)	VSCS PID (ppm)	GEOLOGIC LOG	REMARKS
25-30'	3.0/5.0	25-27'	ML	Dry, tan to brown, SILT, little fine sand	
		27-30'	SM	Dry, tan, poorly graded, fine silty SAND	
30-35'	2.8/5.0	30-33'	SM	Same as 27-30' bgs	
		33-35'	ML	Dry, tan, SILT, little fine sand	
35-40'	3.2/5.0	35-40'	SM	Dry, tan, fine silty SAND	
40-45'	3.3/5.0	40-45'	SM	Dry, tan, fine silty SAND	
45-50'	3.4/5.0	45-50'	SM	Dry, tan, fine silty SAND	

Notes:



QC'd
4/2/2020
JW

Project: Deven's PFAS RI	Boring No.: 30SB-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jomonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

Core Section	Recovery (ft)	Interval (ft)	USCS PTD (ppm)	GEOLOGIC LOG	REMARKS
50-55'	3.4/5.0	50-55'	SM	Dry to moist, tan to brown, fine silty SAND	
55-60'	3.0/5.0	55-60'	SM	Moist, tan to brown, fine silty SAND	30SB-19-01-58-60 @1325
60-65'	4.6/5.0	60-65'	SP	Wet, brown, poorly graded fine SAND, little medium-coarse sand	

Notes:



KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd
4/7/2020
GWS

Project: Devens PFAS RI	Boring No.: 30SB-19-02
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jomonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 Feet bgs	Static Water:

Core Section	Recovery (ft)	Interval (ft)	USCS PHD SPH	GEOLOGIC LOG	REMARKS
0-5'	4.3/5.0	0-0.5'		Asphalt	
		0.5-1.5'	SP	Dry, gray to tan, poorly graded, fine SAND, some subangular gravel	30SB-19-02-0-0.5 @ 1035
		1.5-5'	SP	Dry, brown, poorly graded, fine to medium SAND, little fine subrounded gravel. trace	30SB-19-02-0.5-3 @ 1040
5-10'	4.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine SAND, little subrounded gravel	30SB-19-02-3-7 @ 1045 30SB-19-02-7-15
10-15'	4.5/5.0	10-15'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	@ 1050 A3-SB-DVP-101419 @ 1055

Notes:



KOMAN Government Solutions, LLC 293
Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd
4/17/2020
[Signature]

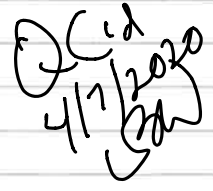
Project: Devens PFAS RF	Boring No.: 305B-19-03
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jumanville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT,
Total Boring Depth: 15 ft. bgs	Static Water:

Core Section	Recovery (ft)	Interval (ft)	USCS PTD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	4.3/5.0	0-0.5'		0-0.5' Asphalt	305B-19-03-0-0.5 @ 935
		0.5-3'	SP	0.5-3' Dry, dark brown, poorly graded, fine SAND, trace subangular gravel	305B-19-03-0.5-3 @ 940
		3-5'	SP	3-5' Dry, tan, poorly graded, fine to medium SAND, trace subangular gravel	
5-10' 5	4.2/5.0	5-10' 5-10'	SP	5-10' Dry tan, poorly graded, fine to medium SAND	305B-19-03-3-7 @ 945
10-15'	4.1/5.0	10-13'	SP	Dry, tan, poorly graded, fine SAND	305B-19-03-7-15 @ 950
		13-15'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 305B-19-04	Page 1 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/15/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 69 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PIB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	4.1/5.0	0-0.5'	-	Concrete	305B-19-04-0-0.5 @ 910
		0.5-3'	SW	Dry, tan, well graded, medium SAND, little coarse sand	
		3-5'	SP	Dry, tan, poorly graded, fine SAND, little medium sand	
5-10'	3.8/5.0	5-8'	SP	Same as 3-5' bgs	305B-19-04-0.5-3 @ 915
		8-10'	SW	Dry, tan, well graded, medium and coarse SAND	305B-19-04-0.5-3 @ 920
10-15'	4.0/5.0	10-12'	SP	Dry, tan, poorly graded, fine SAND	305B-19-04-7-15 @ 930
		12-15'	SW	Dry, tan, well graded, medium and coarse SAND, trace subrounded gravel	
15-20'	3.0/5.0	15-20'	SP	Dry, tan, poorly graded, fine SAND	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

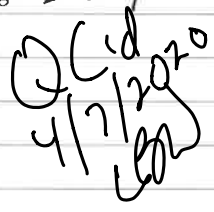
Project: Devens PFAS RI	Boring No.: 30SB-19-04	Page 2 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div>
Address: ADC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/15/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 69 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
20-25'	3.6/5.0	20-25'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel	
25-30'	3.2/5.0	25-30'	SP	Dry, tan, poorly graded, fine SAND	
30-35'	3.5/5.0	30-35'	SP	Dry, tan, poorly graded, fine SAND, trace rounded gravel	
35-40'	3.0/5.0	35-40'	SP-SM	Dry, tan, poorly graded, fine SAND, some fine silty sand	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

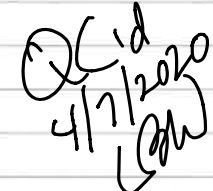
Project: Devens PFAS RI	Boring No.: 30SB-19-04	Page 3 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/15/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 69 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
40-45'	2.9/5.0	40-45'	SP	Dry, tan, poorly graded, fine SAND	
45-50'	2.5/5.0	45-48'	SP	Dry, tan, poorly graded, fine SAND	
		48-50'	SM	Dry, tan, poorly graded, fine silty SAND	
50-55'	3.1/5.0	50-55'	SM	Dry, tan, poorly graded, fine silty SAND	
55-60'	3.2/5.0	55-60'	SP	Dry tan, poorly graded, fine SAND, little silt	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 30SB-19-04	Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/15/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 69 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
60-65'	3.1/5.0	60-65	SM	Dry to ^{DK} Moist, tan, poorly graded, fine silty SAND	
65-70'	3.3/5.0	65-67	SM	Dry, tan, poorly graded, fine silty SAND	30SB-19-04-67-69 @ 1440
		67-69	SM	Moist, tan, poorly graded, fine silty SAND	
		69-70	SM	Wet tan, poorly graded, fine silty SAND	


Notes:



KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-19-05	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QCID</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">JW</div>
Address: AOC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppt)	GEOLOGIC LOG	REMARKS
0-5'	4.0/5.0	0-0.5'	-	Asphalt	305B-19-05-0-0.5 @ 1425 305B-19-05-0.5-3 @ 1430
		0.5-5'	SP	Dry, brown to tan, poorly graded, fine to medium SAND, little subrounded gravel	
5-10'	4.0/5.0	5-7'	SW	Dry, brown, well graded, medium to coarse SAND, little subangular gravel	305B-19-05-3-7 @ 1435 305B-19-05-7-15 @ 1440
		7-10'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	
10-15'	3.7/5.0	10-11'	SP	Same as 7-10' bgs	
		11-15'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	

Notes:	 <small>KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA</small>
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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-19-06	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QCD</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">COW</div>
Address: AOC 30	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/15/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.8/5.0	0-0.5'	SP	Dry, dark brown, poorly graded, fine sand, little subangular gravel, grass/roots at surface (topsoil)	
		0.5-5'	SW	Dry, tan, well graded, medium SAND, little coarse sand, trace rounded gravel	305B-19-06-0-0.5 @ 805 305B-19-06-0.5-3 @ 810
5-10'	3.9/5.0	5-10'	SP	Dry, tan, poorly graded, Fine to medium SAND, trace coarse sand	305B-19-06-5-7 @ 815 305B-19-06-7-15 @ 820
10-15'	3.7/5.0	10-15'	SP	Dry, tan-orange tint, poorly graded medium SAND, trace subrounded gravel	

Notes:	 <small>KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA</small>
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AOC 31

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 315B-19-01	Page 1 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 67 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
		0-3" 3"	-	concrete	
0-5'	3.0/ 5.0 5.0	3"-5'	SP	Dry, brown, poorly graded, fine to medium SAND, trace subangular gravel	315B-19-01-0-0.5 @ 955 315B-19-01-0.5-3 @ 1000
5-10'	2.9/5.0	5-10'	SP	Dry, tan, poorly graded, fine to medium SAND, little subangular gravel, trace coarse sand	315B-19-01-3-7 @ 1005 315B-19-01-7-15 @ 1010
10-15'	3.1/5.0	10-11'	SP	Dry, dark brown, poorly graded, fine SAND	↳ MS/MSD
		11-15'	SW	Dry, tan, well graded, medium SAND, little coarse sand, little subangular gravel	
15-20'	2.5/5.0	15-20'	SP	Dry, tan, poorly graded, fine SAND, some subrounded gravel, trace coarse sand	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 31SB-19-01	Page 2 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 31	Driller: Jay Jumonville	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">(BW)</div>
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 67 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
20-25'	2.6/5.0	20-22'	SP	Dry, brown, poorly graded, fine SAND, trace subrounded gravel	
		22-25'	SW	Dry, tan, well graded, medium SAND, little subrounded gravel	
25-30'	2.0/5.0	25-30'	SW	Dry, tan/brown, well graded, medium SAND, little subangular gravel, trace coarse sand	
30-35'	2.7/5.0	30-35'	SP	Dry, brown, poorly ^{well} graded, medium SAND, little subangular gravel	
35-40'	3.0/5.0	35-40'	SW	Dry, tan, well graded, medium to coarse SAND, trace subangular gravel	

Notes:

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 315B-19-01	Page 3 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">(Signature)</div>
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 67120T	
Total Boring Depth: 70 ft. bgs	Static Water: 67 ft. bgs	


Core Section	Recovery (ft)	Interval (ft)	VSCS PID (ppm)	GEOLOGIC LOG	REMARKS
40-45'	0	-		No recovery	
45-50'	2.8/5.0	45-50'	SW	Dry, tan, well graded, medium to coarse SAND, some subangular gravel	
50-55'	3.1/5.0	50-55'	SW	Dry, tan, well graded, medium to coarse SAND, some subangular gravel	
55-60'	3.3/5.0	55-60'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	

Notes:

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 31SB-19-01	Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QCid</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">LBW</div>
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 70 ft. bgs	Static Water: 67 ft. bgs	


Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm)	GEOLOGIC LOG	REMARKS
60-65'	2.8/5.0	60-65'	SP	Dry to moist, tan, poorly graded, fine SAND, few rounded gravel	
65-70'	3.5/5.0	65-67'	SP	Moist, tan, poorly graded, fine SAND, trace subrounded gravel	31SB-19-01-65-67 @ 1240
		67-70'	SP	Wet, tan, poorly graded, fine to medium SAND	

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**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 31SB-19-02	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/17/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 Ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS MB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.1/5.0	0-2"	-	Asphalt	31SB-19-02-0-0.5 @ 820
		2"-3'	SP	Dry, brown, poorly graded, medium SAND, trace subangular gravel	
		3-5'	SP	Dry, brown to tan, poorly graded, fine SAND, trace medium sand	31SB-19-02-0.5-3 @ 825
5-10'	3.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine to medium SAND, little subangular gravel	31SB-19-02-3-7 @ 830 SP A3-SB-DUP01- 101719 @ 835
10-15'	2.7/5.0	10-12'	SP	Dry, brown, poorly graded, fine SAND, trace subangular gravel	31SB-19-02-7-15 @ 840
		12-15'	SP	Dry, tan, poorly graded, medium SAND, trace subrounded gravel	

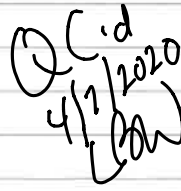
Notes:	 <small>KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA</small>
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**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 315B-19-03	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/7/2020</div> <div style="font-size: 1.5em;">JW</div>
Address: A0C31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/17/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	VSCS PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.4/5.0	0-0.5'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel, little asphalt chunks	315B-19-03-0-0.5 @ 930 315B-19-03-0.5-3 @ 935
		0.5-5'	SP	Dry, brown, poorly graded, fine to medium SAND, little subangular gravel	
5-10'	3.8/5.0	5-6'	SW	Dry, tan, well graded, medium SAND, trace subangular gravel	315B-19-03-3-7 @ 940
		6-10'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subangular gravel	315B-19-03-7-15 @ 945 15
10-15'	4.0/5.0	10-13'	SP	Dry, brown, poorly graded, fine SAND	
		13-15'	SW	Dry, tan, well graded, medium SAND, trace coarse sand	

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 315B-19-04	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.9/5.0	0-0.5	—	Asphalt/concrete	315B-19-04-0-0.5 @ 1420
		0.5-5'	SP	Dry, brown to tan, poorly graded, fine to medium SAND, little subangular gravel	315B-19-04-0.5-3 @ 1425
5-10'	3.1/5.0	5-6'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	315B-19-04-3-7 @ 1430
		6-10'	SW	Dry, tan, well graded, medium to coarse SAND, trace subangular gravel	315B-19-04-7-15 @ 1435
10-15'	3.1/5.0	10-12'	SP	Dry, tan, poorly graded, fine SAND, trace angular gravel	
		12-15'	SW	Dry, tan, well graded, medium SAND, little coarse sand, trace subangular gravel	


Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 315B-19-05	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/17/2020</div> <div style="font-size: 1.5em;">LAW</div>
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/17/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. logs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.2/5.0 $\frac{3.2}{5.0}$	0-1'	SW	Dry, brown, well graded, medium to coarse SAND, trace asphalt chunks	
	3.2/5.0	1-5'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	315B-19-05-0-0.5 @1220 315B-19-05-0.5-3 @1225
5-10'	3.1/5.0	5-7'	SW	Dry, tan, well graded, coarse SAND, little subrounded gravel	315B-19-05-3-7 @1230
		7-10'	SP	Dry, tan, poorly graded, fine SAND, little subangular gravel	315B-19-05-7-15 @1235
10-15'	3.3/5.0	10-15'	SP	Dry, tan, poorly graded, fine to medium SAND, little subangular gravel	

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 315B-19-06	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 31	Driller: Jay Jumonville	<div style="font-size: 2em; font-weight: bold;"> CID 4/2/2020 LBW </div>
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 10 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	UCCS DIB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.0/5.0	0-5'	SP	Dry, brown, poorly graded, fine to medium SAND, trace subangular gravel	315B-19-06-0-10 1325
5-10'	2.9/5.0	5-10'	SP	Dry, tan, poorly graded, fine to medium SAND, little coarse sand, trace subangular gravel	315B-19-06-3-7 @ 1330


Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 315B-19-07	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<i>QC'd 4/17/2020 (CW)</i>
Address: AOC 31	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/16/19	Drilling Equip: Geoprobe 6712 DT	
Total Boring Depth: 10 Ft. by 5	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	VOCs PH (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.3/4.0	0-0.5'	-	Concrete	31-concrete-0CT19 @ 840
		0.5-5'	SP	Dry, brown, poorly graded, medium SAND, trace subangular gravel	315B-19-07-0-1 @ 845
5-10'	3.0/4.0	5-10'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	315B-19-07-3-7 @ 850 A3-3B-PUP01-101619 @ 855

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AOC 50

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 505B-19-01	Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	J.C. d. 4/17/2020 C.D.W.
Address: AOC50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/24/19	Drilling Equip: Vac Master 4000 to 10' bgs / Geoprobe 67120T after	
Total Boring Depth: 50 ft. bgs	Static Water: 46 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	N/A	0-0.5'	SP	Dry, dark brown, poorly graded, fine SAND, trace rounded gravel, some organics	505B-19-01-0-0.5 @ 830
		0.5-5'	SP	Dry, dark brown, poorly graded, fine SAND, trace subrounded gravel	505B-19-01-0.5-3 @ 835
5-10'	N/A	5-10'	SW	Dry, dark brown, well graded, medium SAND, few coarse sand, trace subangular gravel	505B-19-01-3-7 @ 840 505B-19-01-7-15 @ 1115
10-15'	3.0/5.0	10-13'	SP	Dry, dark brown, poorly graded, fine SAND, trace subrounded gravel	
		13-15'	SP	Dry, tan, poorly graded, medium SAND, little coarse sand	
15-20'	3.5/5.0	15-18'	SP	Dry, dark brown, poorly graded, fine SAND	
		18-20'	SP	Dry, tan, poorly graded, fine SAND	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 50SB-19-01	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 (JW)
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/24/19	Drilling Equip: Geoprobe 6712 DT	
Total Boring Depth: 50 ft. bgs	Static Water: 46 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VCS PHD (ppm)	GEOLOGIC LOG	REMARKS
20-25'	2.7/5.0	20-25'	SP	Dry, tan, poorly graded, fine SAND, little silt	
25-30'	3.0/5.0	25-30'	SM	poorly graded, Dry, tan, fine silty SAND	
30-35'	2.5/5.0	30-35'	SM	Dry, tan, poorly graded, fine silty SAND	
35-40'	3.2/5.0	35-38'	SM	Dry, tan, poorly graded, fine silty SAND	
		38-39'	ML	Dry, tan brown, SILT, little fine sand	
		39-40'	SP	Dry, tan, poorly graded, fine sand	

Notes:



KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 505B-19-01	Page 3 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	<i>QC'd</i> <i>4/7/2020</i>
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/24/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 50 ft. bgs	Static Water: 46 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm)	GEOLOGIC LOG	REMARKS
40-45'	2.8/5.0	40-44'	SP	Dry, tan, poorly graded, fine SAND	
		44-45'	SM	Moist, tan, poorly graded, fine silty SAND	
45-50'	3.9/5.0	45-46'	SM	Same as 44-45' bgs	505B-19-01-44-46 @ 1240
		46-50'	SM	Wet, brown/tan, poorly graded, fine silty SAND	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 50SB-19-02	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<i>OC 12/20/19 12/20/19 [Signature]</i>
Address: AOL 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/24/19	Drilling Equip: Vac Master 4000 to 10' bgs	Geoprobe 6712DT after
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PH (ppm)	GEOLOGIC LOG	REMARKS
0-0.5' 0-5'	N/A	0-0.5'	SP	Dry, dark brown, poorly graded, fine sand, some organics/roots, trace subangular gravel	50SB-19-02-0-0.5 @ 930
		0.5-5'	SP	Dry, tan, poorly graded, fine SAND, little medium sand	50SB-19-02-0.5-3 @ 935
5-10'	N/A	5-10'	SP	Dry, tan, poorly graded, fine SAND	50SB-19-02-3-7 @ 940 50SB-19-02-7-15 @ 945 DK 1340
10-15'	2.5/5.0	10-15'	SP	Dry, tan to ^{brown} tan , poorly graded fine SAND, few coarse sand	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

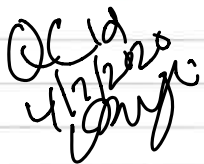
Project: Devens PFAS RI	Boring No.: 50SB-19-03	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	<div style="font-size: 2em; font-weight: bold;">QC'd</div> <div style="font-size: 1.5em;">4/2/2020</div> <div style="font-size: 1.5em;">JAG</div>
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/23/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15-ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.5/5.0	0-0.5'	-	Asphalt	50SB-19-03-0-0.5 @ 910
		0.5-3'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel, little coarse sand	50SB-19-03-0.5-3 @ 915
		3-5'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel	
5-10'	3.3/5.0	5-6'	SP	Same as 3-5' bgs	50SB-19-03-3-7 @ 920
		6-9'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	50SB-19-03-7-15 @ 925
		9-10'	SP	Dry, tan, poorly graded, fine SAND	
10-15'	3.4/5.0	10-15'	SP	Dry, tan, poorly graded, medium SAND, some fine sand	A3-SB-DuPol-102519 @ 930
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Notes:



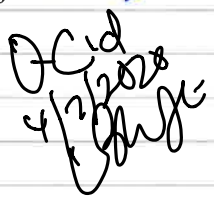
**KOMAN Government Solutions, LLC
SOIL BORING LOG**


Project: Devens PFAS RI	Boring No.: 505B-19-04	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/23/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. logs	Static Water:	


Core Section	Recovery (ft)	Interval (ft)	USCS MB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.2/5.0	0-0.5'	-	Asphalt/Concrete	
		0.5-3'	SP	Dry, tan, poorly graded, fine SAND, few subrounded gravel	505B-19-04-0-0.5 @ 1100
		3-5'	SP	Dry, dark brown to brown, poorly graded, fine SAND	505B-19-04-0-0.5-3 @ 1105
5-10'	3.8/5.0	5-8'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel	505B-19-04-3-7 @ 1110 ↳ MS/MSD
		8-10'	SP	Dry, tan, ^(LW) poorly graded, medium SAND, trace coarse sand, trace subrounded gravel	505B-19-04-7-15 @ 1115
10-15'	4.0/5.0	10-11'	SP	Dry, brown, poorly graded, fine SAND	
		11-13'	SW	Dry, tan, well graded, coarse SAND, some subrounded gravel	
		13-15'	SP	Dry, tan, poorly graded, fine SAND	

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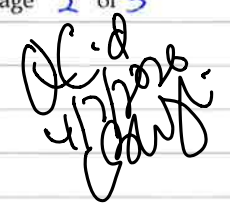
KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 50SB-19-05	Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/23/19	Drilling Equip: Geoprobe 67120T	
Total Boring Depth: 60 ft. bgs	Static Water: 53 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	VSCS PIB (ppm)	GEOLOGIC LOG	REMARKS
0-5'	3.6/5.0	0-0.5'	-	Asphalt	50SB-19-05-0-0.5 @ 1230
		0.5-1.5'	SW	Dry, brown, well graded, medium SAND, little coarse sand, trace subrounded gravel	
		1.5-5'	SP	Dry, orange orange/tan to tan, poorly graded, fine SAND, trace subangular gravel	50SB-19-05-0.5-3 @ 1235
5-10'	3.2/5.0	5-9'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subangular gravel	50SB-19-05-3-7 @ 1240
		9-10'	SP	Dry, tan, poorly graded, fine SAND	A3-SB-DVP02-1023-19 @ 1245  ↓ 50SB-19-05-7-15 @ 1245
10-15'	3.0/5.0	10-13'	SW	Dry, brown to tan, well graded, coarse SAND, little medium sand, little subangular gravel	
		13-15'	SP	Dry, tan, poorly graded, fine SAND	
15-20'	3.1/5.0	15-20'	SP	Dry, brown, poorly graded, fine SAND, trace subangular gravel	

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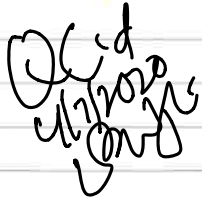
KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 505B-19-05	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/23/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 60 ft. bgs	Static Water: 53 ft. bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PI (ppm)	GEOLOGIC LOG	REMARKS
20-25'	3.4/5.0	20-25'	SP	Dry, tan, poorly graded, fine SAND, with ^{trace} silt	
25-30'	3.6/5.0	25-30'	SM	poorly graded Dry, tan, fine silty SAND	
30-35'	3.8/5.0	30-35'	SM	Dry/Moist, tan, poorly graded, fine silty SAND	
35-40'	3.7/5.0	35-40'	SM	Dry/Moist, tan, poorly graded, fine silty SAND	

Notes:

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 50SB-19-05	Page 3 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/23/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 60 ft. bgs	Static Water: 53 ft bgs	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
40-45'	4.0/ 5.0 ^{5.0}	40-45'	SM	Dry, tan, poorly graded, fine silty SAND	
45-50'	4.0/5.0	45-50'	SM	Dry/Moist, ^{tan/brown} poorly graded, fine silty SAND	
50-55'	4.0/5.0	50- 53 ⁵³	SM	Moist, brown, poorly graded, fine silty SAND	50SB-19-05-51-53 @1350
		53-55 ⁵³ 55'	SM	Wet, brown, poorly graded, fine silty SAND	
55-60'	3.8/5.0	55-60'	SP	Wet, brown, poorly graded, fine SAND	

**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: <i>Devens PFAS SB, Area 3</i>	Boring No.: <i>50SB-14-06</i>
Project No.: <i>01082-0011-533</i>	Drilling Co.: <i>TDS</i>
Address: <i>AOC 50</i>	Driller: <i>Jay Jumanille</i>
Logger: <i>Chris Vignola</i>	Drilling Method: <i>Geoprobe (Direct Push)</i>
Date: <i>10/28/19</i>	Drilling Equip: <i>Geoprobe 6712 DT</i>
Total Boring Depth: <i>65'</i>	Static Water: <i>N/A</i>

*QC'd
4/2/2020
[Signature]*

Core Section	Recovery (ft)	Interval (ft)	USCS SP (SPM) Symbol	GEOLOGIC LOG	REMARKS
<i>0-5'</i>	<i>39"</i>	<i>0-7"</i>	<i>SP</i>	<i>Dry, dark brown, fine to medium sand, (poorly graded) trace organics</i>	<i>0-0.5 ~ 0820</i>
		<i>7-39"</i>	<i>SP</i>	<i>Dry, tan, poorly graded fine to medium sand, trace sub-angular, fine gravel</i>	<i>0.5-3 ~ 0825</i>
<i>5-10'</i>	<i>37"</i>	<i>0-13"</i>	<i>SP</i>	<i>Dry, brown, poorly graded fine to medium sand</i>	<i>3-7 ~ 0830</i>
		<i>13-37"</i>	<i>SP</i>	<i>Dry, tan, poorly graded medium to coarse sand, trace sub-rounded fine gravel</i>	<i>7-15 ~ 0835</i>
<i>10-15'</i>	<i>37"</i>	<i>0-13"</i>	<i>SP</i>	<i>Dry, brown, poorly graded, fine to medium sand</i>	
		<i>13-31"</i>	<i>SP</i>	<i>Dry, tan, poorly graded medium to coarse sand with few sub angular fine gravel</i>	
		<i>31-37"</i>	<i>SP</i> SP <i>SW</i>	<i>Dry, tan, well graded coarse sand with some sub-angular fine gravel</i>	
<i>15-20'</i>	<i>46"</i>	<i>0-26"</i>	<i>SP</i>	<i>Dry, brown, poorly graded, fine to medium sand with few, sub-rounded fine gravel.</i>	
		<i>26-46"</i>	<i>SP</i>	<i>Dry, tan, poorly graded, medium to coarse sand with little, sub-angular fine gravel</i>	
<i>20-25'</i>	<i>27"</i>	<i>0-27"</i>	<i>SP</i>	<i>Dry, tan, poorly graded, medium to coarse sand with trace, sub rounded fine gravel</i>	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS SB, Area 3	Boring No.: 50SB-19-06
Project No.: 01082-0011-533	Drilling Co.: TAS
Address: Arc 50	Driller: Jay J. Jernigan
Logger: Chris Vignoli	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 65'	Static Water: N/A

*QC'd
4/2/2020
[Signature]*

Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm) symbols	GEOLOGIC LOG	REMARKS
25-30'	31"	0-31"	SP	Dry, tan, poorly graded, medium to coarse sand with trace, subrounded, fine gravel	
30-35'	35"	0-35"	SP	Dry, tan, poorly graded, fine to medium sand with trace, sub rounded, fine gravel, trace coarse sand	
35-40'	34"	0-34"	SP	Dry, tan, poorly graded, fine to medium sand with trace, sub-rounded fine gravel, few coarse sand	
40-45'	36"	0-36"	SP	Dry, tan, poorly graded, fine to medium sand, trace sub-rounded, fine gravel, trace coarse sand	
45-50'	26"	0-16"	SP	Dry, tan, poorly graded, fine to medium sand	
		16-26"	SP	Dry, light tan, poorly graded, fine to medium sand	

Notes:



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devins PFAS SB, Area 3	Boring No.: 50SB-19-06
Project No.: 01082-0011-533	Drilling Co.: YDS
Address: AOC 50	Driller: Jay Jumentville
Logger: Chris Vignola	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 67R DT
Total Boring Depth: 65'	Static Water: N/A

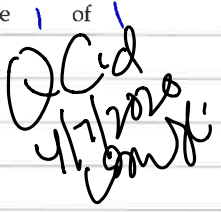
*QC'd
4/2/20
[Signature]*

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (pppt) symbols	GEOLOGIC LOG	REMARKS
50-55'	33"	0-33"	SP	Dry, tan, poorly graded, fine to medium sand	
55-60'	39"	0-26"	SP	Dry, tan, poorly graded, fine to medium sand, small pockets of coarse sand	
		26-39"	SM	Dry, tan, poorly graded, fine sand with few silt	
60-65'	43"	0-24" 62' ~ water table	SM	Moist, poorly graded, fine sand with few silt	Water table @ 62' 60-62' ~ 1125

Notes:



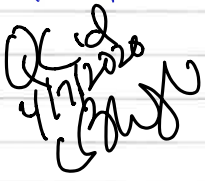
**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 505B-19-07	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/25/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15 ft. bgs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS PHD (ppm)	GEOLOGIC LOG	REMARKS
0-5'	2.7 3.7/5.0 	0-1'	SP	Dry, dark brown, ^{SW} poorly graded, fine SAND, few organics/roots	505B-19-07-0-0.5 @ 840
		1-5'	SP	Dry, tan, poorly graded, fine SAND, cobble @ 3' bgs	505B-19-07-0.5-3 @ 845
5-10'	3.8/5.0	5-8'	SP	Dry, tan, poorly graded, medium SAND, little fine sand	505B-19-07- ³ 7-7 @ 850
		8-10'	SW	Dry, tan, well graded, coarse SAND, little subangular gravel	505B-19-07-7-15 @ 855 A3-SB-DVP01-107519 @ 900
10-15'	3.0/5.0	10-12'	SP	Dry, light brown, poorly graded, fine SAND	
		12-15'	SW	Dry, tan, well graded, coarse SAND, some subrounded gravel	

Notes:

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 50SB-19-08	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn	Drilling Method: Direct Push	
Date: 10/25/19	Drilling Equip: Geoprobe 6712 PT	
Total Boring Depth: 15 ft. logs	Static Water:	

Core Section	Recovery (ft)	Interval (ft)	USCS - PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	4.2/5.0	0-1'	SP	Dry, dark brown, poorly graded, fine SAND, little organics/roots	50SB-19-08-0-0.5 @ 1015
		1-2'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	50SB-19-08-0.5-3 @ 1020
		2-5'	SW	Dry, tan, well graded, coarse SAND, little medium sand, little subrounded gravel	
5-10'	4.0/5.0	5-8'	SW	Dry, tan, well graded, medium SAND, trace subangular gravel	50SB-19-08-3-7 @ 1025 ↳ MS/MSD
		8-10'	SW	Dry, tan, well graded, coarse SAND, some subrounded gravel	50SB-19-08-7-15 @ 1030
10-15'	4.3/5.0	10-12'	SW	Dry, tan, well graded, medium SAND, trace subrounded gravel	
		12-15'	SW GW	Dry, tan, well graded, coarse SAND and subrounded GRAVEL	

Notes:



KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devers PFA's Soil Borings	Boring No.: 50SB-19-09
Project No.: 02082-0011-5330	Drilling Co.: TDS
Address: AOC 50-	Driller: Jay Jumenuille
Logger: Kristen Esser	Drilling Method: DPT
Date: 10/31/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 10'	Static Water: NA

DCD
4/2/2020
[Signature]

Core Section	Recovery ft in	Interval ft in	USCS # (ppm) SYM	GEOLOGIC LOG	REMARKS
0-5'	32	0-18 18-28 28-32	SM-OP SM-OP SW	0-18: Dark brown to black poorly graded fine-med SAND with some SILT and some organics 18-28: Dark brown to black poorly graded med. SAND and few SILT, some organics 28-32: light brown well graded med-coarse SAND	
5-10'	26	0-5 5-26	SW SW	0-5: light brown well graded med-coarse SAND 5-26: light saturated tan well graded med-coarse SAND	Water table @ 7' bgs

Notes: Water table @ 7', sample intervals are 0-0.5, 0.5-3, 3-5, 5-7'

MD
2.5-3
MSMND
@ 7.7'



KOMAN Government Solutions, LLC 293
Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd
4/2/2020
[Signature]

Project: <u>Drewens PFA's Soil Borings</u>	Boring No.: <u>505B-19-10</u>
Project No.: <u>02082-0011-533</u>	Drilling Co.: <u>TDS</u>
Address: <u>AOC 50-</u>	Driller: <u>Jay Jomonville</u>
Logger: <u>Kristen Eckel</u>	Drilling Method: <u>DPT</u>
Date: <u>10/31/19</u>	Drilling Equip: <u>Cheprobe 6712 DT</u>
Total Boring Depth: <u>10'</u>	Static Water: <u>NA</u>

Core Section	Recovery (#) in	Interval (#) in	USCS PID (ppt) sym.	GEOLOGIC LOG	REMARKS
0-5'	32	0-26 26-32	SM SP	0-26: dark brown - black poorly graded dry fine-med SAND with little SILT 26-32: Brown poorly graded med. SAND dry with some organics	
5-10'	29	0-5 5-19 19-29	SP SP SW	0-5: tan-brown poorly graded med. SAND dry 5-19: tan-grey poorly graded med. SAND dry 19-29: tan-grey well graded med-coarse SAND with saturated/most trace sub-angular gravel (low)	(E)

Notes: water @ 7' bgs, intervals for sampling
0-0.5, 0.5-3, 3-5, 5-7
field dup @ 3.5'



**KOMAN Government Solutions, LLC
SOIL BORING LOG**

Project: Devens PFAS RI	Boring No.: 505B-19-11	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 gms
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn - Kristen Estro	Drilling Method: Direct Push	
Date: 11/25/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15'	Static Water: NA	

Core Section	Recovery (#) in	Interval (ft) in	JCS PHD (ppm) sym.	GEOLOGIC LOG	REMARKS
0-5	37	0-11 11-24 24-37 24-37	SM SP SW-GW	0-11: top soil - dry dark brown fine sand 11-24: dry poorly graded tan fine-med. SAND fine cobble @ 24" 24-37: well graded tan med. coarse SAND dry some GRAVEL sub-angular	SILT, some
5-10	40	0-23 23-46	SW SP	0-23: well graded light tan med. - coarse SAND dry with few gravel 23-46: dry poorly graded light tan fine-med SAND	
10-15	40	0-40	SP	0-40: dry poorly graded light tan fine-med SAND	

Notes: Samples @ 0-0.5, 0.5-3, 3-7, 7-15
7-15 is MS/MSD



KOMAN Government Solutions, LLC
SOIL BORING LOG

12

Project: Devens PFAS RI	Boring No.: 505B-19- 18 19 20	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	DC id 4/17/2020 [Signature]
Address: AOC 50	Driller: Jay Jumonville	
Logger: Dave Kortjohn - Kristen Esser	Drilling Method: Direct Push	
Date: 11/18/19	Drilling Equip: Creoprobe 6712DT	
Total Boring Depth: 15'	Static Water: 52'	

Core Section	Recovery #ft/in	Interval #ft in	USCS PTD (ppm) sum.	GEOLOGIC LOG	REMARKS
0-5	(1A) 46 (1B) 46	0-5.5 5.5-25 25-46	SM-0 SP SW	0-5.5: topsoil, silt with some fine SAND ^(Bw) SAND dry dark brown 5.5-25: dry tan fine-med SAND, poorly graded 25-46: dry well graded light tan med-coarse SAND with trace sil sand gravel	
5-10	40	0-40	SW	0-40: dry light tan well graded med-coarse SAND trace sub-angular gravel	
10-15	40	0-40	SW	0-40: dry light brown to light tan well graded med-coarse SAND trace angular gravel	

Notes:





**APPENDIX E SURFACE WATER AND
SEDIMENT FIELD SHEETS**

Area 3 Surface Water and Sediment Sampling Field Sheets

**AOC 20 Unnamed
Wetland**

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS-RI DeVens, MA
Location: Area 3
Sample Location ID: UP-19-01

Date/Time: 10/17/19 1145
Sampler: Melissa Miller




Surface Water/Leachate Seep Information Shorline						
Type of SW: () Stream () River () Seep <input checked="" type="checkbox"/> Pond						
Water Depth: <u>6"</u>			Dissolved Oxygen (mg/L): <u>7.22</u>			
Velocity of Water: <u>Standing H₂O</u>			ORP (mV): <u>131.4</u>			
Temperature (C): <u>10.25</u>			Specific Conductance (µS/cm): <u>—</u>			
pH (STD): <u>6.84</u>			Turbidity (NTU): <u>7.13</u>			
Sample Observations:			Field Testing Equipment:			
() Odor <u>None</u>			Make	Model	Serial #	
() Color <u>Clear</u>			<u>Y6L</u>	<u>650 MDS</u>	<u>06J1938 AB</u>	
() Other			<u>Lamotte</u>	<u>2020WE</u>	<u>1828-0412</u>	
<u>Sample Direct DIP</u>						
Sediment/Leachate Seep Sediment Information sample depth = 6" bgs						
Sediment Type: <input checked="" type="checkbox"/> Organic () Gravel () Clay () Silt <input checked="" type="checkbox"/> Sand () Other						
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete () Composite						
Sample Observations:						
() Odor <u>Slight smell</u>						
() Color <u>Grey</u>						
() Other						
<u>sample collected via stainless steel Hand Cover & Homogenized</u>						
Samples Collected						
Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>UP-19-01-SW-OCT19</u>	<u>UP-19-01</u>	<u>1145</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS</u>
<u>UP-19-01-SE-OCT19</u>	<u> </u>	<u>1145</u>	<u>SE</u>	<u>1</u>	<u> </u>	<u>PFAS</u>
<u>UP-19-01-SE-OCT19</u>	<u> </u>	<u>1145</u>	<u>SE</u>	<u>1</u>	<u> </u>	<u>TOC</u>
<u>UP-19-01-SE-OCT19</u>	<u>X</u>	<u>1145</u>	<u>SE</u>	<u>1</u>	<u>X</u>	<u>Grain Size</u>
Comments: <u>SE = sediment SW = surface H₂O</u>						
<u>Sample location 12 ft N^W from ID stake</u>						
<u>SACO: small & large areas like the shore of the Pond</u>						
<u>lily Ponds & a Beaver Dam Present</u>						
<u>42.5695913, -71.6140248 gmap.</u>						

**AOC 21
Unnamed
Stream**

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 3
Sample Location ID: US-19-01

Date/Time: 10/18/2019 1145
Sampler: Seiler + Hazebroek 

Surface Water/Leachate Seep Information → *no SW sample collected*

Type of SW: <input type="checkbox"/> Stream <input type="checkbox"/> River <input type="checkbox"/> Seep			
Water Depth:	Dissolved Oxygen (mg/L):		
Velocity of Water:	ORP (mV):		
Temperature (C):	Specific Conductance (µS/cm):		
pH (STD):	Turbidity (NTU):		
Sample Observations:		Field Testing Equipment:	
<input type="checkbox"/> Odor	Make	Model	Serial #
<input type="checkbox"/> Color	<u>NA</u>		
<input type="checkbox"/> Other	<u>NA</u>		

Sediment/Leachate Seep Sediment Information *sample depth 0-6"*

Sediment Type: <input checked="" type="checkbox"/> Organic <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input checked="" type="checkbox"/> Silt <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Other <i>fine sand</i>			
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input type="checkbox"/> Composite			
Sample Observations:			
<input type="checkbox"/> Odor <u>none</u>			
<input type="checkbox"/> Color <u>brown/dark brown</u>			
<input type="checkbox"/> Other			
<u>sample collected with decon. stainless steel spoon</u>			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>US-19-01-SE-Oct19</u>	<u>US-19-01</u>	<u>1145</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>PFAS</u>
<u>US-19-01-SE-Oct19</u>	<u>US-19-01</u>	<u>1145</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>TOC</u>
<u>US-19-01-SE-Oct19</u>	<u>US-19-01</u>	<u>1145</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>Grain Size</u>

Comments: Stake is 10' S of sampling location
creek bed was dry at time of sampling, only
sediment was collected on 10/18

42.567162 * -71.608341

Airfield Wetland

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 3
Sample Location ID: AFW-19-01

Date/Time: 10/18/2019 1000
Sampler: Seiter + Hazebrawk



Surface Water/Leachate Seep Information

Type of SW: () Stream () River () Seep (x) Wetland

Water Depth: 1-2 inches Dissolved Oxygen (mg/L): 3.23

Velocity of Water: stagnant ORP (mV): 166.8

Temperature (C): 8.37 Specific Conductance (µS/cm): 93

pH (STD): 4.73 Turbidity (NTU): 759 AU

Sample Observations: () Odor none Field Testing Equipment: Make Model Serial #

() Color gray YSI 560 MDS 0J1938 AB

() Other Lamoth 2020 WC 1828-0412

Direct dip sample

Sediment/Leachate Seep Sediment Information ^{sample depth} 0-6"

Sediment Type: (x) Organic () Gravel () Clay () Silt () Sand (x) Other fine sand

Type of Sample Collected: (x) Discrete () Composite

Sample Observations: () Odor none

() Color dark brown/black

() Other

sample collected with decon. stainless steel spoon

Samples Collected


Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>AFW-19-01-SL-0ct19</u>	<u>AFW-19-01</u>	<u>1000</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS</u>
<u>AFW-19-01-SE-0ct19</u>	<u>AFW-19-01</u>	<u>1000</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>PFAS</u>
<u>AFW-19-01-SE-0ct19</u>	<u>AFW-19-01</u>	<u>1000</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>TOC</u>
<u>AFW-19-01-SE-0ct19</u>	<u>AFW-19-01</u>	<u>1000</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>Grain size</u>

Comments: Stake is 20' NW of sample location
Trees along shore line, woody brush within water

42.570138 x -71.606536

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 3
Sample Location ID: AFW-19-02

Date/Time: 10/18/2019 0900
Sampler: Seiler + Hazebroeck 

Surface Water/Leachate Seep Information

Type of SW: () Stream () River () Seep (x) wetland

Water Depth: <u>3-4 inches</u>	Dissolved Oxygen (mg/L): <u>3.54</u>
Velocity of Water: <u>stagnant</u>	ORP (mV): <u>185.3</u>
Temperature (C): <u>8.91</u>	Specific Conductance (µS/cm): <u>143</u>
pH (STD): <u>3.57</u>	Turbidity (NTU): <u>10.94</u>

Sample Observations: () Odor none () Color clear () Other

Field Testing Equipment:

Make	Model	Serial #
<u>YSI</u>	<u>560MDS</u>	<u>0J1938AB</u>
<u>Lamotte</u>	<u>2020we</u>	<u>1828-0412</u>

Direct Dip Sample

Sediment/Leachate Seep Sediment Information ^{sample} 0-6"

Sediment Type: (x) Organic () Gravel () Clay () Silt () Sand (x) Other fine sand

Type of Sample Collected: (x) Discrete () Composite

Sample Observations: () Odor none () Color dark brown/black () Other

sample collected with a decor. stainless steel spoon

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>AFW-19-02-SW-Oct19</u>	<u>AFW-19-02</u>	<u>0900</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS</u>
<u>AFW-19-02-SE-Oct19</u>	<u>AFW-19-02</u>	<u>0900</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>PFAS</u>
<u>AFW-19-02-SE-Oct19</u>	<u>AFW-19-02</u>	<u>0900</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>TOC</u>
<u>AFW-19-02-SE-Oct19</u>	<u>AFW-19-02</u>	<u>0900</u>	<u>Sed.</u>	<u>1</u>	<u>none</u>	<u>Grain Size</u>

Comments: * readjusted points due to access
stake is 10' NW of sample location
Trees along shoreline, woody brush within water

42.571408 x -71.608468

Nashua River

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFA RI - Devens, MA
Location: Area 3
Sample Location ID: NR-19-01

Date/Time: 10/17/19 1020
Sampler: Melissa Miller



Surface Water/Leachate Seep Information Before Dam

Type of SW: () Stream (X) River () Seep	
Water Depth: <u>8"</u>	Dissolved Oxygen (mg/L): <u>9.37</u>
Velocity of Water: <u>Steady/Slow</u>	ORP (mV): <u>159.1</u>
Temperature (C): <u>10.79</u>	Specific Conductance (µS/cm): <u>337</u>
pH (STD): <u>6.0</u>	Turbidity (NTU): <u>10.33</u>

Sample Observations:	Field Testing Equipment:		
() Odor <u>None</u>	Make	Model	Serial #
() Color <u>Clear</u>	<u>YSI</u>	<u>650 MDS</u>	<u>06J1938 AB</u>
() Other	<u>Lamotte</u>	<u>2020 We</u>	<u>1828-0412</u>

Sample by Direct DIP

Sediment/Leachate Seep Sediment Information Sample Depth 6"

Sediment Type: (X) Organic () Gravel () Clay (X) Silt () Sand () Other
Type of Sample Collected: (X) Discrete () Composite
Sample Observations:
() Odor <u>NOI</u>
() Color <u>Grey/Brown</u>
() Other

Sample collected via stainless steel Hand corer & Homogenizer

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-01-SW-0019	NR-19-01	1020	SW	2	None	PFAS
NR-19-01-SE-0019	NR-19-01	1020	SE	1	X	PFAS
NR-19-01-SE-0019	NR-19-01	1020	SE	1		TOC
NR-19-01-SE-0019	NR-19-01	1020	SE	1		Grain


Comments: SE = Sediment, SW = Surface Water
Sample location 12ft towards the Eastbank of the Nashua River from ID STAK
ECO: Small trees & shrubs & cattails line the West Bank of the Nashua River

42.5522334, -71.6197537 (Google MAPS)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

PFAS RT

Project: DEWENS, MA
Location: Area 3
Sample Location ID: NR-19-02

Date/Time: 10/16/19
Sampler: Melissa Miller 

Surface Water/Leachate Seep Information West Bank

Type of SW: () Stream River () Seep

Water Depth: 8" Dissolved Oxygen (mg/L): 10.24

Velocity of Water: Steady Flow ORP (mV): 105.4

Temperature (C): 11.34 Specific Conductance (µS/cm): 473

pH (STD): 6.82 Turbidity (NTU): 1.8

Sample Observations: () Odor none () Color clear () Other sample Direct DIP

Field Testing Equipment:

Make	Model	Serial #
<u>YSI</u>	<u>650 MDS</u>	<u>06J1938 AB</u>

Sediment/Leachate Seep Sediment Information sample depth 6' BGS

Sediment Type: Organic () Gravel () Clay Silt () Sand () Other _____

Type of Sample Collected: Discrete () Composite

Sample Observations: () Odor none () Color Dark Grey () Other _____

Sample Collected via stainless steel Hand Corer & Homogenized

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-02-SW-OCT19	NR-19-02	1245	SW	2	none	PFAS
NR-19-02-SE-OCT19		1245	SE	1		PFAS
NR-19-02-SE-OCT19		1245	SE	1		TOC
NR-19-02-SE-OCT19		1245	SE	1		Grain Size
AB-SW-DUP-10/16/19		1250	SW	2		PFAS
AB-SE-DUP-10/16/19		1250	SE	1		PFAS
AB-SE-DUP-10/16/19		1250	SE	1		TOC
AB-SE-DUP-10/16/19	<input checked="" type="checkbox"/>	1250	SE	1	<input checked="" type="checkbox"/>	Grain Size

Comments: SE = Sediment SW = Surface H₂O
Sample Location 8ft towards East Bank of ED Start

ECO: Large & Small trees line the shore/BANK of the River

42.5629948, -71.6107814

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RL
Location: Area 3
Sample Location ID: NR-19-03

Date/Time: 10/16/19 1130
Sampler: Melissa Miller



Surface Water/Leachate Seep Information west bank

Type of SW: () Stream River () Seep

Water Depth: 8" Dissolved Oxygen (mg/L): 10.12

Velocity of Water: Steady flow ORP (mV): 104.9

Temperature (C): 11.5 Specific Conductance (µS/cm): 479.

pH (STD): 6.83 Turbidity (NTU): 1.0

Sample Observations: () Odor none () Color clear () Other

Field Testing Equipment:

Make	Model	Serial #
<u>YSI</u>	<u>650MDS</u>	<u>0651938 AB</u>

Sample Direct DIP

Sediment/Leachate Seep Sediment Information Sample Depth: 6" bgs

Sediment Type: Organic () Gravel () Clay Silt () Sand () Other

Type of Sample Collected: Discrete () Composite

Sample Observations: () Odor none () Color Brown () Other

Sample collected via stainless steel hand corer & homogenized

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-03-SW-OCT19	NR-1903	1130	SW	2	none	PFAS
NR-19-03-SE-OCT19	↓	1130	SE	1	↓	PFAS
NR-19-03-SE-OCT19	↓	1130	SE	1	↓	TOC
NR-19-03-SE-OCT19	×	1130	SE	1	×	Grain Size

Comments: SE = Sediment, SW = surface H₂O
Sample Location, 12ft SE of ID stake
ECO: Large & small trees line the shore

42.5638779, -71.6092686 gmaps

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Ared 3
Sample Location ID: NR-19-04

Date/Time: 10/16/19 1030
Sampler: Malissa Miller



Surface Water/Leachate Seep Information *west bank*

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep	
Water Depth: <u>8"</u>	Dissolved Oxygen (mg/L): <u>9.98</u>
Velocity of Water: <u>Steady Flow</u>	ORP (mV): <u>108.1</u>
Temperature (C): <u>10.20</u>	Specific Conductance (µS/cm): <u>479</u>
pH (STD): <u>6.47</u>	Turbidity (NTU): <u>2.2</u>
Sample Observations:	
() Odor <u>None</u>	Field Testing Equipment:
() Color <u>Clear</u>	Make Model Serial #
() Other	<u>YSI 650 MPS 0651938AB</u>
<u>Sample Direct Dip</u>	

Sediment/Leachate Seep Sediment Information *sample depth 6" bgs*

Sediment Type: () Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand () Other	
Type of Sample Collected: () Discrete () Composite	
Sample Observations:	
() Odor <u>none</u>	
() Color <u>Grey/Black</u>	
() Other	
<u>Sample collected via stainless steel Hand Over & Homogenizer</u>	

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-04-SW-0CT19	NR-19-04	1030	SW	2	none	PFAS
NR-19-04-SE-0CT19		1030	SE	1		PFAS
NR-19-04-SE-0CT19		1030	SE	1		TOC
NR-19-04-SE-0CT19	X	1030	SE	1	X	Grain Size

Comments: *SE = Sediment SW = Surface H₂O*
sample location 8ft ~~at~~ towards the bank.
Ec: small trees/shrubs, plants & large trees line the shorebank

12.5654225, -71.6086473

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI 0
Location: Area 3
Sample Location ID: NR-19-05

Date/Time: 10/16/19 0930
Sampler: Melissa Miller



Surface Water/Leachate Seep Information Westbank

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep	
Water Depth: <u>7.5 ft</u>	Dissolved Oxygen (mg/L): <u>9.72</u>
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>147.2</u>
Temperature (C): <u>10.10</u>	Specific Conductance (µS/cm): <u>494</u>
pH (STD): <u>6.03</u>	Turbidity (NTU): <u>1.3</u>
Sample Observations:	
() Odor <u>none</u>	Field Testing Equipment:
() Color <u>clear</u>	Make Model Serial #
() Other	<u>YSI 650 MDS 0651938 AB</u>
<u>Sample collected by direct Dip</u>	

Sediment/Leachate Seep Sediment Information sample depth 6" bgs

Sediment Type: <input checked="" type="checkbox"/> Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand () Other
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete () Composite
Sample Observations:
() Odor <u>none</u>
() Color <u>Grey/Black</u>
() Other
<u>Sample collected by stainless steel hand corer & Homogenized</u>

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-05-SW-OCT19	NR-19-05	0930	SW	2	none	PFAS
NR-19-05-SE-OCT19		0930	SE	1		PFAS
NR-19-05-SE-OCT19		0930	SE	1		TOC
NR-19-05-SE-OCT19	X	0930	SE	1	X	Grain size

Comments: SE = sediment SW = surface H2O
Sample location 10 ft NE of ID stake
ECO: Trees and small shrubs / plants line the west bank

42.5671448, -71.6081300 (ID stake) Gmaps

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RE DEVERNS, MA
Location: Area 3
Sample Location ID: NR-19-06

Date/Time: 10/15/19 1300
Sampler: Melissa Miller



Surface Water/Leachate Seep Information *West Bank*

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep			
Water Depth: <u>8"</u>	Dissolved Oxygen (mg/L): <u>9.35</u>		
Velocity of Water: <u>Steady flow/slow</u>	ORP (mV): <u>128.1</u>		
Temperature (C): <u>11.21</u>	Specific Conductance (µS/cm): <u>609</u>		
pH (STD): <u>6.83</u>	Turbidity (NTU): <u>1.2</u>		
Sample Observations:		Field Testing Equipment:	
() Odor <u>none</u>	Make	Model	Serial #
() Color <u>clear</u>	<u>YSI</u>	<u>650 MDS</u>	<u>0651938 AB</u>
() Other			
<u>Direct Dip Sample -</u>			

Sediment/Leachate Seep Sediment Information 6" bgs

Sediment Type: () Organic () Gravel () Clay () Silt <input checked="" type="checkbox"/> Sand () Other _____			
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete () Composite			
Sample Observations:			
() Odor <u>none</u>			
() Color <u>Brown/Black</u>			
() Other			
<u>sample w/ a stainless steel hand cover & homogenized</u>			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-06-SW-OCT19	NR-19-06	1300	SW	2	none	PFAS
NR-19-06-SE-OCT19		1300	SE	1		PFAS
NR-19-06-SE-OCT19		1300	SE	1		TOC
NR-19-06-SE-OCT19	X	1300	SE	1	X	Grain size

Comments: sample location 10 FT SE of TD stake
SE = sediment
SW = surface H₂O

ECO: Trees & shrubs line the west bank

42.5685740, -71.6115984 (G-maps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: DEVERENS, MA PFAS R/F
Location: Area 3
Sample Location ID: NR-19-07

Date/Time: 10/15/19 1155
Sampler: Melissa Miller



Surface Water/Leachate Seep Information West Bank

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep	
Water Depth: <u>8"</u>	Dissolved Oxygen (mg/L): <u>9.84</u>
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>102.9</u>
Temperature (C): <u>11.70</u>	Specific Conductance (µS/cm): <u>494</u>
pH (STD): <u>6.94</u>	Turbidity (NTU): <u>1.5</u>
Sample Observations:	
() Odor <u>None</u>	Field Testing Equipment:
() Color <u>Clear</u>	Make Model Serial #
() Other	<u>YSI 650 MDS 06J1938 AB</u>
<u>Direct DIP</u>	

Sediment/Leachate Seep Sediment Information 0.5' by 5'

Sediment Type: () Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand () Other	
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete () Composite	
Sample Observations:	
() Odor <u>None</u>	
() Color <u>Dark Grey</u>	
() Other	
<u>Stainless steel Hand cover & Homogenized</u>	

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-07-SW-OCT19	NR-19-07	1155	SW	2	none	PFAS
NR-19-07-SE-OCT19		1155	SE	1		PFAS
NR-19-07-SE-OCT19		1155	SE	1		TOC
NR-19-07-SE-OCT19	X	1155	SE	1	none	Grain size

Comments: SE = Sediment Sample location 7 ft from ID stake (East)
SW = surface H₂O
ECO: Trees and shrubs line the River Bank

12.5698960, -71.6120098 (G-maps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RT, Devens, MA
Location: Area 3
Sample Location ID: NR-19-08

Date/Time: 10/15/19 1010
Sampler: Melissa Miller



Surface Water/Leachate Seep Information Eastbank

Type of SW: () Stream (X) River () Seep			
Water Depth: <u>0.61 ft</u>	Dissolved Oxygen (mg/L): <u>9.22</u>		
Velocity of Water: <u>Steady Flow</u>	ORP (mV): <u>87.6</u>		
Temperature (C): <u>10.42</u>	Specific Conductance (µS/cm): <u>440</u>		
pH (STD): <u>6.95</u>	Turbidity (NTU): <u>1.0</u>		
Sample Observations:		Field Testing Equipment:	
() Odor <u>None</u>	Make	Model	Serial #
() Color <u>Clear</u>	<u>YSI</u>	<u>650 MDS</u>	<u>0651932 AB</u>
() Other			

Sediment/Leachate Seep Sediment Information Sample Depth 5' bag

Sediment Type: () Organic () Gravel () Clay (X) Silt () Sand () Other			
Type of Sample Collected: (X) Discrete () Composite			
Sample Observations:			
() Odor <u>None</u>			
() Color <u>Grey</u>			
() Other			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-08-SW-0CT19	NR-19-08	1010	SW	2	None	PFAS
NR-19-08-SE-0CT19	↓	1010	SE	1	↓	PFAS
NR-19-08-SE-0CT19	↓	1010	SE	1	↓	TOC
NR-19-08-SE-0CT19	↓	1010	SE	1	X	Grain size

Comments: SE= Sample Collected via Hand Core ^{stainless steel} & Homogenized
SW= Sample Collected by Direct Dip SE= sediment
Sample collected 8 ft from ID STAKE SW= surface H₂O
ECO. Trees & small shrubs line the east bank

2.5719878, -71.6125164 (gnaps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
DENNIS, MA
Location: Area 3
Sample Location ID: NR-19-09

Date/Time: 10/15/19 0920
Sampler: Melissa Miller



Surface Water/Leachate Seep Information East bank

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep	
Water Depth: <u>0.6' ft</u>	Dissolved Oxygen (mg/L): <u>8.26</u>
Velocity of Water: <u>Steady Flow</u>	ORP (mV): <u>83.0</u>
Temperature (C): <u>10.02</u>	Specific Conductance (µS/cm): <u>439</u>
pH (STD): <u>6.73</u>	Turbidity (NTU): <u>1 NTU</u>
Sample Observations:	Field Testing Equipment:
() Odor <u>none</u>	Make Model Serial #
() Color <u>clear</u>	<u>YSE 650MDS 0631938 AB</u>
() Other	

Sediment/Leachate Seep Sediment Information Sample Depth: 6.5' bgs

Sediment Type: () Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand () Other
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input checked="" type="checkbox"/> Composite
Sample Observations:
() Odor <u>none</u>
() Color <u>Grey/Black</u>
() Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-09-SW-Oct19	0920	NR-19-09	SW	2	none	PFAS
NR-19-09-SE-Oct19	0920		SE	1		PFAS
NR-19-09-SE-Oct19	0920		SE	1		TUC
NR-19-09-SE-Oct19	0920	X	SE	1	X	Grain Size

Comments: SE = Sampled via stainless steel hand cover & homogenized
SW = Sample Direct Dip
Sample Location 5ft from TD stake.
ECO: trees & shrubs line the east bank

42.5729238, -71.6143028 (Gmaps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
DeVens, MA
Location: NR-19-10 Area 3
Sample Location ID: NR-19-10

Date/Time: 10/15/19 0825
Sampler: Melissa Miller



Surface Water/Leachate Seep Information East Bank

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep	
Water Depth: <u>6'</u> APPROX	Dissolved Oxygen (mg/L): <u>9.64</u>
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>149.1</u>
Temperature (C): <u>10.91</u>	Specific Conductance (µS/cm): <u>436</u>
pH (STD): <u>5.79</u>	Turbidity (NTU): <u>5.0</u>
Sample Observations:	Field Testing Equipment:
() Odor <u>none</u>	Make Model Serial #
() Color <u>Clear</u>	<u>YSI 650 MDS 0601938 AB</u>
() Other	

Sediment/Leachate Seep Sediment Information Sample Depth 1.5' bgs

Sediment Type: () Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt () Sand () Other
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input checked="" type="checkbox"/> Composite
Sample Observations:
() Odor <u>n</u>
() Color <u>Grey/Brown</u>
() Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-10-SW-OCT19	NR-19-10	0825	SW	2	none	PFAS
NR-19-10-SE-OCT19		0825	SE	1		PFAS
NR-19-10-SE-OCT19		0825	SE	1		TOC
NR-19-10-SE-OCT19	X	0825	SE	1	X	Grain Size

Comments:
SE= Sample collected via Grab from Stainless Steel Hand Cover & Homogenized
SW= Sample collected by Direct DIP SE= Sediment
Eco: Trees & ferns line the East bank, Beaver marks on trees. SW= Surface H₂O

42.5750183, -71.6140366 grab
nple location 8 ft from ED stake
(West)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: DeVens, MA PFAS RI
Location: Area 3
Sample Location ID: NR-19-11

Date/Time: 10/14/19 1244
Sampler: Melissa Miller



Surface Water/Leachate Seep Information

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep			
Water Depth: <u>1ft Approx</u>	Dissolved Oxygen (mg/L): <u>9.61</u>		
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>106.0</u>		
Temperature (C): <u>11.91</u>	Specific Conductance (µS/cm): <u>407.0</u>		
pH (STD): <u>6.53</u>	Turbidity (NTU): <u>0.5</u>		
Sample Observations:		Field Testing Equipment:	
() Odor <u>none</u>	Make	Model	Serial #
() Color <u>clear</u>	<u>YST</u>	<u>650 MPS</u>	<u>060198AB</u>
() Other			

Sediment/Leachate Seep Sediment Information Depth .6'

Sediment Type: () Organic () Gravel () Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand () Other _____			
Type of Sample Collected: () Discrete <input checked="" type="checkbox"/> Composite			
Sample Observations:			
() Odor			
() Color <u>Grey/Brown</u>			
() Other			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-11-SW-0CT19	NR-19-11	1245	SW	2	none	PFAS
NR-19-11-SE-0CT19		1245	SE	1		PFAS
NR-19-11-SE-0ct19		1245	SE	1		TOC
NR-19-11-SE-0ct19		1245	SE	1		Grain size
AB-SE-DUP-101419		1250	SW	2		PFAS
AB-SE-DUP-101419		1250	SE	1		PFAS
AB-SE-DUP-101419		1250	SE	1		TOC
AB-SE-DUP-101419	<input checked="" type="checkbox"/>	1250	SE	1	<input checked="" type="checkbox"/>	Grain size

Comments: Sample grabbed stainless steel hand corer & homogenized
Direct Dip = SW
sample location .10 ft NW of JD stake. SW = surface H₂O
SE = Sediment
Eco: Trees, shrubs along the Bank.

42.5570480, -71.6125932

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Bevens PFAS RI
Location: Area 3
Sample Location ID: NR-19-12

Date/Time: 10/14/19 1100
Sampler: Melissa Miller



Surface Water/Leachate Seep Information

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep			
Water Depth: <u>3 ft ~</u>	Dissolved Oxygen (mg/L): <u>9.92</u>		
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>100.5</u>		
Temperature (C): <u>11.22</u>	Specific Conductance (µS/cm): <u>414</u>		
pH (STD): <u>6.62</u>	Turbidity (NTU): <u>0.6</u>		
Sample Observations: <u>sw</u>		Field Testing Equipment:	
() Odor <u>none</u>	Make	Model	Serial #
() Color <u>clear</u>	<u>YSI</u>	<u>650 MPS</u>	<u>06J1938 AB</u>
() Other			

Sediment/Leachate Seep Sediment Information *sampling depth!*

Sediment Type: <input checked="" type="checkbox"/> Organic () Gravel () Clay () Silt () Sand () Other _____			
Type of Sample Collected: () Discrete <input checked="" type="checkbox"/> Composite			
Sample Observations:			
() Odor <u>none</u>			
() Color <u>black</u>			
() Other			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>NR-19-12-SW-OCT19</u>	<u>NR-19-12</u>	<u>1100</u>	<u>SE</u>	<u>2</u>	<u>none</u>	<u>PFAS</u>
<u>NR-19-12-SE-OCT19</u>		<u>1100</u>	<u>SE</u>	<u>1</u>		<u>PFAS</u>
<u>NR-19-12-SE-OCT19</u>		<u>1100</u>	<u>SE</u>	<u>1</u>		<u>TOC</u>
<u>NR-19-12-SE-OCT19</u>	<u>*</u>	<u>1100</u>	<u>SE</u>	<u>1</u>	<u>*</u>	<u>Grain Size</u>

Comments: Sample collected 5ft North of ID Stake.
East Bank, trees and grass present.

Samples collected by stainless steel hand pump & homogenizer
42. 5777748, -71.6098439

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens, MA PFAS RT
Location: Area 3
Sample Location ID: NR-19-13

Date/Time: 10/14/19 0930
Sampler: Melissa Miller



Surface Water/Leachate Seep Information

Type of SW: () Stream <input checked="" type="checkbox"/> River () Seep		
Water Depth: <u>1.5 ft ±</u>	Dissolved Oxygen (mg/L): <u>9.74</u>	
Velocity of Water: <u>Steady flow</u>	ORP (mV): <u>117.9</u>	
Temperature (C): <u>11.03</u>	Specific Conductance (µS/cm): <u>432</u>	
pH (STD): <u>5.80</u>	Turbidity (NTU): <u>4.9</u>	
Sample Observations: <u>sw</u>		Field Testing Equipment:
() Odor <u>none</u>	Make	Model Serial #
() Color <u>Clear</u>	<u>YSI 650 MDS</u>	<u>06J1938 AB</u>
() Other		

Sediment/Leachate Seep Sediment Information

sample depth = 6"

Sediment Type: <input checked="" type="checkbox"/> Organic () Gravel () Clay () Silt <input checked="" type="checkbox"/> Sand () Other
Type of Sample Collected: () Discrete <input checked="" type="checkbox"/> Composite
Sample Observations:
() Odor <u>no</u>
() Color <u>Black</u>
() Other
<u>Homogenized Sample</u>

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>NR-19-13-SW-0CT19</u>	<u>NR-19-13</u>	<u>0930</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS</u>
<u>NR-19-13-SE-0CT19</u>	<u> </u>	<u>0930</u>	<u>SE</u>	<u>1</u>	<u>none</u>	<u>PFAS</u>
<u>NR-19-13-SE-0CT19</u>	<u> </u>	<u>0930</u>	<u>SE</u>	<u>1</u>	<u>none</u>	<u>TOC</u>
<u>NR-19-13-SE-0CT19</u>	<u>X</u>	<u>0930</u>	<u>SE</u>	<u>1</u>	<u>none</u>	<u>Grain size</u>

Comments: by a culvert, 4 feet NE of LP stake SW = Surface Water
Rare, East Bank trees & shrubs line the banks SE = Sediment

42.5784140, -71.6093709

sample collected w/ stainless steel Hand cover & Homogenize

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Area 3

Project: Devens PFAS RI
Location: ^{DK} NR-19-14 Background
Sample Location ID: NR-19-14

Date/Time: 12/18/19/900
Sampler: Kevin Anderson



Surface Water/Leachate Seep Information

Type of SW: () Stream (X) River () Seep	
Water Depth: <u>≈ 3 ft.</u>	Dissolved Oxygen (mg/L): <u>12.22</u>
Velocity of Water: <u>N/A</u>	ORP (mV): <u>188.8</u>
Temperature (C): <u>0.80°C</u>	Specific Conductance (µS/cm): <u>0.256</u>
pH (STD): <u>6.31</u>	Turbidity (NTU): <u>13.2</u>
Sample Observations:	
Field Testing Equipment:	
() Odor <u>None</u>	Make Model Serial #
() Color Brown ^{DK} <u>Clear</u>	<u>YSI 650MDS 116100387</u>
() Other	<u>La Motte 2020we 3590-3513</u>

Sediment/Leachate Seep Sediment Information

Sediment Type: () Organic () Gravel () Clay (X) Silt (X) Sand () Other _____
Type of Sample Collected: (X) Discrete () Composite
Sample Observations:
() Odor <u>None</u>
() Color <u>Brown</u>
() Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>NR-SW-19-14-DEC19</u>	<u>NR-19-14</u>	<u>1030</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS 537</u>
<u>NR-SED-19-14-DEC19</u>	<u>NR-19-14</u>	<u>1105</u>	<u>SEA</u>	<u>2</u>	<u>none</u>	<u>PFAS/TOC</u>
<u>NR-SED-19-14-DEC19</u>	<u>NR-19-14</u>	<u>1300</u>	<u>SED</u>	<u>1 bag</u>	<u>none</u>	<u>Grain Size</u>

Comments:
→ Collected on 12/20/19 by Dave Kortjohn

Background Surface Water and Sediment Sampling

Squannacook River

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens PFAS RI
 Location: Background
 Sample Location ID: SR-19-01

Date/Time: 12/18/19 / 1130
 Sampler: Kevin Anderson



Surface Water/Leachate Seep Information

Type of SW: <input type="checkbox"/> Stream <input checked="" type="checkbox"/> River <input type="checkbox"/> Seep			
Water Depth: <u>≈ 3.5 ft</u>	Dissolved Oxygen (mg/L): <u>12.85</u>		
Velocity of Water: <u>N/A</u>	ORP (mV): <u>171.0</u>		
Temperature (C): <u>0.59</u>	Specific Conductance (μS/cm): <u>0.125</u>		
pH (STD): <u>5.92</u>	Turbidity (NTU): <u>2.72</u>		
Sample Observations:		Field Testing Equipment:	
<input type="checkbox"/> Odor <u>None</u>	Make	Model	Serial #
<input type="checkbox"/> Color <u>Clear</u>	<u>YS1650</u>	<u>MDS</u>	<u>116100387</u>
<input type="checkbox"/> Other	<u>La Motte</u>	<u>2020we</u>	<u>3590-3513</u>

Sediment/Leachate Seep Sediment Information

Sediment Type: <input type="checkbox"/> Organic <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand <input type="checkbox"/> Other _____			
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input type="checkbox"/> Composite			
Sample Observations:			
<input type="checkbox"/> Odor <u>None</u>			
<input type="checkbox"/> Color <u>Brown</u>			
<input type="checkbox"/> Other			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
SR-SW-19-01-DEC19	SR-19-01	1230	SW	2	None	PFAS
BK-SW-DUP-121819	SR-19-01	1235	SW	2	None	PFAS
SR-SED-19-01-DEC19	SR-19-01	1245	SED	2	None	PFAS/TOC
BK-SED-DUP-121819	SR-19-01	1250	SED	2	None	PFAS/TOC
SR-SED-19-01-DEC19	SR-19-01	1200	SED	1 bag	None	Grain Size

Comments:
 → Collected on 12/20/19 by Dave Kortjohn

Bower's Brook

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devers RI SW/SED
Location: _____
Sample Location ID: BB-20-01

Date/Time: 5/20/2020 0800
Sampler: KA



Surface Water/Leachate Seep Information						
Type of SW: <input checked="" type="checkbox"/> Stream () River () Seep						
Water Depth: <u>~ 18-24"</u>			Dissolved Oxygen (mg/L): <u>4.78</u>			
Velocity of Water: <u>~ 0 m/s</u>			ORP (mV): <u>91.4</u>			
Temperature (C): <u>13.47</u>			Specific Conductance (µS/cm): <u>299</u>			
pH (STD): <u>7.00</u>			Turbidity (NTU): <u>6.27</u>			
Sample Observations:			Field Testing Equipment:			
<input checked="" type="checkbox"/> Odor <u>Light brassy tint (no odor)</u>		Make	Model	Serial #		
<input checked="" type="checkbox"/> Color <u>✓</u>		<u>YSI</u>	<u>550MS</u>	<u>0561941AD</u>		
<input type="checkbox"/> Other						
Sediment/Leachate Seep Sediment Information						
Sediment Type: <input checked="" type="checkbox"/> Organic () Gravel () Clay () Silt <input checked="" type="checkbox"/> Sand () Other _____						
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete () Composite						
Sample Observations:						
<input checked="" type="checkbox"/> Odor <u>Organic decomposition odor</u>						
<input checked="" type="checkbox"/> Color <u>Brown - dark brown</u>						
<input checked="" type="checkbox"/> Other <u>Heavy organic concentration</u>						
Samples Collected						
Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
BB-20-01	—	—	—	—	—	—
BB-SW-20-01- <u>May 20</u>	BB-20-01	0820	SW	<u>6</u>	NA	PFAS MS37
BB-SED-20-01- <u>May 20</u>	BB-20-01	0825	SED	<u>6</u>	NA	PFAS MS37
BB-SED-20-01- <u>May 20</u>	BB-20-01	0825	SED	<u>3</u>	NA	TOC
BB-SED-20-01- <u>May 20</u>	BB-20-01	0825	SED	<u>1 (bag)</u>	NA	Grain Size
Comments: <u>MS/MSD collected at location for PFAS (SW), PFAS (SED), TOC (SED)</u>						

Flannigan's Pond

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens RI SW/SED
Location: _____
Sample Location ID: FP-20-01

Date/Time: 5/20/2020 1100
Sampler: KA



Surface Water/Leachate Seep Information

Type of SW: () Stream () River (Seep (Lake))

Water Depth: ~30"	Dissolved Oxygen (mg/L): 7.48
Velocity of Water: 0-0.5	ORP (mV): -13.9
Temperature (C): 19.4	Specific Conductance (µS/cm): 172
pH (STD): 7.08	Turbidity (NTU): 2.14

Sample Observations: () Odor None () Color Light brown tint () Other _____

Field Testing Equipment:

Make	Model	Serial #
<u>YSI</u>	<u>556MPS</u>	<u>0561941AD</u>

Sediment/Leachate Seep Sediment Information

Sediment Type: (Organic) () Gravel () Clay () Silt (Sand) () Other _____

Type of Sample Collected: (Discrete) () Composite

Sample Observations:

(Odor) Strong organic decomposition

(Color) Dark brown

(Other) heavy organic concentration, little sand

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>FP-SW-20-01-^{may 20}</u>	<u>FP-20-01</u>	<u>1100</u>	<u>SW</u>	<u>2</u>	<u>-</u>	<u>PFAS MS37</u>
<u>FP-SED-20-01-^{may 20}</u>	<u>FP-20-01</u>	<u>1110</u>	<u>SED</u>	<u>2</u>	<u>-</u>	<u>PFAS MS37</u>
<u>FP-SED-20-01-^{may 20}</u>	<u>FP-20-01</u>	<u>1110</u>	<u>SED</u>	<u>1</u>	<u>-</u>	<u>TOC</u>
<u>FP-SED-20-01-^{may 20}</u>	<u>FP-20-01</u>	<u>1110</u>	<u>SED</u>	<u>1 bag</u>	<u>-</u>	<u>GRAIN SIZE</u>

Comments:

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devers RI SW/SED
Location: _____
Sample Location ID: FP-20-02

Date/Time: 5/20/2020 1000
Sampler: KA



Surface Water/Leachate Seep Information

Type of SW: () Stream () River <input checked="" type="checkbox"/> Seep (Lake)	
Water Depth: ~ 24"	Dissolved Oxygen (mg/L): 6.97
Velocity of Water: ~ 0 m/s	ORP (mV): -25.2
Temperature (C): 20.52	Specific Conductance (µS/cm): 186
pH (STD): 7.14	Turbidity (NTU): 4.33
Sample Observations:	
() Odor none	Field Testing Equipment:
() Color clear	Make Model Serial #
() Other	YSI 556 MPS 0561941AD

Sediment/Leachate Seep Sediment Information

Sediment Type: Organic () Gravel () Clay () Silt Sand () Other _____

Type of Sample Collected: Discrete () Composite

Sample Observations:

() Odor slight organic decomposition odor

() Color Gray/dark gray sand w/ dark brown organics

() Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
FP-SW-20-02-may20	FP-20-02	1015	SW	2	-	PFAS MS37
BK-SW-DUP-052020	FP-20-02	1020	SW	2	-	PFAS MS37 (DUP)
FP-SED-20-02-may20	FP-20-02	1030	SED	2	-	PFAS MS37
BK-SED-DUP-052020	FP-20-02	1035	SED	2	-	PFAS MS37 (DUP)
FP-SED-20-02-may20	FP-20-02	1030	SED	1	-	TOC
BK-SED-DUP-052020	FP-20-02	1035	SED	1	-	TOC (DUP)
FP-SED-20-02-may20	FP-20-02	1030	SED	1 (log)	-	Grain Size

Comments: FD collected for PFAS(SW), PTAS(SED), TOC(SED)

Nashua River

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: DeVens PFAS RI

Date/Time: 12/20/19 / 1100

Location: NRBK-19-01

Sampler: Dave Kostjohn



Sample Location ID: ~~NRBK-19-01~~

NRBK-SW-19-01-DEC19 NRBK-SED-19-01-DEC19

Surface Water/Leachate Seep Information

Type of SW: <input type="checkbox"/> Stream <input checked="" type="checkbox"/> River <input type="checkbox"/> Seep	
Water Depth:	Dissolved Oxygen (mg/L): <u>18.77</u>
Velocity of Water:	ORP (mV): <u>147.8</u>
Temperature (C): <u>-0.10°</u>	Specific Conductance (µS/cm): <u>0.290</u>
pH (STD): <u>5.77</u>	Turbidity (NTU): <u>3.68</u>
Sample Observations:	
<input checked="" type="checkbox"/> Odor <u>None</u>	Field Testing Equipment:
<input checked="" type="checkbox"/> Color <u>clear</u>	Make Model Serial #
<input type="checkbox"/> Other	<u>YSI</u> <u>650MDS</u> <u>116100387</u>

Sediment/Leachate Seep Sediment Information

Sediment Type: <input checked="" type="checkbox"/> Organic <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand <input type="checkbox"/> Other _____
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input type="checkbox"/> Composite
Sample Observations:
<input checked="" type="checkbox"/> Odor <u>None</u>
<input checked="" type="checkbox"/> Color <u>dark brown</u>
<input type="checkbox"/> Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>NRBK-SW-19-01-DEC19</u>	<u>1100</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS M537</u>	
<u>NRBK-SED-19-01-DEC19</u>	<u>1110</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>PFAS M537</u>	
<u>NRBK-SED-19-01-DEC19</u>	<u>1110</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>TOC</u>	
<u>NRBK-SED-19-01-DEC19</u>	<u>1110</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>Grain Size</u>	

Comments:

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: DeVens PFAS RI
 Location: NRBK-19-02
 Sample Location ID: NRBK-SW-19-02-DEC19
NRBK-SED-19-02-DEC19

Date/Time: 12/20/19 / 0930
 Sampler: Dave Kortjohn



Surface Water/Leachate Seep Information

Type of SW: () Stream (X) River () Seep

Water Depth:	Dissolved Oxygen (mg/L): <u>18.19</u>
Velocity of Water:	ORP (mV): <u>195.3</u>
Temperature (C): <u>-0.02°</u>	Specific Conductance (µS/cm): <u>0.295</u>
pH (STD): <u>5.660</u>	Turbidity (NTU): <u>2.23</u>

Sample Observations: (X) Odor None
 (X) Color clear
 () Other

Field Testing Equipment:

Make	Model	Serial #
<u>YSI 650MDS</u>	<u>116100387</u>	

Sediment/Leachate Seep Sediment Information

Sediment Type: (X) Organic () Gravel () Clay (X) Silt (X) Sand () Other _____

Type of Sample Collected: (X) Discrete () Composite

Sample Observations:
 () Odor None
 () Color dark brown
 () Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>NRBK-SW-19-02-DEC19</u>	<u>NRBK-SW-19-02-DEC19</u>	<u>0930</u>	<u>SW</u>	<u>2</u>	<u>none</u>	<u>PFAS M537</u>
<u>NRBK-SED-19-02-DEC19</u>	<u>NRBK-SED-19-02-DEC19</u>	<u>0945</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>PFAS M537</u>
<u>NRBK-SED-19-02-DEC19</u>	<u>NRBK-SED-19-02-DEC19</u>	<u>0945</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>TOC</u>
<u>NRBK-SED-19-02-DEC19</u>	<u>NRBK-SED-19-02-DEC19</u>	<u>0945</u>	<u>SED</u>	<u>1</u>	<u>none</u>	<u>Grain Size</u>

Comments:

Willow's Brook

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens PFAS RI
 Location: Background
 Sample Location ID: WAB-19-01

Date/Time: 12/18/19/1315
 Sampler: Dave Kortjohn



Surface Water/Leachate Seep Information

Type of SW: <input checked="" type="checkbox"/> Stream <input type="checkbox"/> River <input type="checkbox"/> Seep			
Water Depth: <u>≈ 1.5 ft</u>	Dissolved Oxygen (mg/L): <u>11.47</u>		
Velocity of Water: <u>N/A</u>	ORP (mV): <u>156.2</u>		
Temperature (C): <u>0.71</u>	Specific Conductance (μS/cm): <u>0.260</u>		
pH (STD): <u>5.94</u>	Turbidity (NTU): <u>2.95</u>		
Sample Observations:		Field Testing Equipment:	
<input type="checkbox"/> Odor <u>None</u>	Make	Model	Serial #
<input type="checkbox"/> Color <u>Clear</u>	<u>VSI 650 MDS</u>	<u>116100387</u>	
<input type="checkbox"/> Other	<u>LaMotte 2020we</u>	<u>3590-3513</u>	

Sediment/Leachate Seep Sediment Information

Sediment Type: <input type="checkbox"/> Organic <input checked="" type="checkbox"/> Gravel <input type="checkbox"/> Clay <input checked="" type="checkbox"/> Silt <input checked="" type="checkbox"/> Sand <input type="checkbox"/> Other _____			
Type of Sample Collected: <input checked="" type="checkbox"/> Discrete <input type="checkbox"/> Composite			
Sample Observations:			
<input type="checkbox"/> Odor <u>None</u>			
<input type="checkbox"/> Color <u>Brown</u>			
<input type="checkbox"/> Other			

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>WAB-SW-19-01-DEC19</u>	<u>WAB-19-01</u>	<u>1340</u>	<u>SW</u>	<u>2</u>	<u>None</u>	<u>PFAS</u>
<u>WAB-SED-19-01-DEC19</u>	<u>WAB-19-01</u>	<u>1350</u>	<u>SED</u>	<u>4 (MS/MSD)</u>	<u>None</u>	<u>PFAS/TOC</u>
<u>WAB-SED-19-01-DEC19</u>	<u>WAB-19-01</u>	<u>1130</u>	<u>SED</u>	<u>1 ziplock</u>	<u>None</u>	<u>Grain Size</u>

Comments:
 → Collected on 12/20/19 by DK

Calibration Field Sheets



Field Instrument Calibration Log

Date: 10/14/19

Weather: 50°F Partial clouds

Project/Site Name: Devens, MA

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time <u>725</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^{\circ}$)	3/20	1347	1413	16.60	1410	17.79	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/20/21	7.10	7.00	17.30	6.98	19.85	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	3.83	4.00	17.40	3.89	19.82	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/31/19	9.93	10.00	16.61	9.92	19.69	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20/20	240.8	240.0	17.11	235.1	19.78	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	101.7	100.0	16.41	99.8	18.71	-	N
Dissolved Oxygen (mg/L)	NA	9.96	9.98	16.41	9.96	18.71	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	760	16.41	—	—	-	NA

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller

Date: 10/14/19



Field Instrument Calibration Log

Date: 10/15/19

Weather: 42°F cool / partial clouds

Project/Site Name: Devens, MA

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time <u>0635</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1400</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^2$)	3/20	1409	1413	18.31	1410	17.36	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.92	7.00	18.26	7.06	17.42	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.09	4.00	18.33	3.98	17.39	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/31/19	9.97	10.0	18.41	10.05	17.47	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	232.1	240.0	18.50	233.1	17.50	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	NA	102.5	100.0	16.21	99.1	16.50	-	N
Dissolved Oxygen (mg/L)	NA	10.08	9.82	16.21	9.68	16.50	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	760	-	-	16.21	-	-	-	

Notes:

* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature: Melissa A. Miller

Date: 10/15/19



Field Instrument Calibration Log

Date: 10/16/19

Weather: 32°F Cool chance of Rain

Project/Site Name: Devens, MA

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time <u>0645</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1430</u>		Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	3/20	1363	1413	16.48	1407	16.22	$\pm 10 \mu\text{S}/\text{cm}$	N	
pH (7)	2/21	7.06	7.00	16.32	6.98	16.27	$\pm 0.3 \text{ Ph}^*$	N	
pH (4)	3/21	4.09	4.00	16.29	3.94	16.30	$\pm 0.3 \text{ Ph}^*$	N	
pH (10)	12/19	9.99	10.0	16.41	9.89	16.34	$\pm 0.3 \text{ Ph}^*$	N	
ORP (240 mv)	5/20	242.1	240.0	16.55	237.9	16.38	$\pm 10 \text{ mv}$	N	
Dissolved Oxygen (%)	NA	100.0	100.0	17.28	102.7	14.47	-	N	
Dissolved Oxygen (mg/L)	NA	9.61	9.61	17.28	10.0	14.47	$\pm 0.5 \text{ mg/L}$ < 0.5 mg/L for 0 mg/L solution, no negative value	N	
Barometric Pressure (mmHg)	760	—	—	17.28	760	14.47	-	NA	

Notes: _____

* Ph Unit with Ph 7 Buffer (Mark Noted Variances on Field Forms)

Signature:

Date: 10/16/19



Turbidity Instrument Calibration Log

Project/Site Name: Devens, MA PFAS RI

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 06J1938 AB

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 126 NTU	Post-Cal 126 NTU	0 NTU	126 NTU	
10/14/19	-2.7	0.0	133.6	126.0	0.3	118.7	N
10/15/19	1.4	0.0	122.1	124.0	1.0	119.1	N
10/16/19	-0.9	0.0	100.9	126.0	2.7	115.3	N
10/17/19	Not calibrating switched to Larnotte						

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 12.6

Signature: _____

Date: 10/17/19



Field Instrument Calibration Log

Date: 10/17/19

Weather: 58°F Windy/cool

Project/Site Name: PFAS RI - Bevens, MA

Instrument: YSI 650 MDS

Calibrated By: Melissa Miller

Serial Number: 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time <u>0720</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1525</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^\circ$)	3/20	14.05	14.13	17.78	14.20	16.50	$\pm 10 \mu\text{S}/\text{cm}$	N
pH (7)	2/21	6.93	7.00	17.70	6.91	16.43	$\pm 0.3 \text{ Ph}^*$	N
pH (4)	3/21	4.5 4.00	8.00 9.00	17.77	3.97	16.41	$\pm 0.3 \text{ Ph}^*$	N
pH (10)	12/19	9.99	10.00	17.53	9.89	16.39	$\pm 0.3 \text{ Ph}^*$	N
ORP (240 mv)	5/20	11.55 235.1	11.55 240	17.70 17.70	247	16.48	$\pm 10 \text{ mv}$	N
Dissolved Oxygen (%)	—	99.6	100.0	17.22	104.9	14.22	-	Y
Dissolved Oxygen (mg/L)	—	9.59	9.62	17.22	10.75	14.22	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	760	—	—	17.22	760	—	-	

Notes:

* Ph Unit with Ph 7 Buffer (Mark Noted Variences on Field Forms)

Signature: Melissa Miller

Date: 10/17/19



Field Instrument Calibration Log

Date: 10/18/2019

Weather: some clouds, dry, ≈ 40-55°F

Project/Site Name: Devens MA - PFAS RI

Instrument: YSI 556 MDS

Calibrated By: Sciler

Serial Number: 06J1938 AR

Parameters	Solution Expiration Date	AM Calibration Time <u>0640</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1250</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 μS/cm ^o)	<u>3/2020</u>	<u>1432</u>	<u>1413</u>	<u>16.70</u>	<u>1393 → 1413</u> 9.10.10 → 10.02	<u>17.06</u>	±10 μS/cm	<u>Yes</u> No
pH (7)	<u>2/2021</u>	<u>7.04</u>	<u>7.00</u>	<u>16.67</u>	<u>6.96 → 7.00</u>	<u>16.83</u>	± 0.3 Ph *	<u>no</u>
pH (4)	<u>3/2021</u>	<u>4.01</u>	<u>4.00</u>	<u>16.87</u>	<u>3.99 → 4.00</u>	<u>16.53</u>	± 0.3 Ph *	<u>no</u>
pH (10)	<u>12/31/2019</u>	<u>10.11</u>	<u>10.02</u>	<u>16.69</u>	<u>10.10 → 10.02</u>	<u>16.87</u>	± 0.3 Ph *	<u>no</u>
ORP (240 mv)	<u>5/2020</u>	<u>239.5</u>	<u>239.9</u>	<u>16.56</u>	<u>240.9 → 240.0</u>	<u>17.11</u>	±10 mv	<u>no</u>
Dissolved Oxygen (%)	<u>-</u>	<u>112.5</u>	<u>100.0</u>	<u>14.52</u>	<u>97.1% → 100.0%</u>	<u>17.52</u>	-	<u>-</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>11.45</u>	<u>10.19</u>	<u>14.52</u>	<u>9.28 → 9.56</u>	<u>17.52</u>	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	<u>Yes</u>
Barometric Pressure (mmHg)	<u>760</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	-	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: Bob Sciler

Date: 10/18/2019



Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - Devens, MA

Instrument: LaMotte 2020we

Calibrated By: Melissa Miller

Serial Number: 1828-0412

MM

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
10/17/19	0.0	0.0	9.15	10.0	0.25	9.59	N
10/18/19	0.29	0.23	5.20	7.51	1.82	9.10	yes

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: 
Rich Silva

Date: 10/17/19
10/18/2019



Field Instrument Calibration Log

Date: 12/18/19

Weather: 30°F, cloudy

Project/Site Name: Devens PFAS RI

Instrument: YSI 650 MOS

Calibrated By: Dave Kortjohn

Serial Number: 116100387

Parameters	Solution Expiration Date	AM Calibration Time <u>730</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1455</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>3/2020</u>	<u>1.458</u>	<u>1.413</u>	<u>15.89</u>	<u>1.420</u>	<u>16.10</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/2021</u>	<u>7.69</u>	<u>7.00</u>	<u>15.72</u>	<u>7.12</u>	<u>15.95</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>2/2021</u>	<u>4.05</u>	<u>3.99</u>	<u>15.87</u>	<u>4.02</u>	<u>15.99</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>10.51</u>	<u>10.07</u>	<u>15.71</u>	<u>10.21</u>	<u>16.03</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>5/2020</u>	214.4 <u>248.0</u> ^{OB}	<u>248.0</u>	<u>15.91</u>	<u>241.2</u>	<u>16.13</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>-</u>	<u>89.7</u>	<u>100.0</u>	<u>14.16</u>	99.3 ^{OK} <u>105.6</u>	<u>14.82</u>	<u>-</u>	<u>Y</u>
Dissolved Oxygen (mg/L)	<u>-</u>	<u>9.22</u>	<u>10.27</u>	<u>14.16</u>	10. ^{OK} <u>12.89</u>	<u>14.82</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>Y</u>
Barometric Pressure (mmHg)	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>760</u>	<u>-</u>	<u>-</u>	<u>-</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

nature:

Date: 12/18/19



Field Instrument Calibration Log

Date: 12/20/19

Weather: Clear, 13-27°F

Project/Site Name: Dewens PFIAS RI

Instrument: 650 MDS

Calibrated By: Kristen Esser

Serial Number: 116100387

Parameters	Solution Expiration Date	AM Calibration Time <u>0745</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1345</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^2$)	<u>3/2020</u>	<u>1.411</u>	<u>1.413</u>	<u>9.80</u>	<u>1.380</u>	<u>11.61</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/2021</u>	<u>6.34</u>	<u>7.00</u>	<u>9.29</u>	<u>6.94</u>	<u>11.02</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>3/2021</u>	<u>4.45</u>	<u>4.00</u>	<u>9.57</u>	<u>4.17</u>	<u>11.36</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>2/2021</u>	<u>11.38</u>	<u>10.00</u>	<u>9.64</u>	<u>9.98</u>	<u>11.23</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>5/2020</u>	<u>245.6</u>	<u>240.1</u>	<u>9.50</u>	<u>244.5</u>	<u>11.19</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>—</u>	<u>75.0</u>	<u>100.0</u>	<u>9.67</u>	<u>97.8</u>	<u>8.83</u>	<u>—</u>	<u>—</u>
Dissolved Oxygen (mg/L)	<u>—</u>	<u>11.45</u>	<u>9.56</u>	<u>9.67</u>	<u>11.34</u>	<u>8.83</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L}$ for 0 mg/L solution, no negative value	<u>Y</u>
Barometric Pressure (mmHg)	<u>—</u>	<u>760.0</u>	<u>760.0</u>	<u>9.70</u>	<u>760.0</u>	<u>8.83</u>	<u>—</u>	<u>Y</u>

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variances on Field Forms)

Signature: 

Date: 12/20/19



Field Instrument Calibration Log

Date: 5/20/20

Weather: 50s

Project/Site Name: Dewes

Instrument: 0561941AD WA YSI 956MPS

Calibrated By: WA

Serial Number: 0561941AD

Parameters	Solution Expiration Date	AM Calibration Time <u>700</u>		Cal. Temp. (°C)	PM Post Cal. Check Time <u>1200</u>	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 $\mu\text{S}/\text{cm}^{\circ}$)	<u>10/20</u>	<u>1.372</u>	<u>1.413</u>	<u>18.30</u>	<u>1.420</u>	<u>18.97</u>	$\pm 10 \mu\text{S}/\text{cm}$	<u>N</u>
pH (7)	<u>2/21</u>	<u>6.90</u>	<u>7.00</u>	<u>18.43</u>	<u>7.01</u>	<u>18.81</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (4)	<u>10/21</u>	<u>3.77</u>	<u>4.00</u>	<u>18.40</u>	<u>4.00</u>	<u>18.77</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
pH (10)	<u>10/21</u>	<u>9.78</u>	<u>10.00</u>	<u>18.29</u>	<u>10.18</u>	<u>18.68</u>	$\pm 0.3 \text{ Ph}^*$	<u>N</u>
ORP (240 mv)	<u>5/20</u>	<u>257.9</u>	<u>240.0</u>	<u>17.89</u>	<u>246.1</u>	<u>18.59</u>	$\pm 10 \text{ mv}$	<u>N</u>
Dissolved Oxygen (%)	<u>N/A</u>	<u>91.6%</u>	<u>100.0%</u>	<u>17.11</u>	<u>94.1%</u>	<u>18.77</u>	-	<u>N</u>
Dissolved Oxygen (mg/L)	<u>N/A</u>	<u>9.77</u>	<u>10.00</u>	<u>17.03</u>	<u>9.89</u>	<u>18.54</u>	$\pm 0.5 \text{ mg/L}$ $< 0.5 \text{ mg/L for } 0 \text{ mg/L solution, no negative value}$	<u>N</u>
Barometric Pressure (mmHg)	<u>N/A</u>	-	<u>760</u>	-	<u>760</u>	-	-	<u>N</u>

Notes:

(Mark Noted Variances on Field Forms)

* Ph Unit with Ph 7 Buffer

Signature: _____

Date: 5/20/20



**APPENDIX F PIEZOMETER
CONSTRUCTION LOGS**

AOC 30

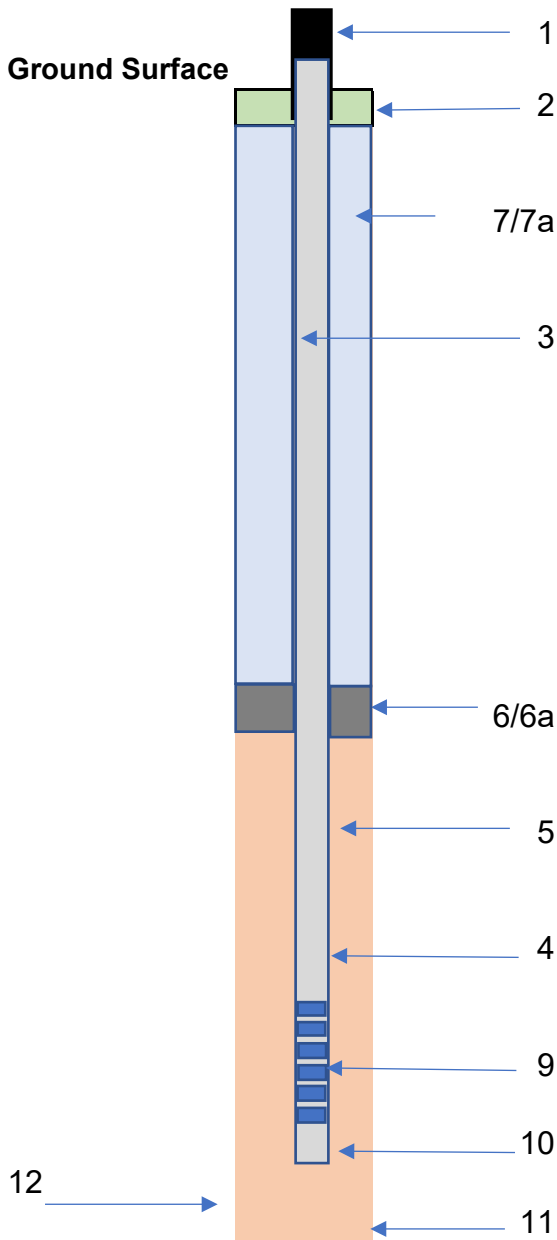


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 30PZ-19-01

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In woods ~440 feet west of western edge of training parking lot/former Moore Army Airfield
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 7/17/2019	Well Construction Date: 7/17/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 30VP-19-01
Ground Elevation (ft NAVD88): 221.30	Top of PVC Elevation (ft NAVD88): 224.63
Easting (State Plane NAD83 [FT]): 626817.1	Northing (State Plane NAD83 [FT]): 3035431.2



- 1. Well Protection Type: Steel Stickup
- 2. Concrete Pad Depth: 0.5 feet
- 3. Diameter/Type of well casing: 1 inch PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2 Bags
 Top/Bottom of Pack: 16-28 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-16 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 18-28 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 28 feet bgs
- 12. Diameter of borehole: 4 inches

Comments:

2' x 2' concrete pad



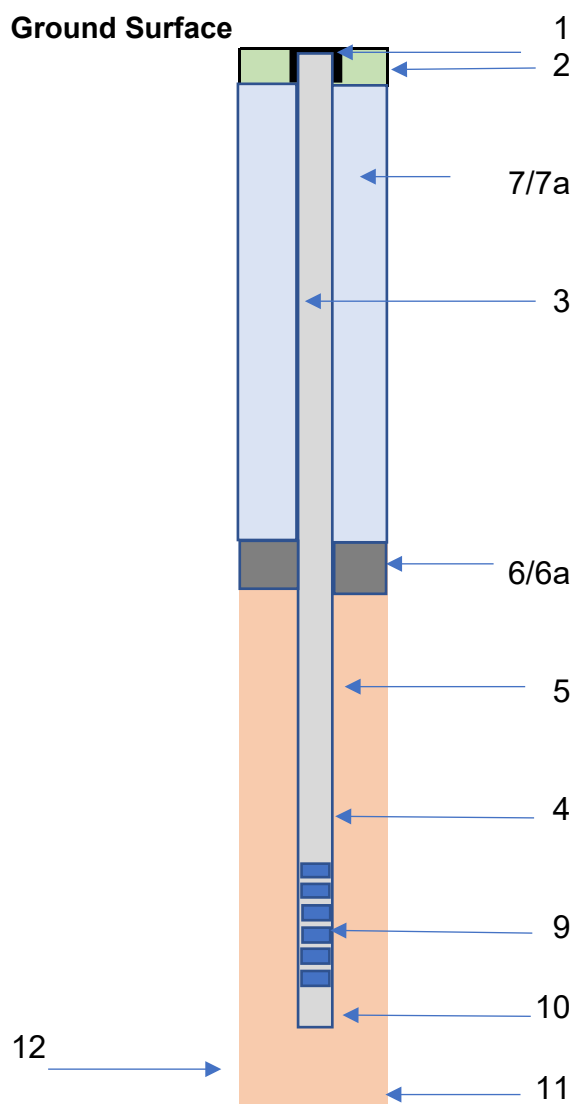
Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 30PZ-19-02

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In open field, ~44 feet south of southeastern corner of radio tower fence. Former Moore Army Airfield.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 7/15/2019	Well Construction Date: 7/15/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: N/A
Ground Elevation (ft NAVD88): 267.45	Top of PVC Elevation (ft NAVD88): 267.12
Easting (State Plane NAD83 [FT]): 626870.2	Northing (State Plane NAD83 [FT]): 3034956.6

Ground Surface



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	0.5 feet
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quantity Used:	2 bags
Top/Bottom of Pack:	68-80 feet bgs
6. Type of Seal:	Bentonite chips
6a. Top/Bottom of Seal:	0.5-68 feet bgs
7. Backfill Mixture Used:	Bentonite Chips
7a. Placement Method:	Gravity
8. Screen length:	10 feet
9. Screen interval:	70-80 feet bgs
10. Sump Length:	N/A
11. Bottom of Boring:	80 feet bgs
12. Diameter of borehole:	4 inches

Comments:

2' x 2' concrete pad



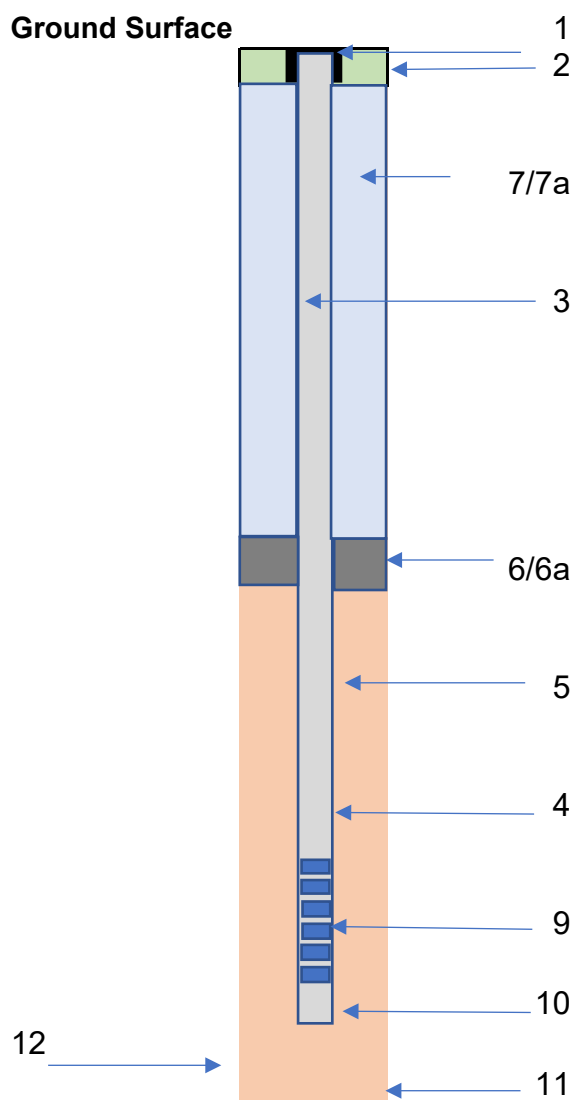
Project: PFAS RI
Project Number: 1082

Piezometer Identification: 30PZ-19-03

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass ~ 6 feet north of former western drum storage pad, former Moore Army Airfield.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 7/12/2019	Well Construction Date: 7/12/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 30VP-19-03
Ground Elevation (ft NAVD88): 268.04	Top of PVC Elevation (ft NAVD88): 267.90
Easting (State Plane NAD83 [FT]): 626448.8	Northing (State Plane NAD83 [FT]): 3035148.1

Ground Surface



- | | |
|----------------------------------|-----------------------------------|
| 1. Well Protection Type: | <u>Flushmount Road Box</u> |
| 2. Concrete Pad Depth: | <u>4 inches</u> |
| 3. Diameter/Type of well casing: | <u>1 inch/PVC schedule 40</u> |
| 4. Type/Screen Slot: | <u>Schedule 40 PVC/0.010 inch</u> |
| 5. Type of Filter Sand: | <u>#2</u> |
| Quantity Used: | <u>25-lbs</u> |
| Top/Bottom of Pack: | <u>67-80 feet bgs</u> |
| 6. Type of Seal: | <u>Bentonite chips</u> |
| 6a. Top/Bottom of Seal: | <u>1-67 feet bgs</u> |
| 7. Backfill Mixture Used: | <u>Bentonite chips</u> |
| 7a. Placement Method: | <u>Gravity</u> |
| 8. Screen length: | <u>10 feet</u> |
| 9. Screen interval: | <u>70-80 feet bgs</u> |
| 10. Sump Length: | <u>2 inches</u> |
| 11. Bottom of Boring: | <u>80 feet bgs</u> |
| 12. Diameter of borehole: | <u>3.75 inches</u> |

Comments:

2' x 2' concrete pad



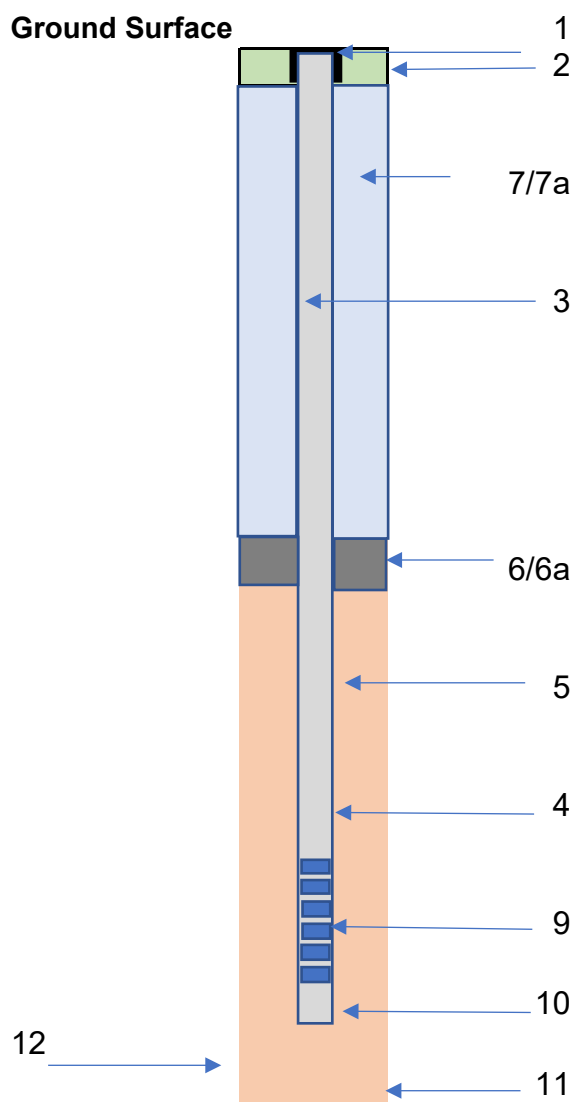
Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 30PZ-19-04

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass ~3 feet west of northwestern taxiway turn, former Moore Army Airfield.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 7/24/2019	Well Construction Date: 7/24/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 30VP-19-04
Ground Elevation (ft NAVD88): 266.90	Top of PVC Elevation (ft NAVD88): 266.80
Easting (State Plane NAD83 [FT]): 626262.8	Northing (State Plane NAD83 [FT]): 3034929.9

Ground Surface



- 1. Well Protection Type: Flushmount Road Box
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch/PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 50-lbs
 Top/Bottom of Pack: 65-77 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-65 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 67-77 feet bgs
- 10. Sump Length: 2 inches
- 11. Bottom of Boring: 77 feet bgs
- 12. Diameter of borehole: 2.25 inches

Comments:

2' x 2' concrete pad



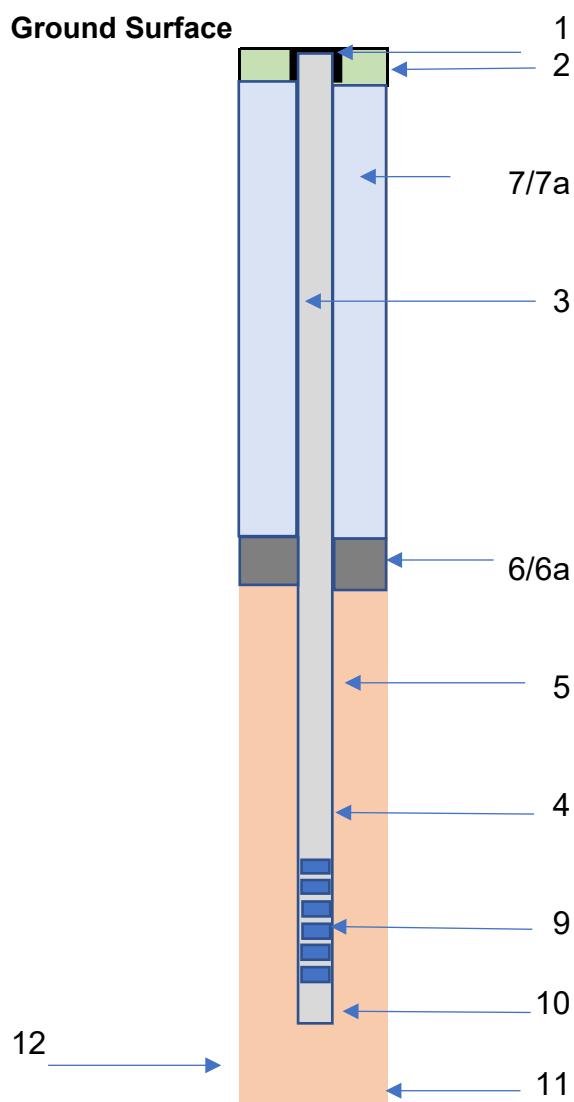
Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 30PZ-19-05

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Located in northwest portion of the
Drilling Company: Technical Drilling Services	motorcycle training parking lot, former Moore Army
Drilling Method and Equipment: Direct Push	Airfield.
Drilling Date(s): 7/17/2019	Well Construction Date: 7/17/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 30VP-19-05
Ground Elevation (ft NAVD88): 224.1	Top of PVC Elevation (ft NAVD88): 223.77
Easting (State Plane NAD83 [FT]): 627375.5	Northing (State Plane NAD83 [FT]): 3035471.4

Ground Surface



- 1. Well Protection Type: Flushmount Road Box
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch/PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2 Bags
 Top/Bottom of Pack: 18-30 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-18 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 20-30 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 30 feet bgs
- 12. Diameter of borehole: 4 inches

Comments:

2' x 2' concrete pad

AOC 31

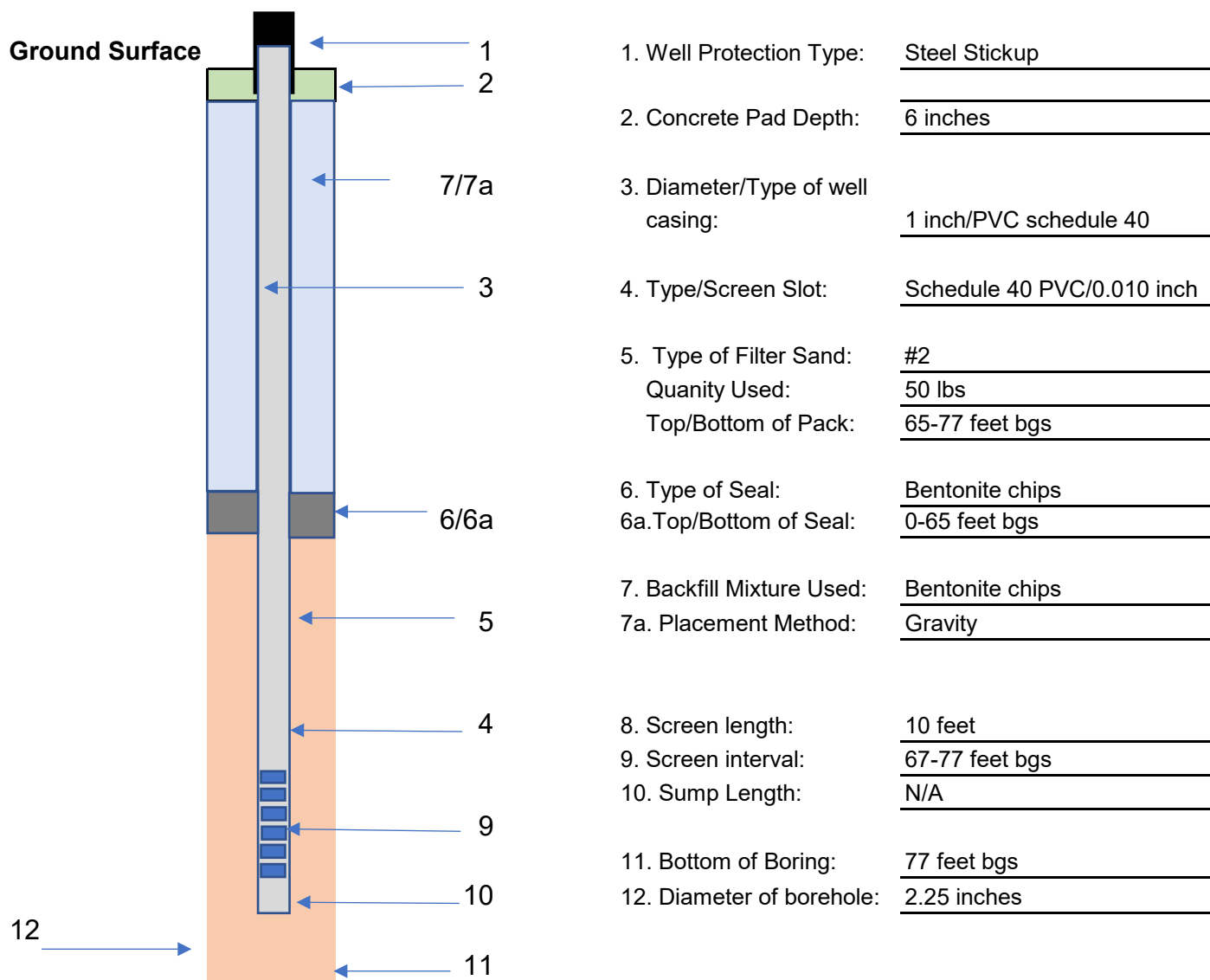


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 31PZ-19-01

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass along west perimeter road, west of
Drilling Company: Technical Drilling Services	runway, former Moore Army Airfield.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 8/9/2019	Well Construction Date: 8/9/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 31VP-19-04
Ground Elevation (ft NAVD88): 266.66	Top of PVC Elevation (ft NAVD88): 269.38
Easting (State Plane NAD83 [FT]): 626075.50	Northing (State Plane NAD83 [FT]): 3034166.00



Comments:

2' x 2' concrete pad

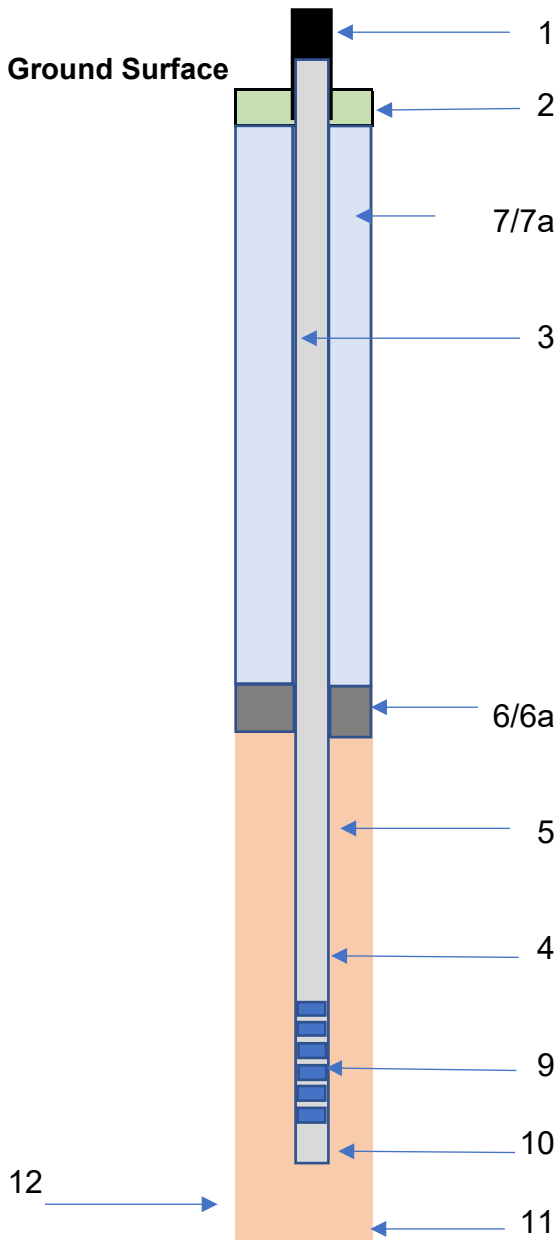


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 31PZ-19-02D

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In woods ~570 feet west of western edge of
Drilling Company: Technical Drilling Services	airfield, ~44 ft east of the west bank of the Nashua
Drilling Method and Equipment: Direct Push	River, Former Moore Army Airfield
Drilling Date(s): 10/1/2019	Well Construction Date: 10/1/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 31VP-19-07
Ground Elevation (ft NAVD88): 206.31	Top of PVC Elevation (ft NAVD88): 209.48
Easting (State Plane NAD83 [FT]): 625372.87	Northing (State Plane NAD83 [FT]): 3033989.36



- | | |
|----------------------------------|-----------------------------------|
| 1. Well Protection Type: | <u>Steel Stickup</u> |
| 2. Concrete Pad Depth: | <u>0.5 feet</u> |
| 3. Diameter/Type of well casing: | <u>1 inch PVC shcedule 40</u> |
| 4. Type/Screen Slot: | <u>Schedule 40 PVC/0.010 inch</u> |
| 5. Type of Filter Sand: | <u>#2</u> |
| Quantity Used: | <u>1 Bag</u> |
| Top/Bottom of Pack: | <u>63-70 feet bgs</u> |
| 6. Type of Seal: | <u>Bentonite chips</u> |
| 6a. Top/Bottom of Seal: | <u>0.5-63 feet bgs</u> |
| 7. Backfill Mixture Used: | <u>Bentonite chips</u> |
| 7a. Placement Method: | <u>Gravity</u> |
| 8. Screen length: | <u>5 feet</u> |
| 9. Screen interval: | <u>65-70 feet bgs</u> |
| 10. Sump Length: | <u>N/A</u> |
| 11. Bottom of Boring: | <u>70 feet bgs</u> |
| 12. Diameter of borehole: | <u>4 inches</u> |

Comments:

concrete pad

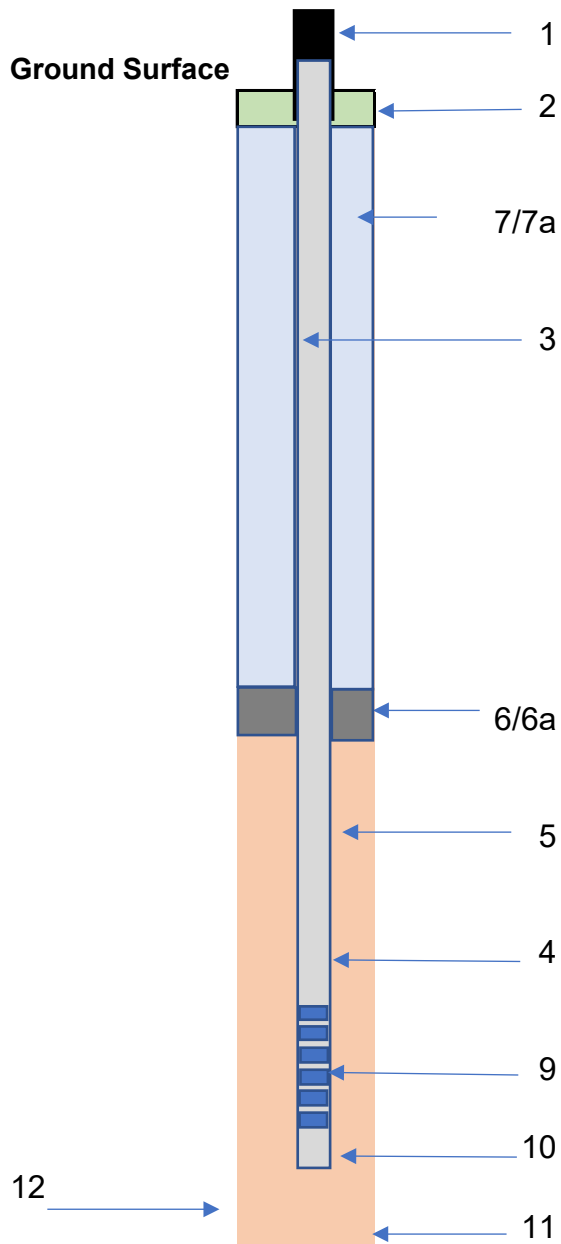


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 31PZ-19-02S

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In woods ~570 feet west of western edge of
Drilling Company: Technical Drilling Services	airfield, ~44 ft east of the west bank of the Nashua
Drilling Method and Equipment: Direct Push	River, Former Moore Army Airfield
Drilling Date(s): 10/1/2019	Well Construction Date: 10/1/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 31VP-19-07
Ground Elevation (ft NAVD88): 206.29	Top of PVC Elevation (ft NAVD88): 209.44
Easting (State Plane NAD83 [FT]): 625374.19	Northing (State Plane NAD83 [FT]): 3033989.86



1. Well Protection Type: Steel Stickup
2. Concrete Pad Depth: 0.5 feet
3. Diameter/Type of well casing: 1 inch PVC shcedule 40
4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
5. Type of Filter Sand: #1
 Quantity Used: 1 Bag
 Top/Bottom of Pack: 6-13 feet bgs
6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-6 feet bgs
7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
8. Screen length: 5 feet
9. Screen interval: 8-13 feet bgs
10. Sump Length: N/A
11. Bottom of Boring: 13 feet bgs
12. Diameter of borehole: 4 inches

Comments:

concrete pad

AOC 50



Project: PFAS RI

Piezometer Identification: 50PZ-19-01

Project Number: 1082

WELL CONSTRUCTION DIAGRAM

Client: USACE

Location: In open grass field, ~88 feet east of Bldg.

Drilling Company: Technical Drilling Services

3822, Former Moore Army Airfield.

Drilling Method and Equipment: Direct Push

Drilling Date(s): 7/22/19

Well Construction Date: 7/22/19

Potable Water Used: (Y/N) Source: N

Drums of IDW: N/A

KGS Field Personnel: Dave Kortjohn (Jacobs)

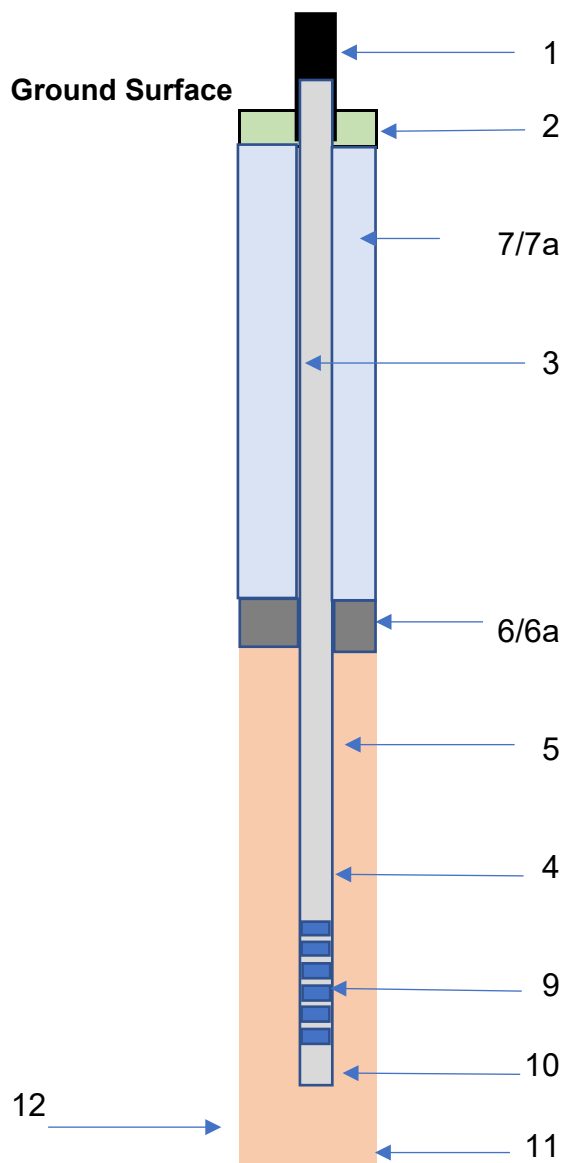
Associated Vertical Profile: 50VP-19-04

Ground Elevation (ft NAVD88): 249.78

Top of PVC Elevation (ft NAVD88): 252.02

Easting (State Plane NAD83 [FT]): 627821.1

Northing (State Plane NAD83 [FT]): 3034978.4



- 1. Well Protection Type: Steel Stickup
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch PVC shcedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
Quantity Used: 50 lbs.
Top/Bottom of Pack: 41-53 feet bgs
- 6. Type of Seal: Bentonite chips
6a. Top/Bottom of Seal: 0- 41 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 43-53 feet bgs
- 10. Sump Length: 2 inches
- 11. Bottom of Boring: 53 feet bgs
- 12. Diameter of borehole: 2.25 inches

Comments: 2x2 ft. concrete pad



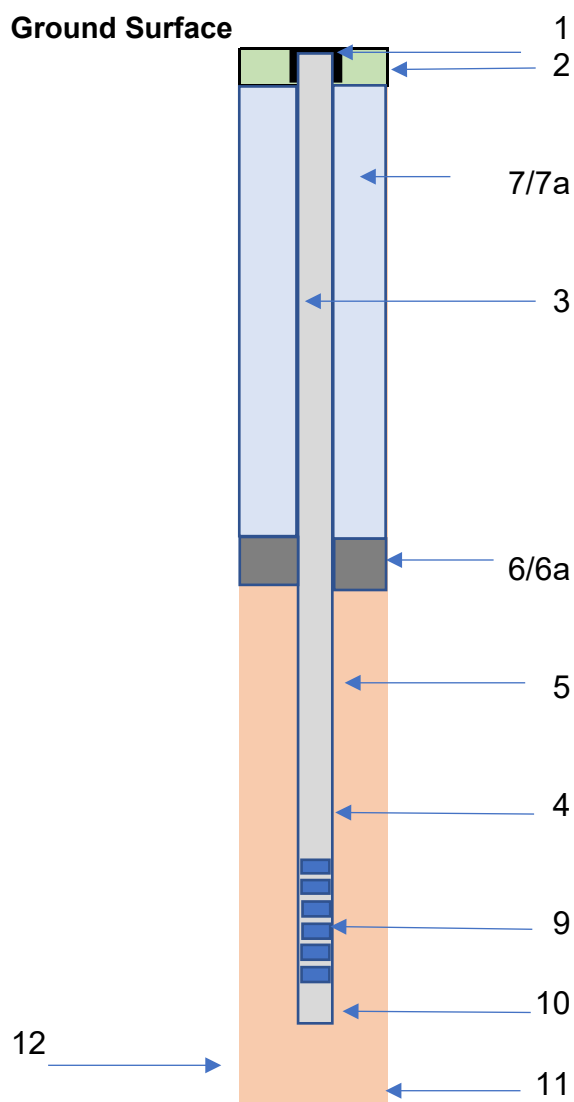
Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 50PZ-19-02

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: South of former Fire Station garage bay
Drilling Company: Technical Drilling Services	door in asphalt, Former Moore Army Airfield.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 7/3/2019	Well Construction Date: 7/3/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 50VP-19-06
Ground Elevation (ft NAVD88): 265.21	Top of PVC Elevation (ft NAVD88): 264.94
Easting (State Plane NAD83 [FT]): 627345.5	Northing (State Plane NAD83 [FT]): 3034648.6

Ground Surface



- 1. Well Protection Type: Flushmount Road Box
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch/PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2 bags
 Top/Bottom of Pack: 55-67 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-55 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 57-67 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 67 feet bgs
- 12. Diameter of borehole: 3 inches

Comments:



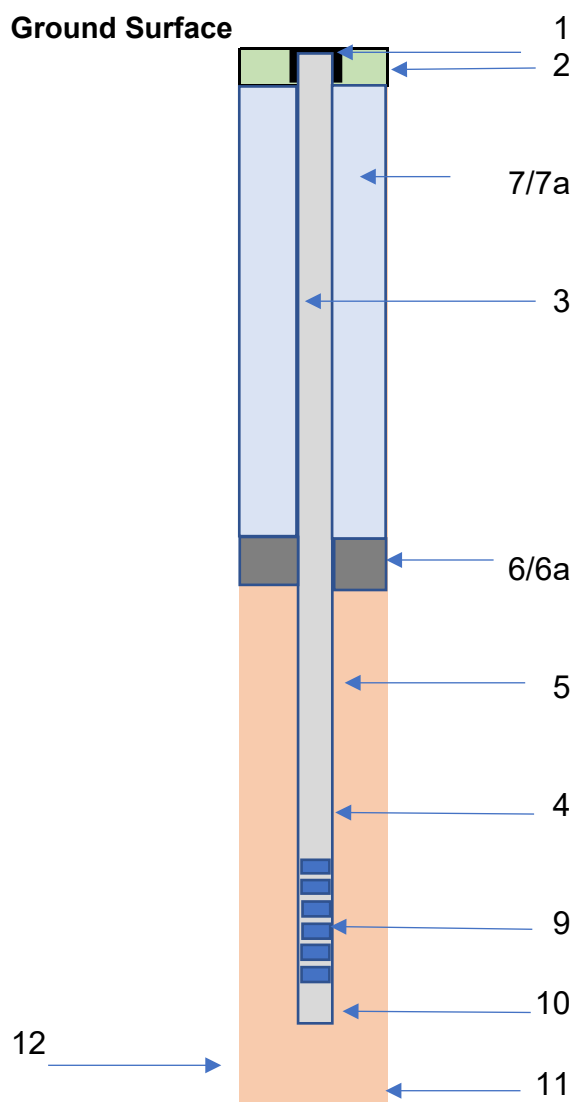
Project: PFAS RI
Project Number: 1082

Piezometer Identification: 50PZ-19-03

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area on the eastern edge of airfield, ~15 ft west of perimeter road, ~200 ft east of the eastern runway, Former Moore Army Airfield.
Drilling Company: Technical Drilling Services	Well Construction Date: 8/23/2019
Drilling Method and Equipment: Direct Push	Drums of IDW: N/A
Drilling Date(s): 8/23/2019	Associated Vertical Profile: 50VP-19-09
Potable Water Used: (Y/N) Source: N	Top of PVC Elevation (ft NAVD88): 258.40
KGS Field Personnel: Kevin Anderson	Northing (State Plane NAD83 [FT]): 3033897.40
Ground Elevation (ft NAVD88): 255.61	
Easting (State Plane NAD83 [FT]): 628849.20	

Ground Surface



- 1. Well Protection Type: Flushmount Road Box
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch/PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
Quantity Used: 2 bags
Top/Bottom of Pack: 38-50 feet bgs
- 6. Type of Seal: Bentonite chips
6a. Top/Bottom of Seal: 0.5-38 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 40-50 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 50 feet bgs
- 12. Diameter of borehole: 4 inches

Comments: 2 x 2 concrete pad

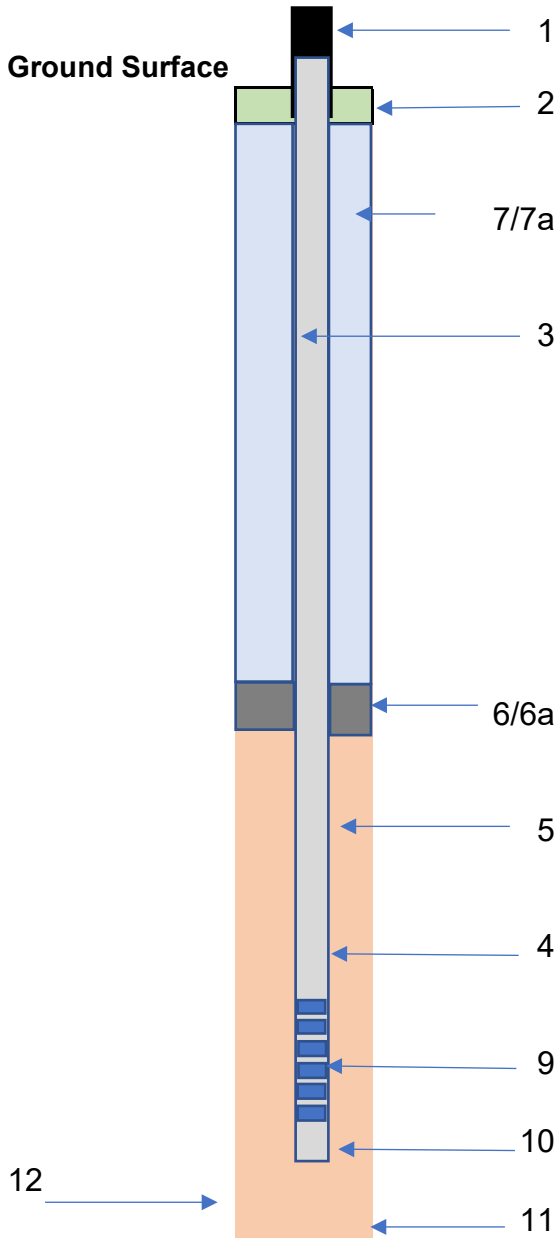


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 50PZ-19-04

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In the central grass area of Former Moore
Drilling Company: Technical Drilling Services	Army Airfield, ~586 ft from the intersection of the
Drilling Method and Equipment: Direct Push	main and eastern runway.
Drilling Date(s): 8/16/2019	Well Construction Date: 8/16/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 50VP-19-10
Ground Elevation (ft NAVD88): 256.99	Top of PVC Elevation (ft NAVD88): 260.37
Easting (State Plane NAD83 [FT]): 628182.7	Northing (State Plane NAD83 [FT]): 3033509.9



- | | |
|----------------------------------|-----------------------------------|
| 1. Well Protection Type: | <u>Steel Stickup</u> |
| 2. Concrete Pad Depth: | <u>0.5 feet</u> |
| 3. Diameter/Type of well casing: | <u>1 inch PVC shcedule 40</u> |
| 4. Type/Screen Slot: | <u>Schedule 40 PVC/0.010 inch</u> |
| 5. Type of Filter Sand: | <u>#2</u> |
| Quantity Used: | <u>2 Bags</u> |
| Top/Bottom of Pack: | <u>43-53 feet bgs</u> |
| 6. Type of Seal: | <u>Bentonite chips</u> |
| 6a. Top/Bottom of Seal: | <u>0.5-43 feet bgs</u> |
| 7. Backfill Mixture Used: | <u>Bentonite chips</u> |
| 7a. Placement Method: | <u>Gravity</u> |
| 8. Screen length: | <u>10 feet</u> |
| 9. Screen interval: | <u>45-55 feet bgs</u> |
| 10. Sump Length: | <u>N/A</u> |
| 11. Bottom of Boring: | <u>55 feet bgs</u> |
| 12. Diameter of borehole: | <u>4 inches</u> |

Comments:

2' x 2' concrete pad

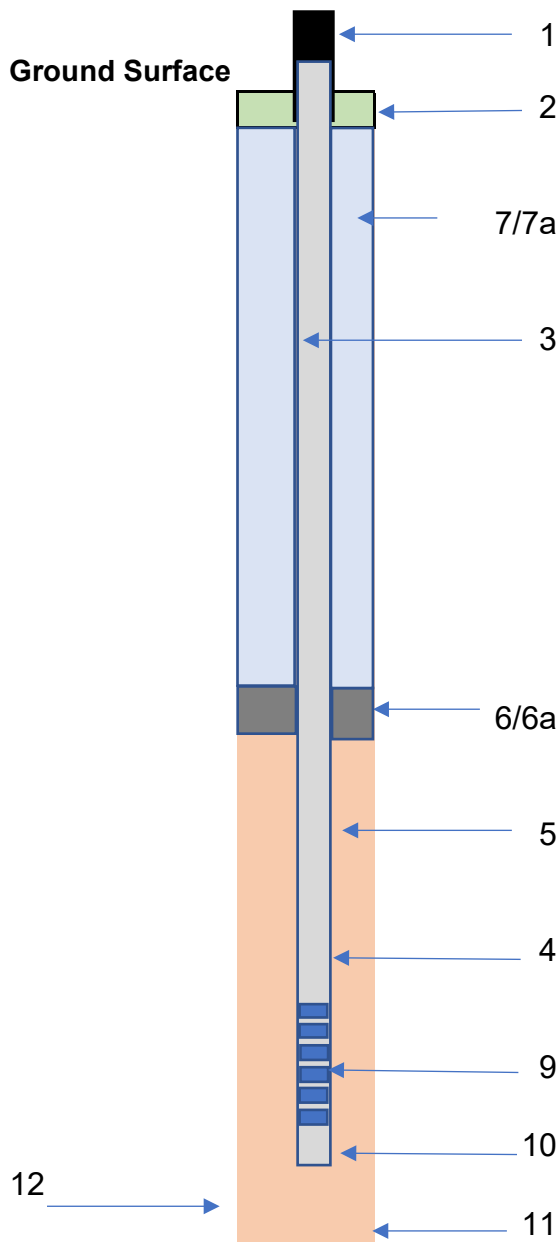


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 50PZ-19-05

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In northern grass area of the auction yard, ~75 ft southwest of perimeter fence.
Drilling Company: Technical Drilling Services	Former Moore Army Airfield.
Drilling Method and Equipment: Direct Push	Well Construction Date: 8/29/2019
Drilling Date(s): 8/29/2019	Drums of IDW: N/A
Potable Water Used: (Y/N) Source: N	Associated Vertical Profile: 50VP-19-11
KGS Field Personnel: Melissa Miller	Top of PVC Elevation (ft NAVD88): 256.51
Ground Elevation (ft NAVD88): 256.16	Northing (State Plane NAD83 [FT]): 3032501.4
Easting (State Plane NAD83 [FT]): 629266.5	



- 1. Well Protection Type: Steel Stickup
- 2. Concrete Pad Depth: 0.5 feet
- 3. Diameter/Type of well casing: 1 inch PVC shcedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2.5 Bags
 Top/Bottom of Pack: 37-49 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0-37 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 39-49 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 49 feet bgs
- 12. Diameter of borehole: 4 inches

Comments:

2' x 2' concrete pad



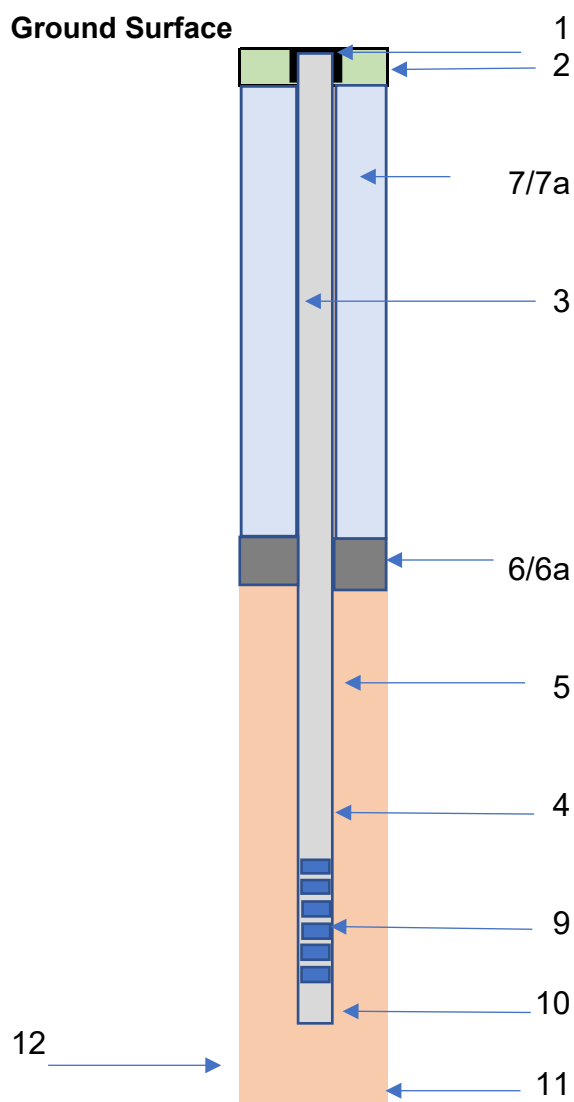
Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 50PZ-19-06

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area, ~101 ft southwest of the southeastern corner of the southern runway. Former Moore Army Airfield.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 08/14/2019	Well Construction Date: 08/14/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 50VP-19-12
Ground Elevation (ft NAVD88): 256.03	Top of PVC Elevation (ft NAVD88): 255.54
Easting (State Plane NAD83 [FT]): 628574.60	Northing (State Plane NAD83 [FT]): 3031601.90

Ground Surface



- 1. Well Protection Type: Flushmount Road Box
- 2. Concrete Pad Depth: 6 inches
- 3. Diameter/Type of well casing: 1 inch/PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2 bags
 Top/Bottom of Pack: 51-63 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0.5-51 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 53-63 feet bgs
- 10. Sump Length: N/A
- 11. Bottom of Boring: 63 feet bgs
- 12. Diameter of borehole: 3 inches

Comments: 2 x 2 concrete pad

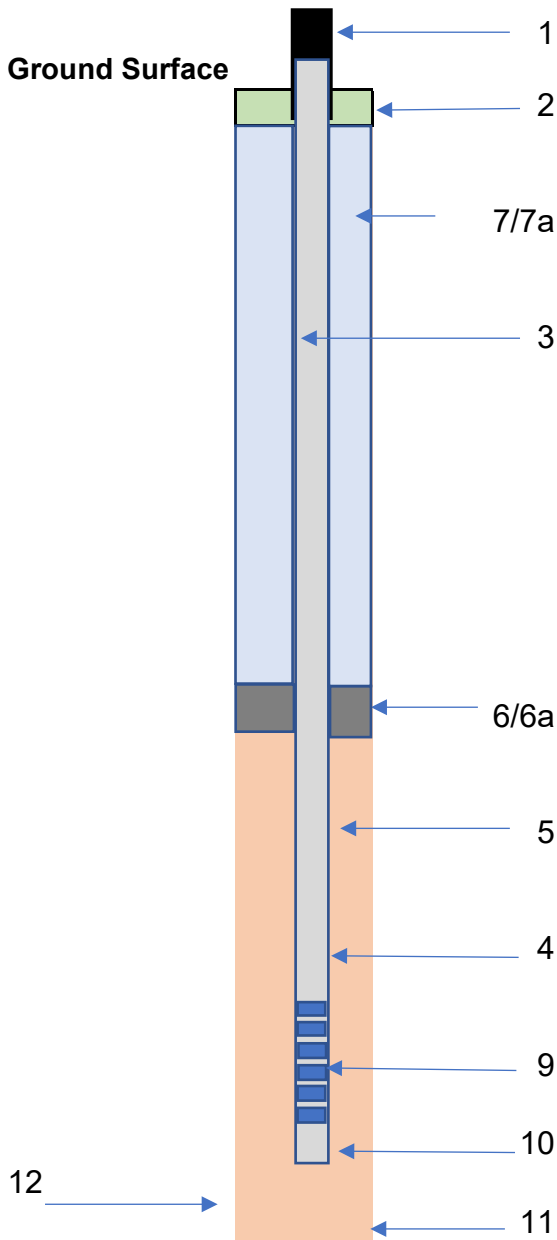


Project: PFAS RI
 Project Number: 1082

Piezometer Identification: 50PZ-19-07

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area, ~227 ft SW of the NW corner of the main runway. Former Moore Army Airfield.
Drilling Company: Technical Drilling Services	Former Moore Army Airfield.
Drilling Method and Equipment: Direct Push	Well Construction Date: 8/22/2019
Drilling Date(s): 8/22/2019	Drums of IDW: N/A
Potable Water Used: (Y/N) Source: N	Associated Vertical Profile: 50VP-19-13
KGS Field Personnel: David Kortjohn (Jacobs)	Top of PVC Elevation (ft NAVD88): 270.11
Ground Elevation (ft NAVD88): 267.03	Northing (State Plane NAD83 [FT]): 3034626.9
Easting (State Plane NAD83 [FT]): 625891.4	



- 1. Well Protection Type: Steel Stickup
- 2. Concrete Pad Depth: 0.5 feet
- 3. Diameter/Type of well casing: 1 inch PVC schedule 40
- 4. Type/Screen Slot: Schedule 40 PVC/0.010 inch
- 5. Type of Filter Sand: #2
 Quantity Used: 2 Bags
 Top/Bottom of Pack: 62-74 feet bgs
- 6. Type of Seal: Bentonite chips
 6a. Top/Bottom of Seal: 0-62 feet bgs
- 7. Backfill Mixture Used: Bentonite chips
 7a. Placement Method: Gravity
- 8. Screen length: 10 feet
- 9. Screen interval: 64-74 feet bgs
- 10. Sump Length: 2 inches
- 11. Bottom of Boring: 74 feet bgs
- 12. Diameter of borehole: 2.25 inches

Comments:

2' x 2' concrete pad

The logo for KGS features a stylized black and red graphic on the left, resembling a pen nib or a stylized letter 'K'. To its right, the letters 'KGS' are written in a pink, serif font. A vertical green line separates the logo from the text to its right.

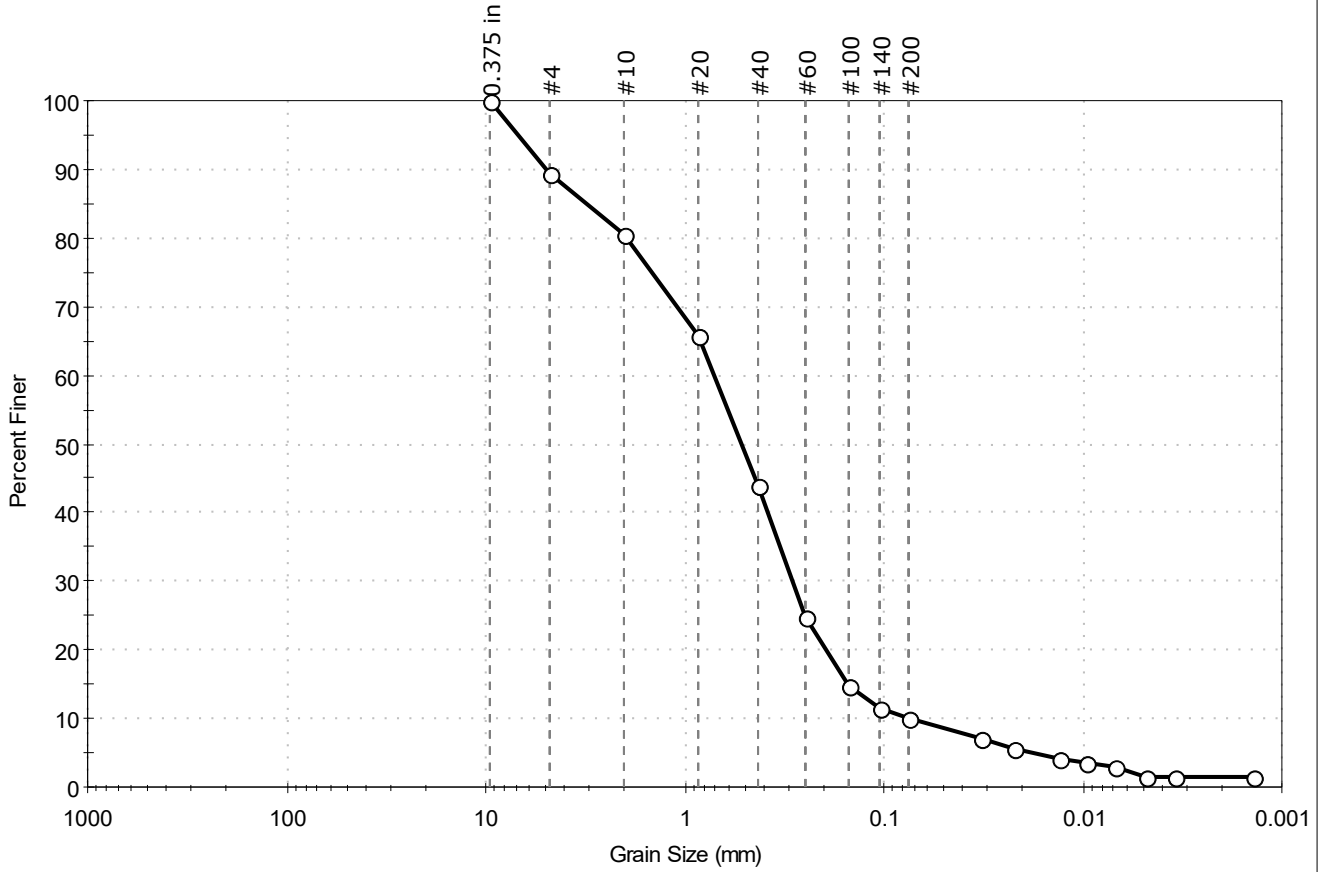
APPENDIX G GRAIN SIZE RESULTS

**AOC 20
Unnamed
Wetland
Sediment Grain
Size Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: UP-19-01-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529919
 Test Comment: ---
 Visual Description: Moist, very dark brown sand with silt
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	10.7	79.4	9.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	89		
#10	2.00	80		
#20	0.85	66		
#40	0.42	44		
#60	0.25	25		
#100	0.15	15		
#140	0.11	12		
#200	0.075	9.9		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0322	7		
---	0.0225	6		
---	0.0133	4		
---	0.0095	4		
---	0.0068	3		
---	0.0048	1		
---	0.0034	1		
---	0.0014	1		

Coefficients	
D ₈₅ = 3.1283 mm	D ₃₀ = 0.2883 mm
D ₆₀ = 0.7087 mm	D ₁₅ = 0.1522 mm
D ₅₀ = 0.5159 mm	D ₁₀ = 0.0760 mm
C _u = 9.325	C _c = 1.543

Classification	
ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (1))

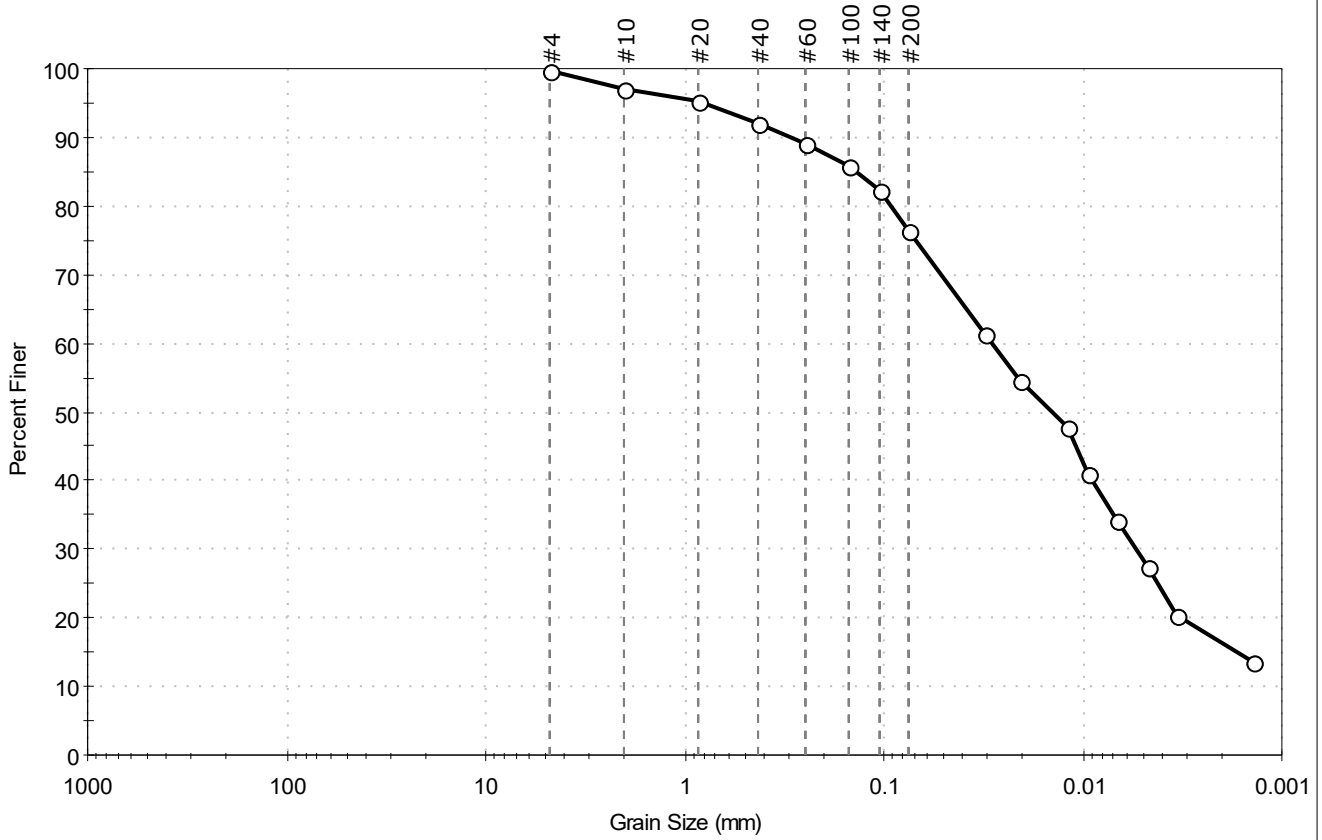
Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

**AOC 21
Unnamed
Stream
Sediment Grain
Size Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: US-19-01_SE_OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529922
 Test Comment: ---
 Visual Description: Moist, dark brown silt with sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.4	23.3	76.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	97		
#20	0.85	95		
#40	0.42	92		
#60	0.25	89		
#100	0.15	86		
#140	0.11	82		
#200	0.075	76		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0312	61		
---	0.0208	55		
---	0.0120	48		
---	0.0094	41		
---	0.0067	34		
---	0.0048	27		
---	0.0034	20		
---	0.0014	14		

<u>Coefficients</u>	
D ₈₅ = 0.1389 mm	D ₃₀ = 0.0054 mm
D ₆₀ = 0.0286 mm	D ₁₅ = 0.0017 mm
D ₅₀ = 0.0143 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

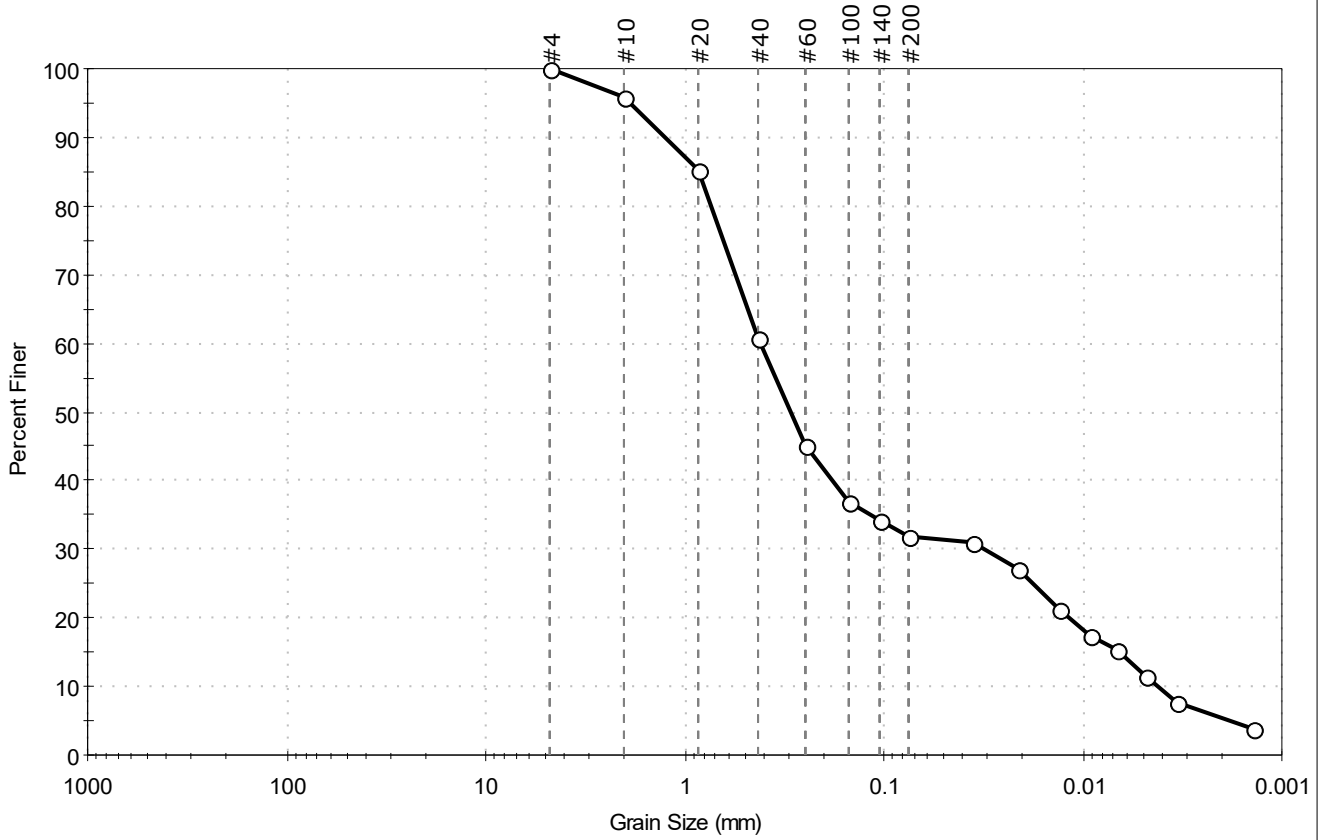
<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

**Airfield
Wetland
Sediment Grain
Size Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: AFW-19-01-SE_OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529921
 Test Comment: ---
 Visual Description: Moist, very dark brown silty sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.2	68.1	31.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	96		
#20	0.85	85		
#40	0.42	61		
#60	0.25	45		
#100	0.15	37		
#140	0.11	34		
#200	0.075	32		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0357	31		
---	0.0214	27		
---	0.0132	21		
---	0.0091	17		
---	0.0067	15		
---	0.0048	12		
---	0.0034	8		
---	0.0014	4		

Coefficients	
D ₈₅ = 0.8446 mm	D ₃₀ = 0.0316 mm
D ₆₀ = 0.4130 mm	D ₁₅ = 0.0064 mm
D ₅₀ = 0.2953 mm	D ₁₀ = 0.0042 mm
C _u = 98.333	C _c = 0.576

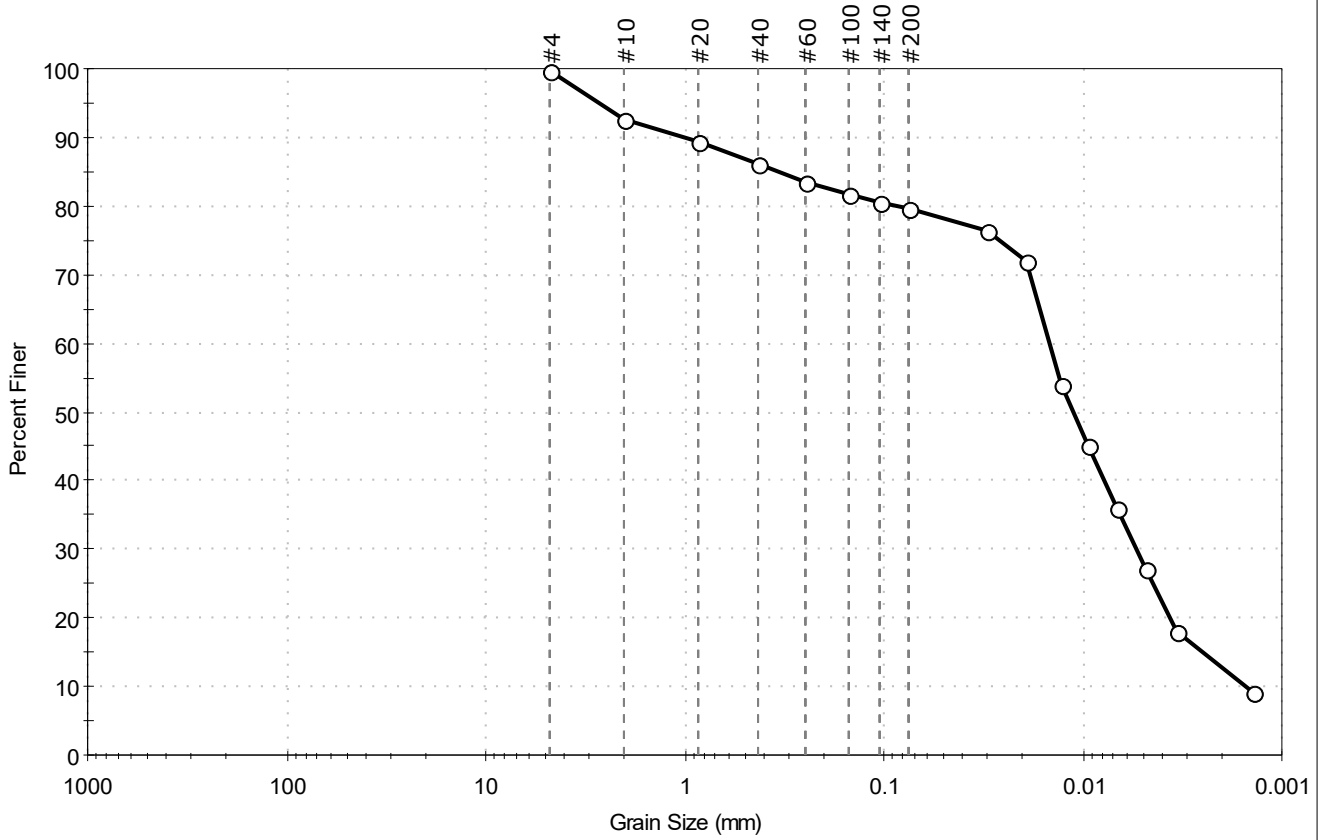
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	AFW-19-02-SE_OCT19	Test Date:	11/27/19
Depth:	0-0.5'	Test Id:	529920
Test Comment:	---		
Visual Description:	Moist, very dark brown silt with sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.4	19.9	79.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	93		
#20	0.85	89		
#40	0.42	86		
#60	0.25	83		
#100	0.15	82		
#140	0.11	81		
#200	0.075	80		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0302	77		
---	0.0192	72		
---	0.0129	54		
---	0.0095	45		
---	0.0068	36		
---	0.0048	27		
---	0.0034	18		
---	0.0014	9		

Coefficients	
D ₈₅ = 0.3431 mm	D ₃₀ = 0.0054 mm
D ₆₀ = 0.0148 mm	D ₁₅ = 0.0025 mm
D ₅₀ = 0.0113 mm	D ₁₀ = 0.0016 mm
C _u = 9.250	C _c = 1.231

Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

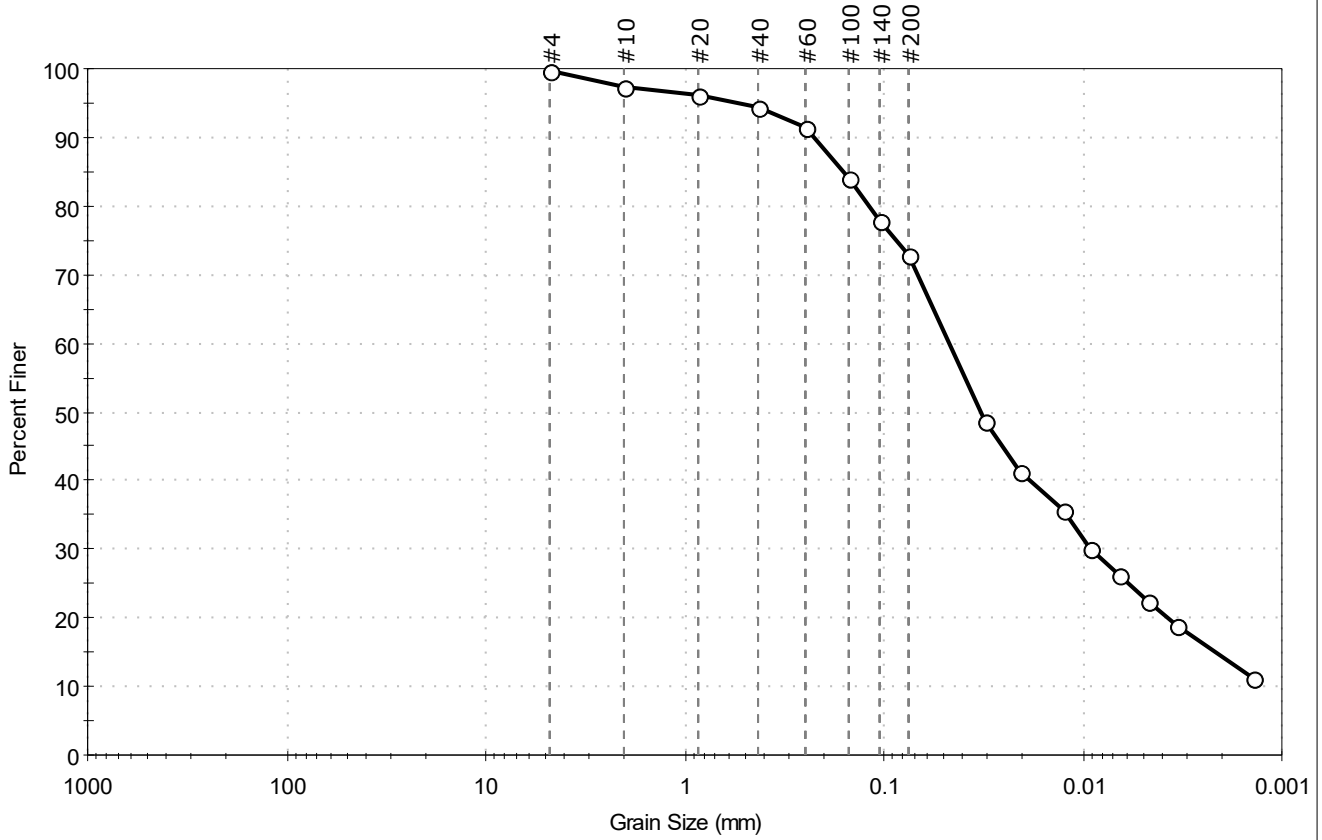
Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

**Nashua River
Sediment Grain
Size Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-01-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529918
 Test Comment: ---
 Visual Description: Moist, very dark brown silt with sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.2	26.9	72.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	97		
#20	0.85	96		
#40	0.42	94		
#60	0.25	92		
#100	0.15	84		
#140	0.11	78		
#200	0.075	73		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0308	49		
---	0.0206	41		
---	0.0127	36		
---	0.0093	30		
---	0.0066	26		
---	0.0047	23		
---	0.0033	19		
---	0.0014	11		

Coefficients	
D ₈₅ = 0.1606 mm	D ₃₀ = 0.0092 mm
D ₆₀ = 0.0466 mm	D ₁₅ = 0.0022 mm
D ₅₀ = 0.0322 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

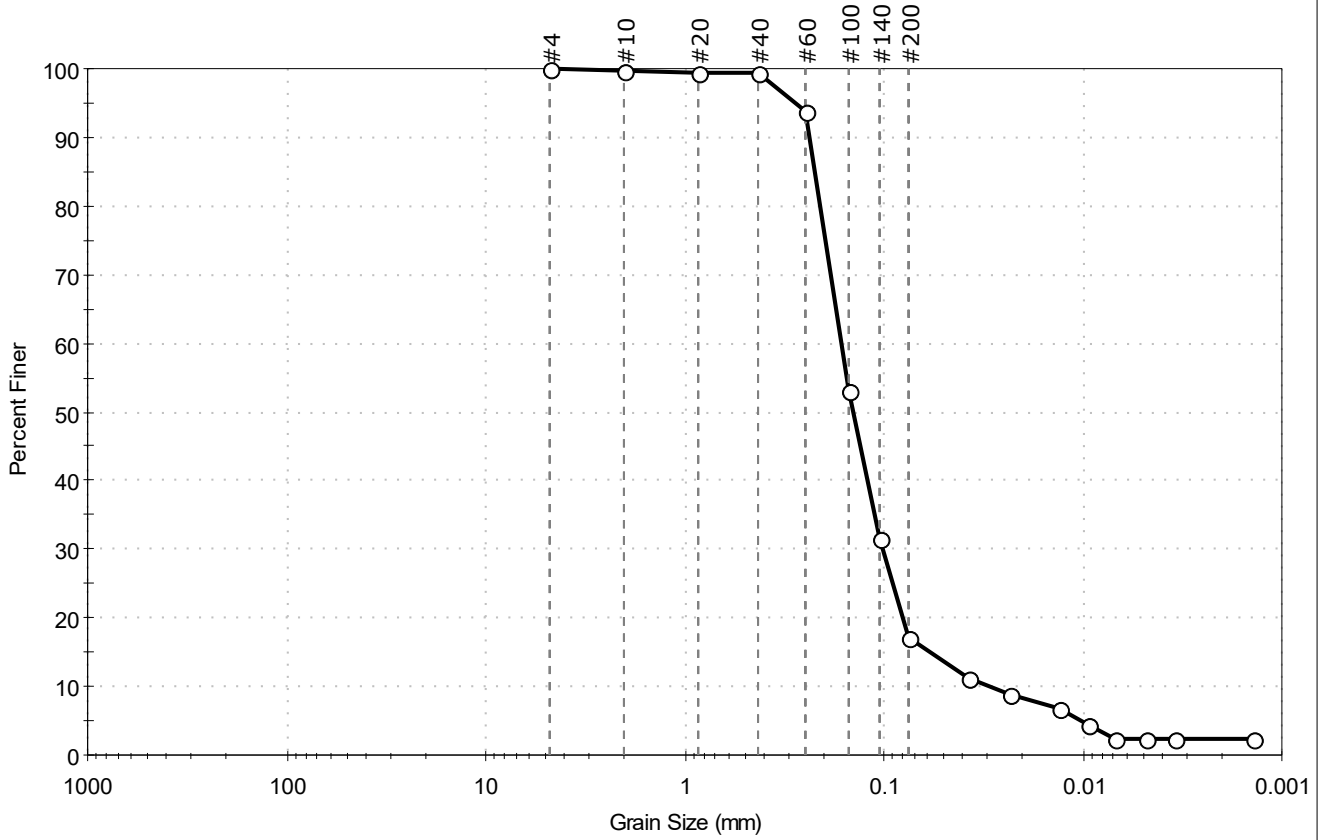
Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-02-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5 Test Id: 529917
 Test Comment: ---
 Visual Description: Moist, very dark gray silty sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	82.7	17.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	94		
#100	0.15	53		
#140	0.11	32		
#200	0.075	17		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0376	11		
---	0.0233	9		
---	0.0132	7		
---	0.0094	4		
---	0.0069	2		
---	0.0048	2		
---	0.0034	2		
---	0.0014	2		

Coefficients	
D ₈₅ = 0.2237 mm	D ₃₀ = 0.1020 mm
D ₆₀ = 0.1636 mm	D ₁₅ = 0.0583 mm
D ₅₀ = 0.1428 mm	D ₁₀ = 0.0295 mm
C _u = 5.546	C _c = 2.156

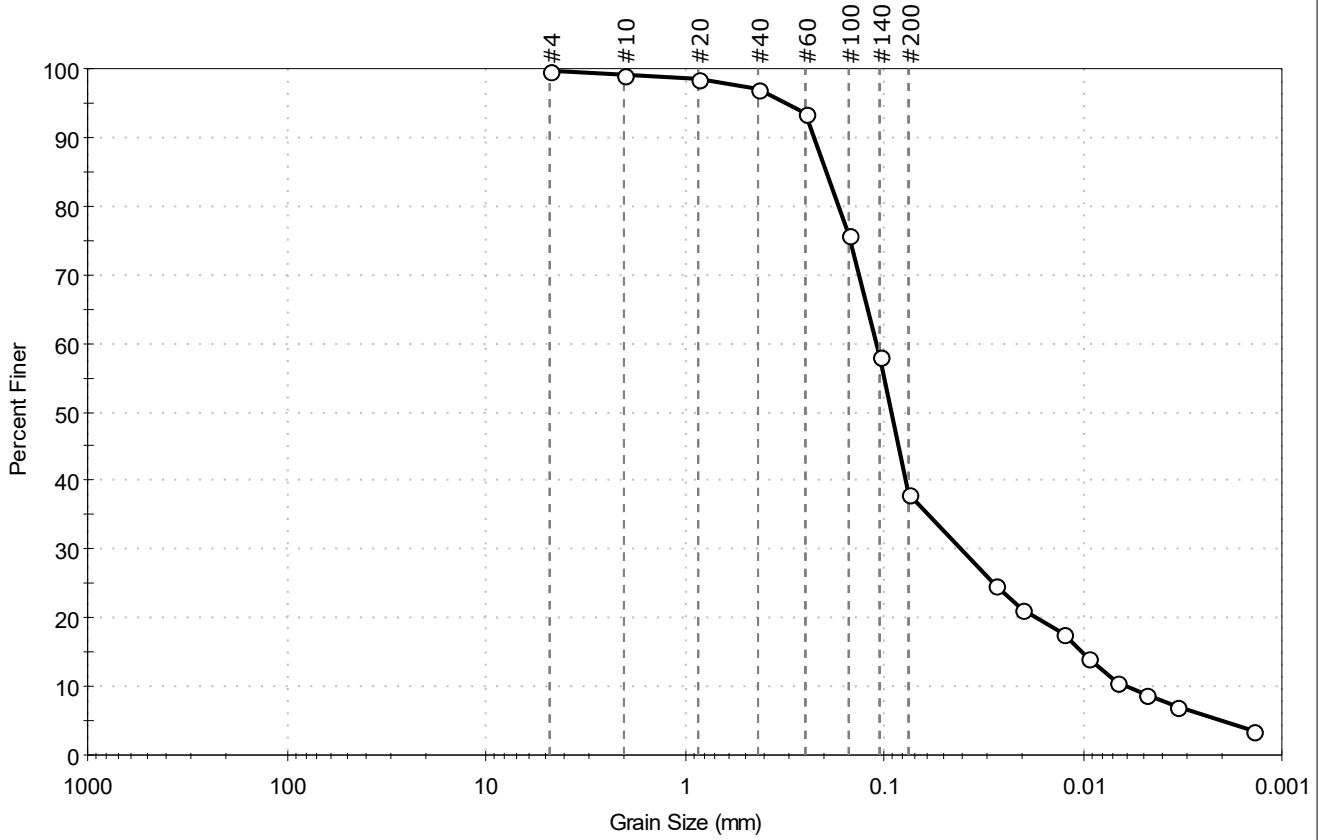
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-03-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5 Test Id: 529916
 Test Comment: ---
 Visual Description: Moist, very dark brown silty sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.2	61.6	38.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	93		
#100	0.15	76		
#140	0.11	58		
#200	0.075	38		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0276	25		
---	0.0204	21		
---	0.0126	18		
---	0.0095	14		
---	0.0067	11		
---	0.0048	9		
---	0.0034	7		
---	0.0014	4		

Coefficients	
D ₈₅ = 0.1953 mm	D ₃₀ = 0.0409 mm
D ₆₀ = 0.1102 mm	D ₁₅ = 0.0102 mm
D ₅₀ = 0.0922 mm	D ₁₀ = 0.0060 mm
C _u = 18.367	C _c = 2.530

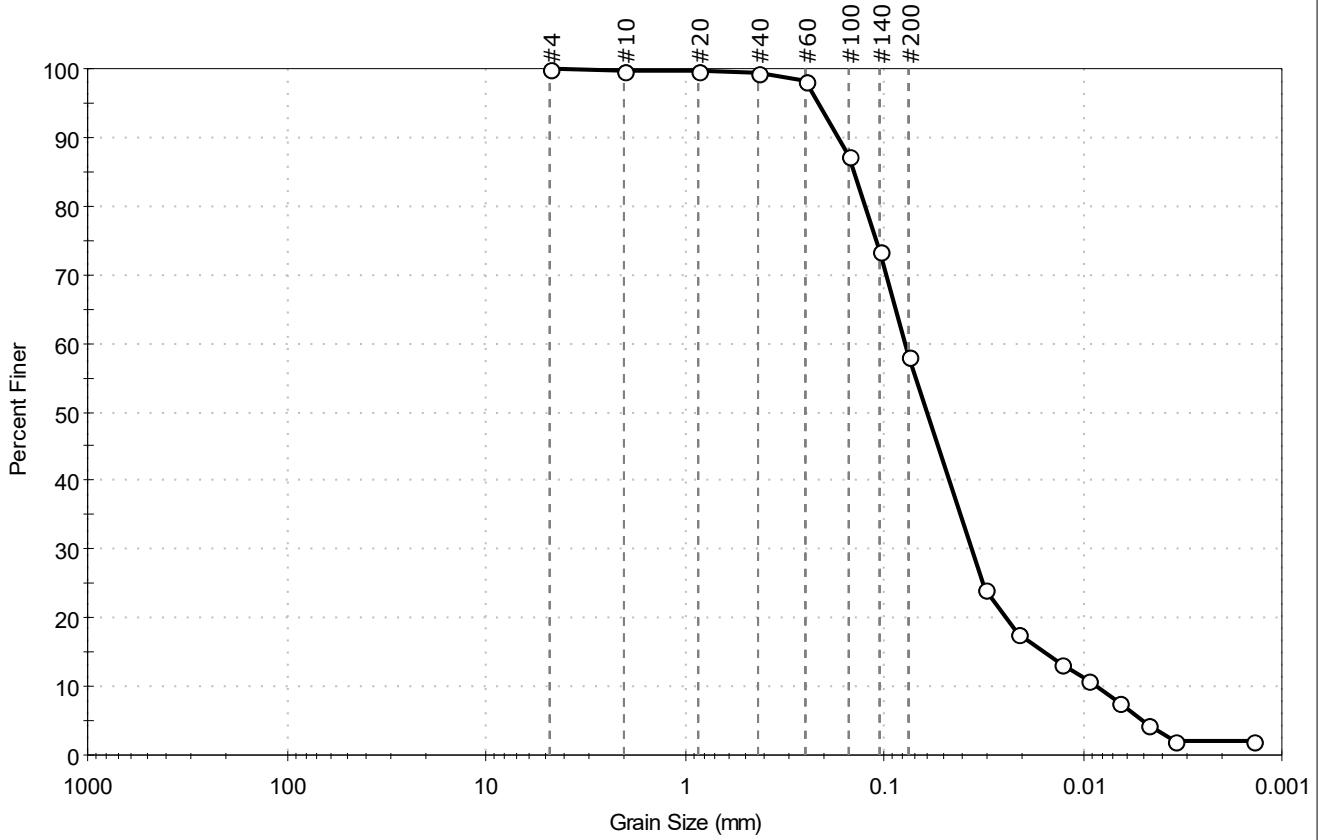
Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-04-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529915
 Test Comment: ---
 Visual Description: Moist, dark brown sandy silt
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	41.8	58.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	98		
#100	0.15	87		
#140	0.11	73		
#200	0.075	58		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0307	24		
---	0.0211	18		
---	0.0129	13		
---	0.0093	11		
---	0.0066	8		
---	0.0047	4		
---	0.0034	2		
---	0.0014	2		

Coefficients	
D ₈₅ = 0.1415 mm	D ₃₀ = 0.0357 mm
D ₆₀ = 0.0781 mm	D ₁₅ = 0.0156 mm
D ₅₀ = 0.0604 mm	D ₁₀ = 0.0084 mm
C _u = 9.298	C _c = 1.943

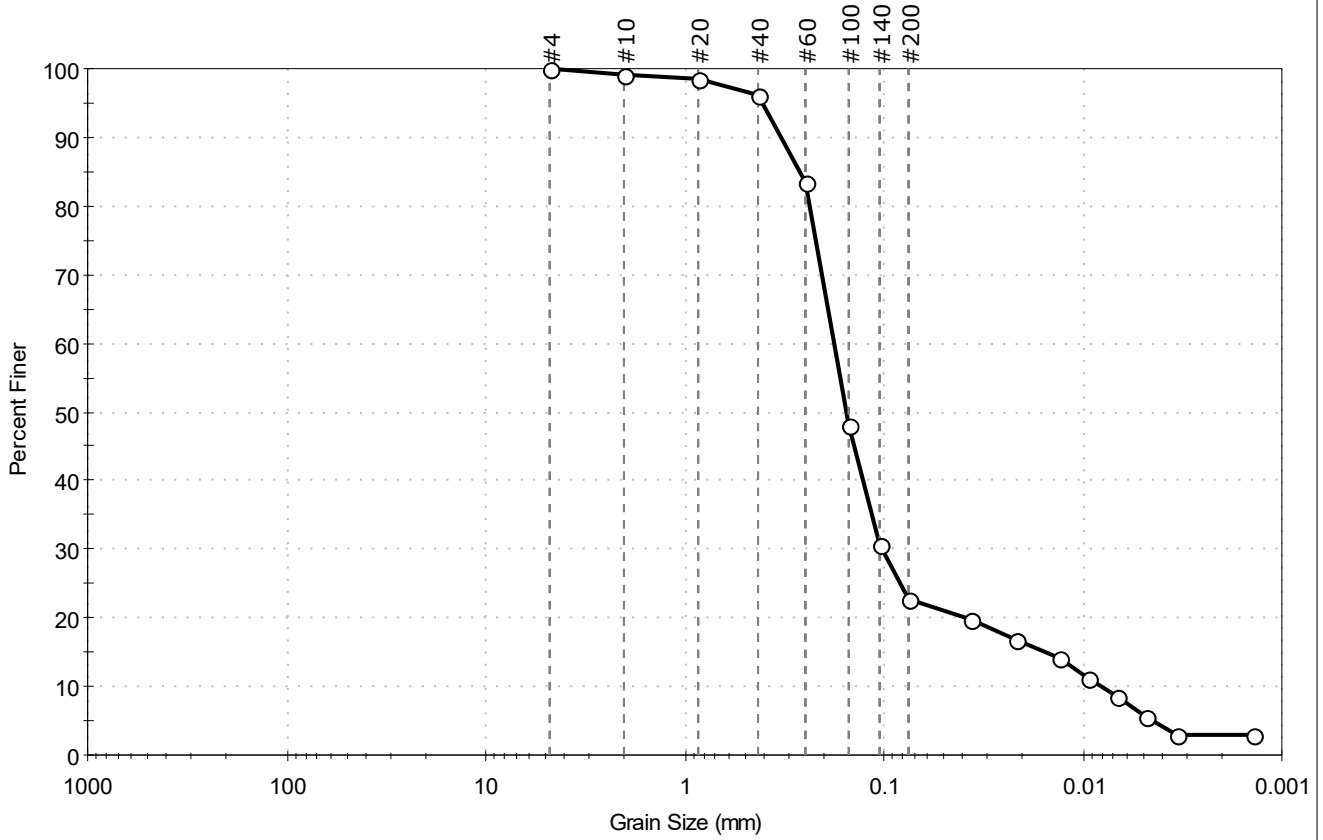
Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-05-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529914
 Test Comment: ---
 Visual Description: Moist, olive brown silty sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	77.4	22.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	96		
#60	0.25	84		
#100	0.15	48		
#140	0.11	31		
#200	0.075	23		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0365	20		
---	0.0215	17		
---	0.0130	14		
---	0.0094	11		
---	0.0067	8		
---	0.0048	6		
---	0.0034	3		
---	0.0014	3		

Coefficients	
D ₈₅ = 0.2659 mm	D ₃₀ = 0.1028 mm
D ₆₀ = 0.1782 mm	D ₁₅ = 0.0154 mm
D ₅₀ = 0.1544 mm	D ₁₀ = 0.0081 mm
C _u = 22.000	C _c = 7.321

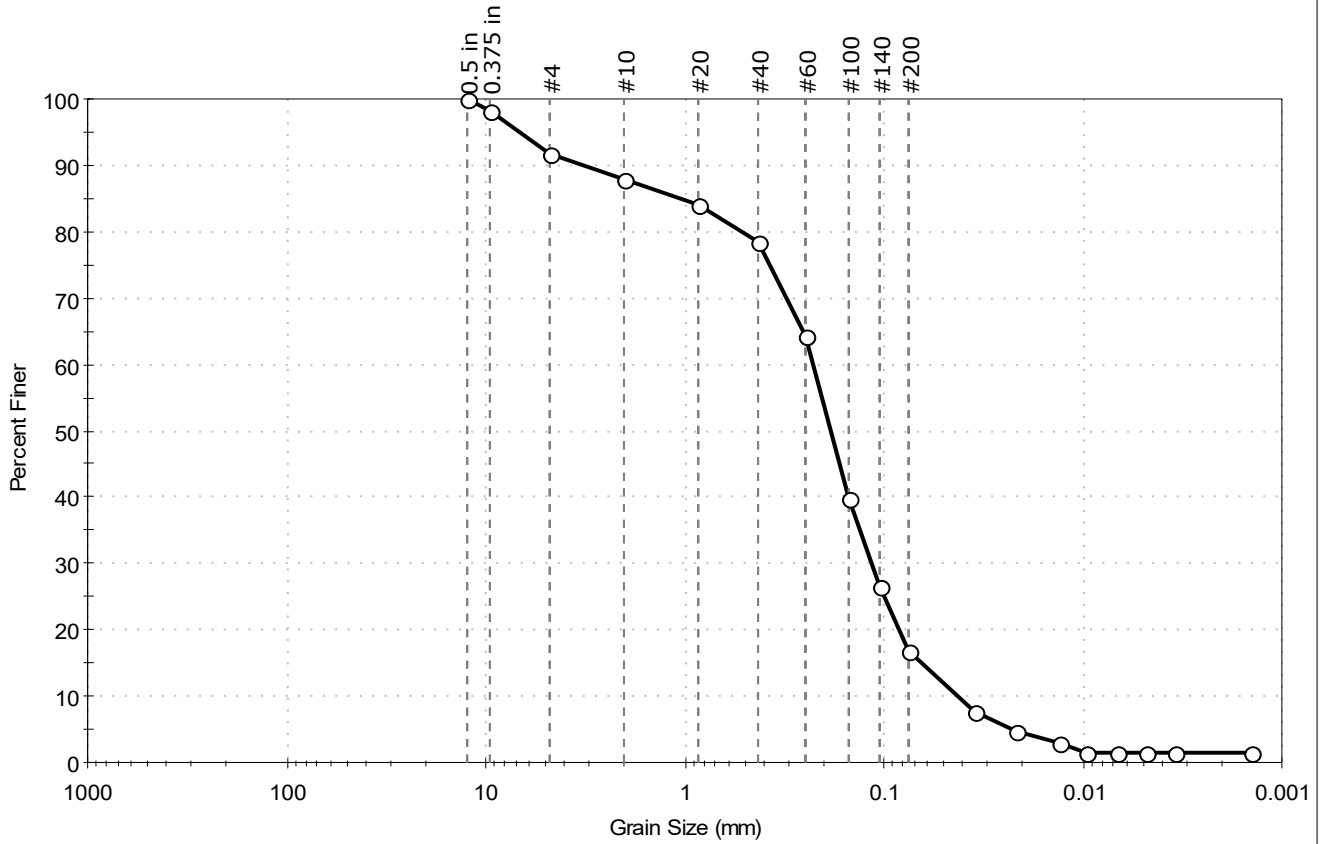
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	NR-19-06-SE-OCT19	Test Date:	11/27/19
Depth:	0-0.5'	Test Id:	529913
Test Comment:	---		
Visual Description:	Moist, dark brown silty sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	8.2	75.0	16.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	98		
#4	4.75	92		
#10	2.00	88		
#20	0.85	84		
#40	0.42	78		
#60	0.25	64		
#100	0.15	40		
#140	0.11	26		
#200	0.075	17		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0352	8		
---	0.0218	5		
---	0.0132	3		
---	0.0097	2		
---	0.0067	2		
---	0.0049	2		
---	0.0034	2		
---	0.0014	2		

Coefficients

D ₈₅ = 1.0450 mm	D ₃₀ = 0.1163 mm
D ₆₀ = 0.2290 mm	D ₁₅ = 0.0646 mm
D ₅₀ = 0.1860 mm	D ₁₀ = 0.0427 mm
C _u = 5.363	C _c = 1.383

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

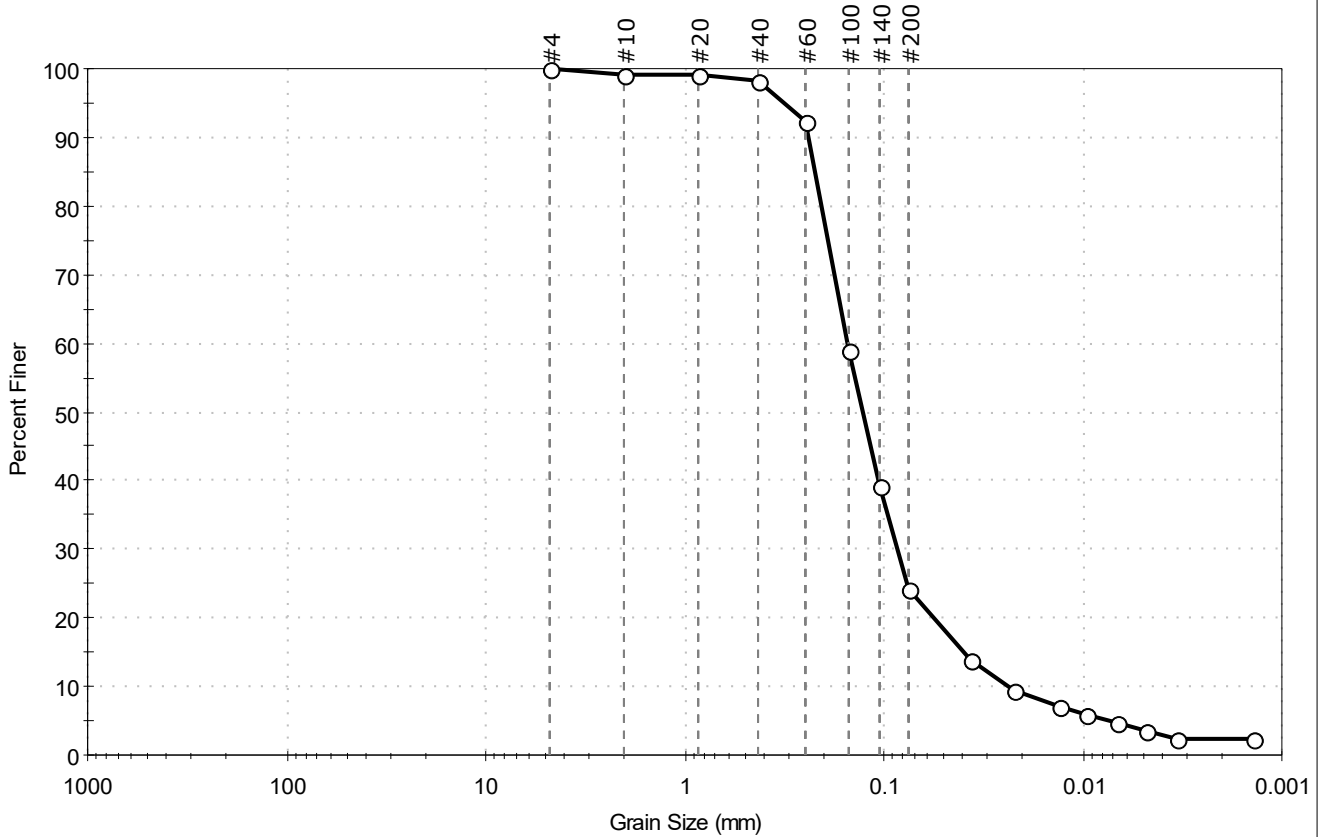
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC	Project No: GTX-310909
Project: PFAS Remedial Investigation	
Location:	
Boring ID: ---	Sample Type: bag
Sample ID: NR-19-07-SE-OCT19	Test Date: 11/27/19
Depth: 0-05'	Test Id: 529912
Test Comment: ---	Tested By: ckg
Visual Description: Moist, very dark gray silty sand	Checked By: bfs
Sample Comment: ---	

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	75.8	24.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	92		
#100	0.15	59		
#140	0.11	39		
#200	0.075	24		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0365	14		
---	0.0221	9		
---	0.0131	7		
---	0.0097	6		
---	0.0068	5		
---	0.0048	3		
---	0.0034	2		
---	0.0014	2		

Coefficients	
D ₈₅ = 0.2232 mm	D ₃₀ = 0.0859 mm
D ₆₀ = 0.1521 mm	D ₁₅ = 0.0393 mm
D ₅₀ = 0.1281 mm	D ₁₀ = 0.0238 mm
C _u = 6.391	C _c = 2.038

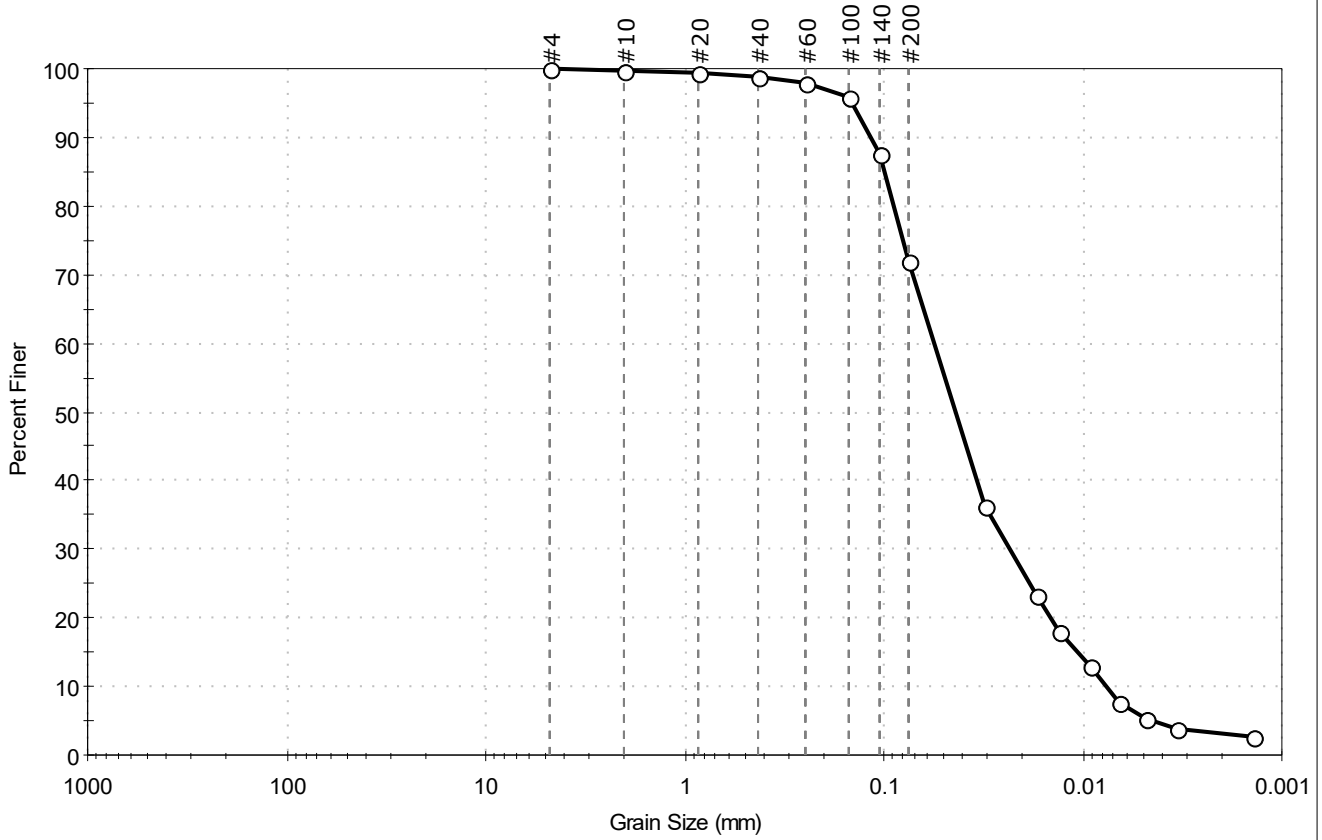
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-08-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529911
 Test Comment: ---
 Visual Description: Moist, olive brown silt with sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	28.1	71.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	96		
#140	0.11	88		
#200	0.075	72		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0312	36		
---	0.0172	23		
---	0.0130	18		
---	0.0093	13		
---	0.0066	8		
---	0.0048	5		
---	0.0034	4		
---	0.0014	3		

Coefficients	
D ₈₅ = 0.1001 mm	D ₃₀ = 0.0235 mm
D ₆₀ = 0.0560 mm	D ₁₅ = 0.0106 mm
D ₅₀ = 0.0438 mm	D ₁₀ = 0.0077 mm
C _u = 7.273	C _c = 1.281

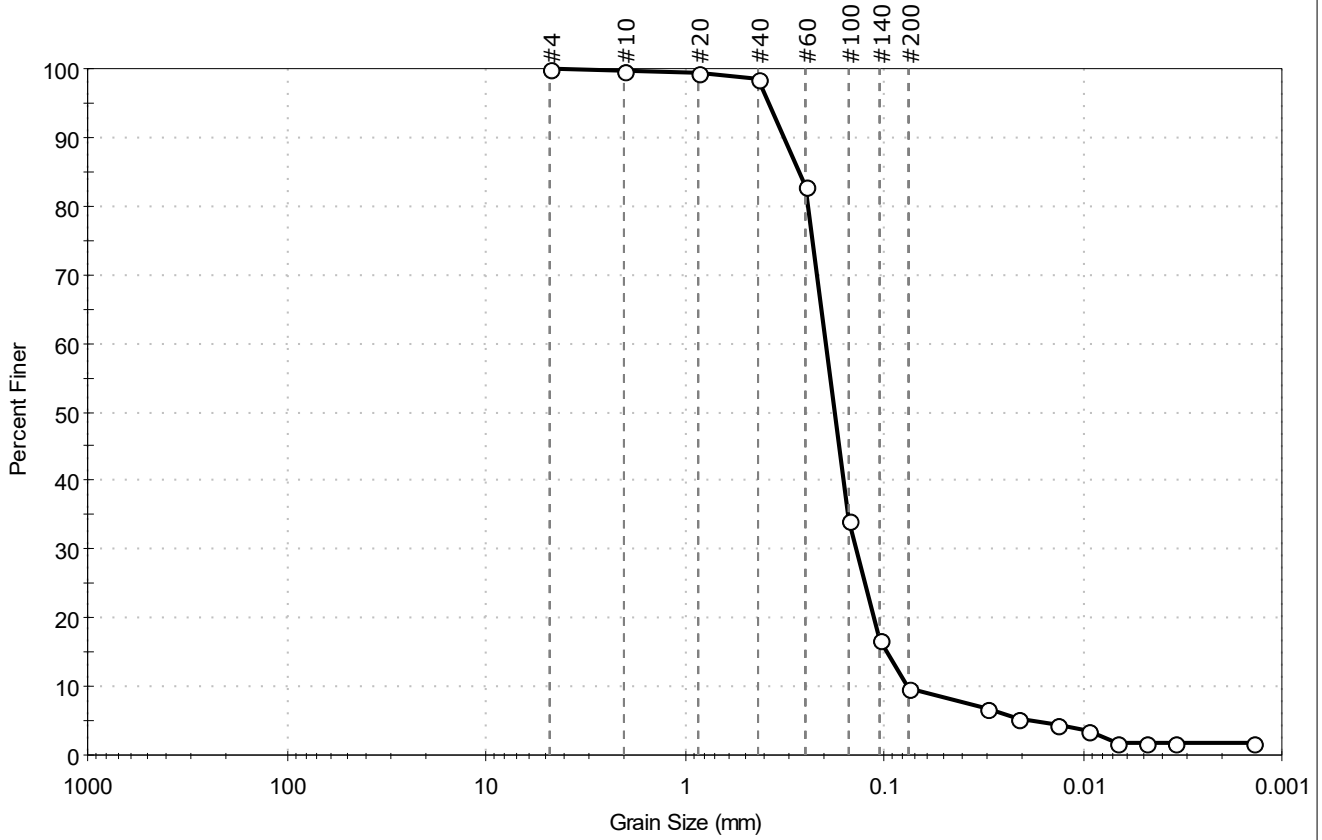
Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-09-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529910
 Test Comment: ---
 Visual Description: Moist, very dark brown sand with silt
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	90.3	9.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	83		
#100	0.15	34		
#140	0.11	17		
#200	0.075	9.6		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0306	7		
---	0.0213	5		
---	0.0133	4		
---	0.0094	3		
---	0.0067	2		
---	0.0048	2		
---	0.0034	2		
---	0.0014	2		

Coefficients	
D ₈₅ = 0.2681 mm	D ₃₀ = 0.1381 mm
D ₆₀ = 0.1966 mm	D ₁₅ = 0.0972 mm
D ₅₀ = 0.1771 mm	D ₁₀ = 0.0763 mm
C _u = 2.577	C _c = 1.271

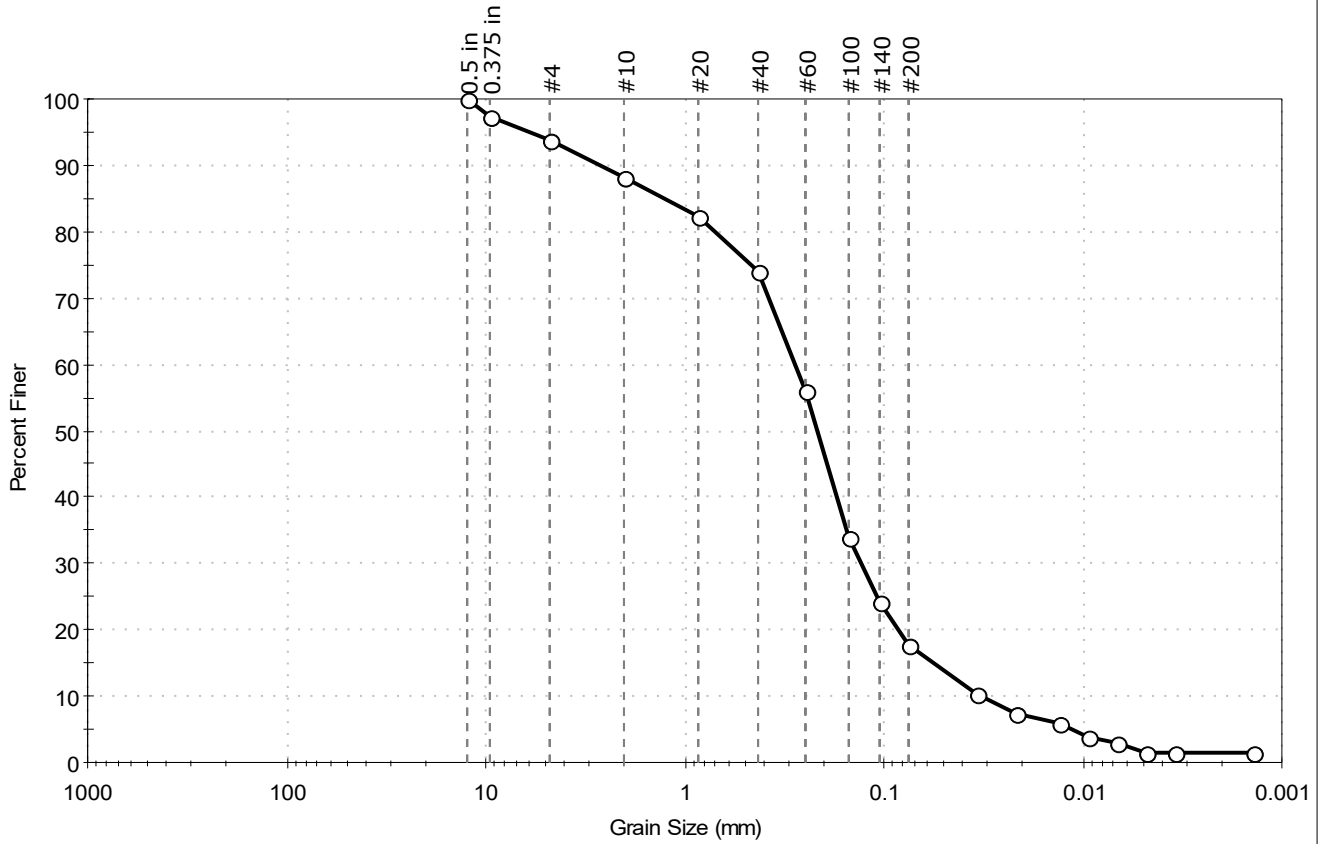
Classification	
ASTM	N/A
AASHTO	Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-10-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529909
 Test Comment: ---
 Visual Description: Moist, dark brown silty sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	6.1	76.1	17.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	94		
#10	2.00	88		
#20	0.85	82		
#40	0.42	74		
#60	0.25	56		
#100	0.15	34		
#140	0.11	24		
#200	0.075	18		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0338	10		
---	0.0216	7		
---	0.0132	6		
---	0.0095	4		
---	0.0068	3		
---	0.0048	1		
---	0.0034	1		
---	0.0014	1		

Coefficients

D ₈₅ = 1.2461 mm	D ₃₀ = 0.1302 mm
D ₆₀ = 0.2807 mm	D ₁₅ = 0.0553 mm
D ₅₀ = 0.2171 mm	D ₁₀ = 0.0315 mm
C _u = 8.911	C _c = 1.917

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

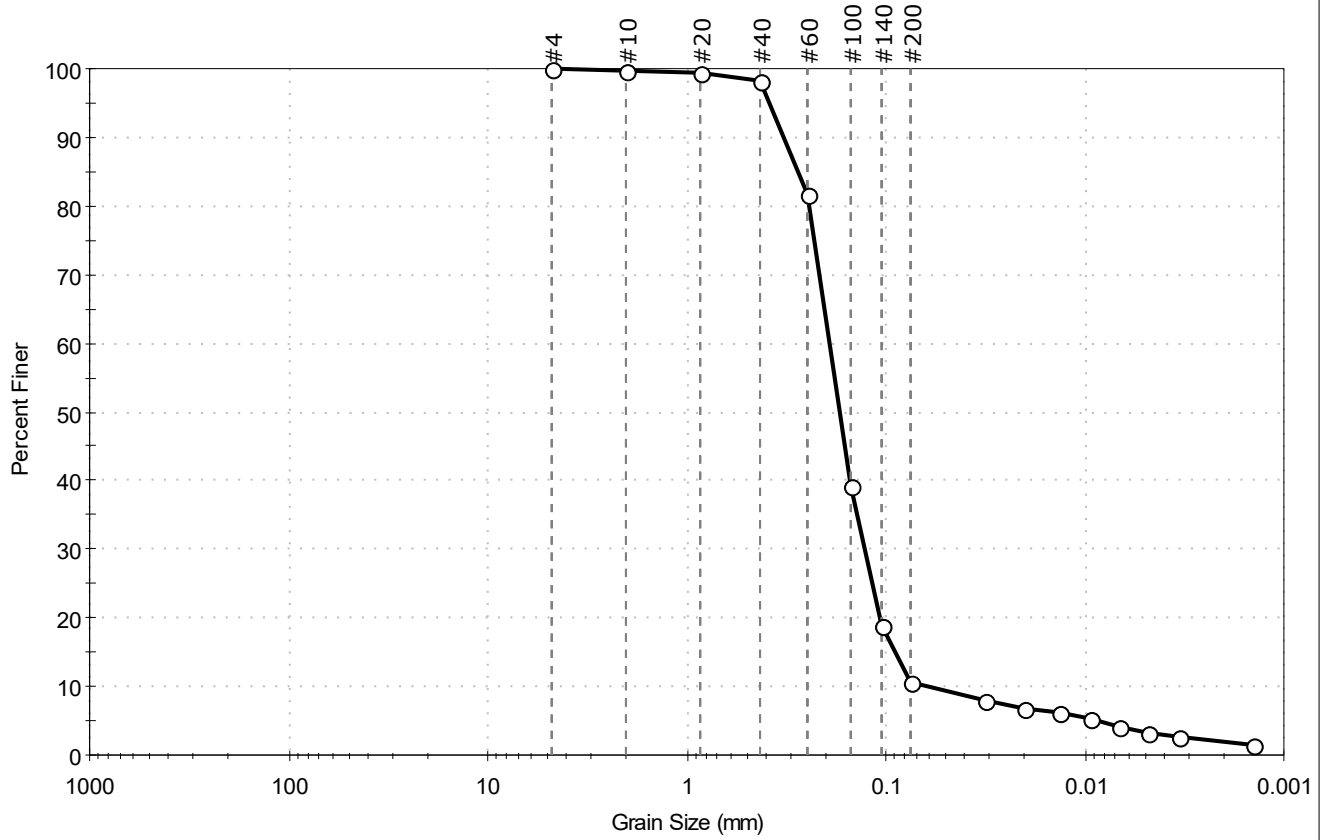
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-11-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529908
 Test Comment: ---
 Visual Description: Moist, dark grayish brown sand with silt
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	89.4	10.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
#60	0.25	82		
#100	0.15	39		
#140	0.11	19		
#200	0.075	11		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0319	8		
---	0.0201	7		
---	0.0136	6		
---	0.0094	5		
---	0.0068	4		
---	0.0048	3		
---	0.0034	3		
---	0.0014	1		

<u>Coefficients</u>	
D ₈₅ = 0.2784 mm	D ₃₀ = 0.1282 mm
D ₆₀ = 0.1925 mm	D ₁₅ = 0.0903 mm
D ₅₀ = 0.1707 mm	D ₁₀ = 0.0608 mm
C _u = 3.166	C _c = 1.404

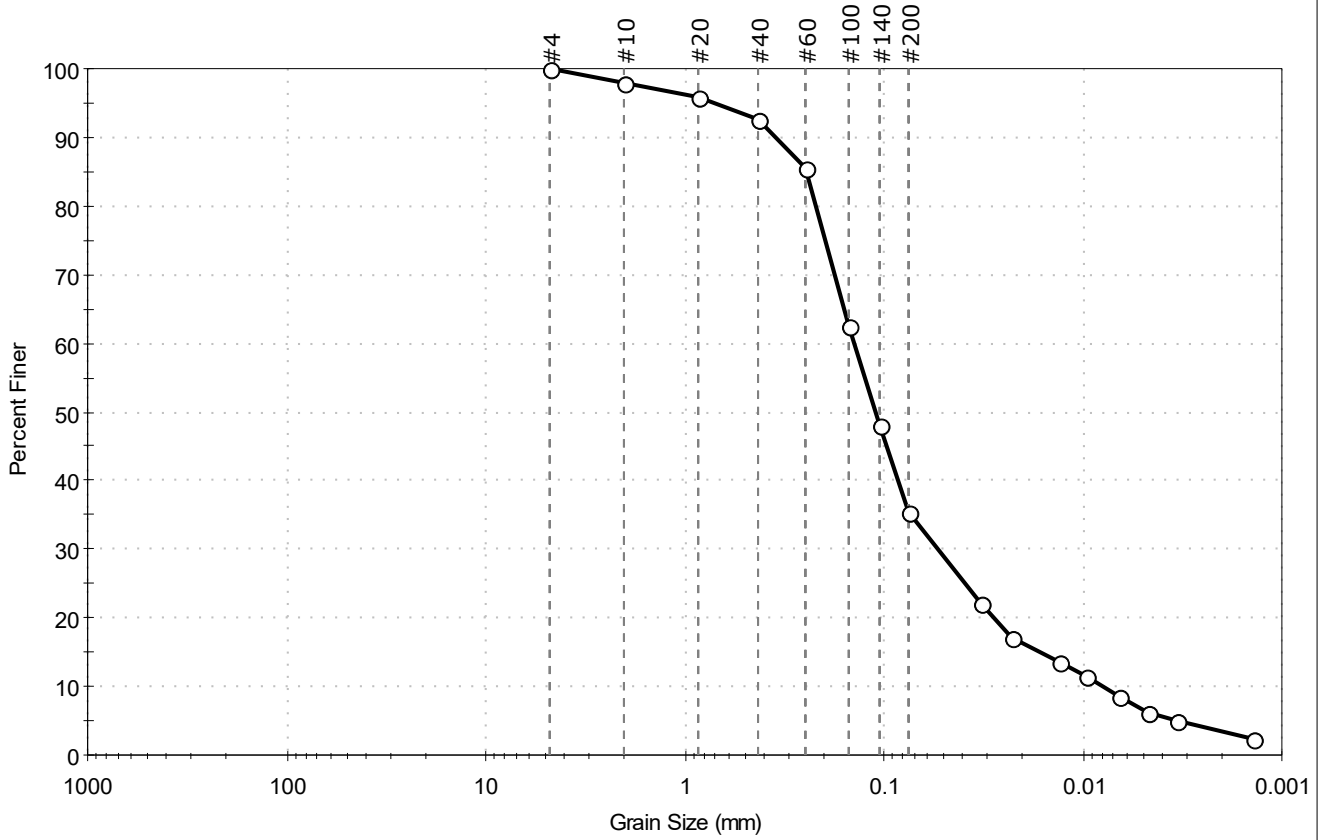
<u>Classification</u>	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-19-12-SE-OCT19 Test Date: 11/27/19 Checked By: bfs
 Depth: 0-0.5' Test Id: 529907
 Test Comment: ---
 Visual Description: Moist, very dark grayish brown silty sand
 Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	64.5	35.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	98		
#20	0.85	96		
#40	0.42	93		
#60	0.25	86		
#100	0.15	63		
#140	0.11	48		
#200	0.075	35		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0328	22		
---	0.0228	17		
---	0.0130	13		
---	0.0096	12		
---	0.0066	9		
---	0.0047	6		
---	0.0034	5		
---	0.0014	2		

Coefficients

D ₈₅ = 0.2464 mm	D ₃₀ = 0.0536 mm
D ₆₀ = 0.1407 mm	D ₁₅ = 0.0166 mm
D ₅₀ = 0.1109 mm	D ₁₀ = 0.0078 mm
C _u = 18.038	C _c = 2.618

Classification

ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

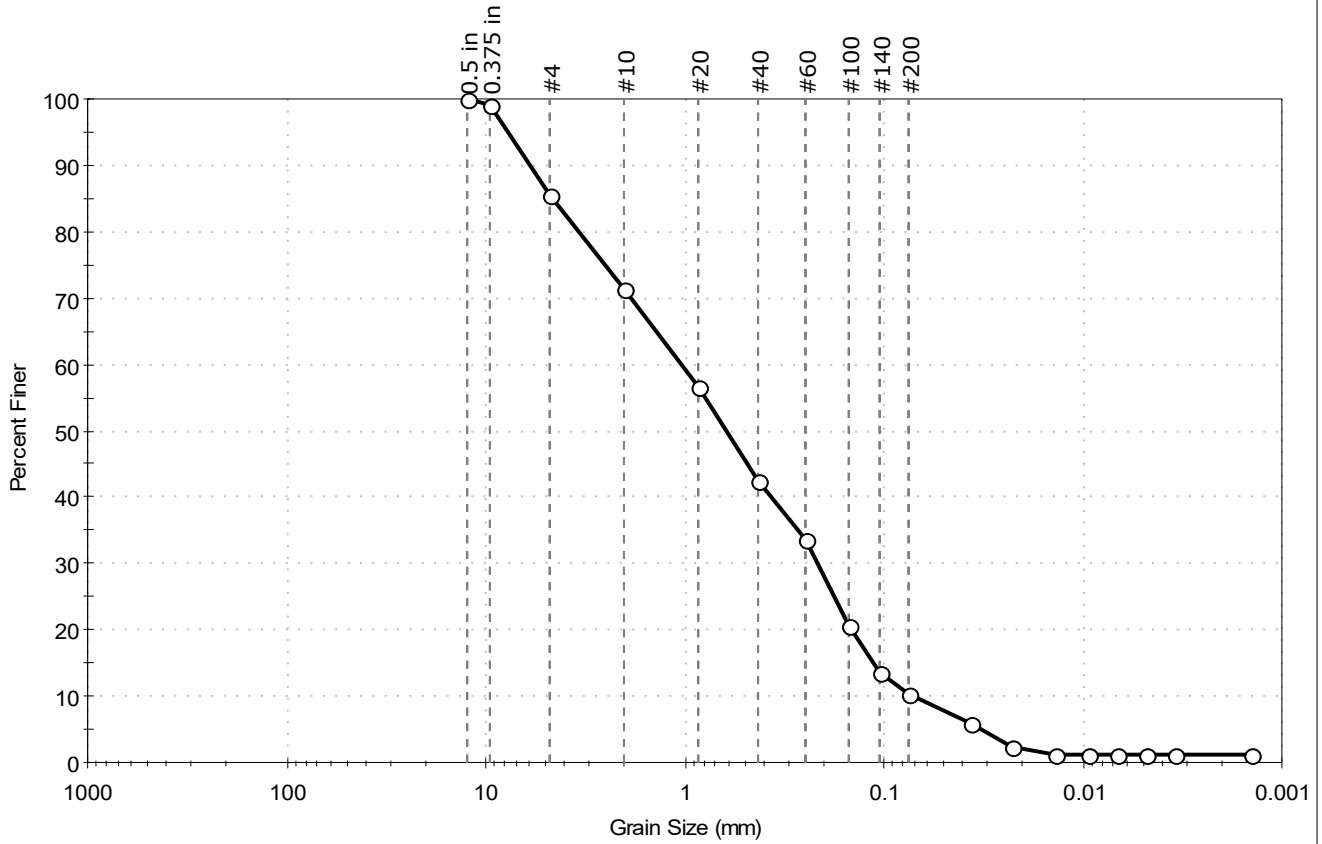
Sample/Test Description

Sand/Gravel Particle Shape : ---
 Sand/Gravel Hardness : ---
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Est. Specific Gravity : 2.65
 Separation of Sample: #200 Sieve



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	NR-19-13-SE-OCT19	Test Date:	11/27/19
Depth:	0-0.5'	Test Id:	529906
Test Comment:	---		
Visual Description:	Moist, olive brown sand with silt		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	14.5	75.1	10.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	86		
#10	2.00	71		
#20	0.85	57		
#40	0.42	42		
#60	0.25	34		
#100	0.15	21		
#140	0.11	14		
#200	0.075	10		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0368	6		
---	0.0226	2		
---	0.0138	1		
---	0.0094	1		
---	0.0068	1		
---	0.0048	1		
---	0.0034	1		
---	0.0014	1		

Coefficients

D ₈₅ = 4.6014 mm	D ₃₀ = 0.2164 mm
D ₆₀ = 1.0368 mm	D ₁₅ = 0.1141 mm
D ₅₀ = 0.6150 mm	D ₁₀ = 0.0703 mm
C _u = 14.748	C _c = 0.642

Classification

ASTM	N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

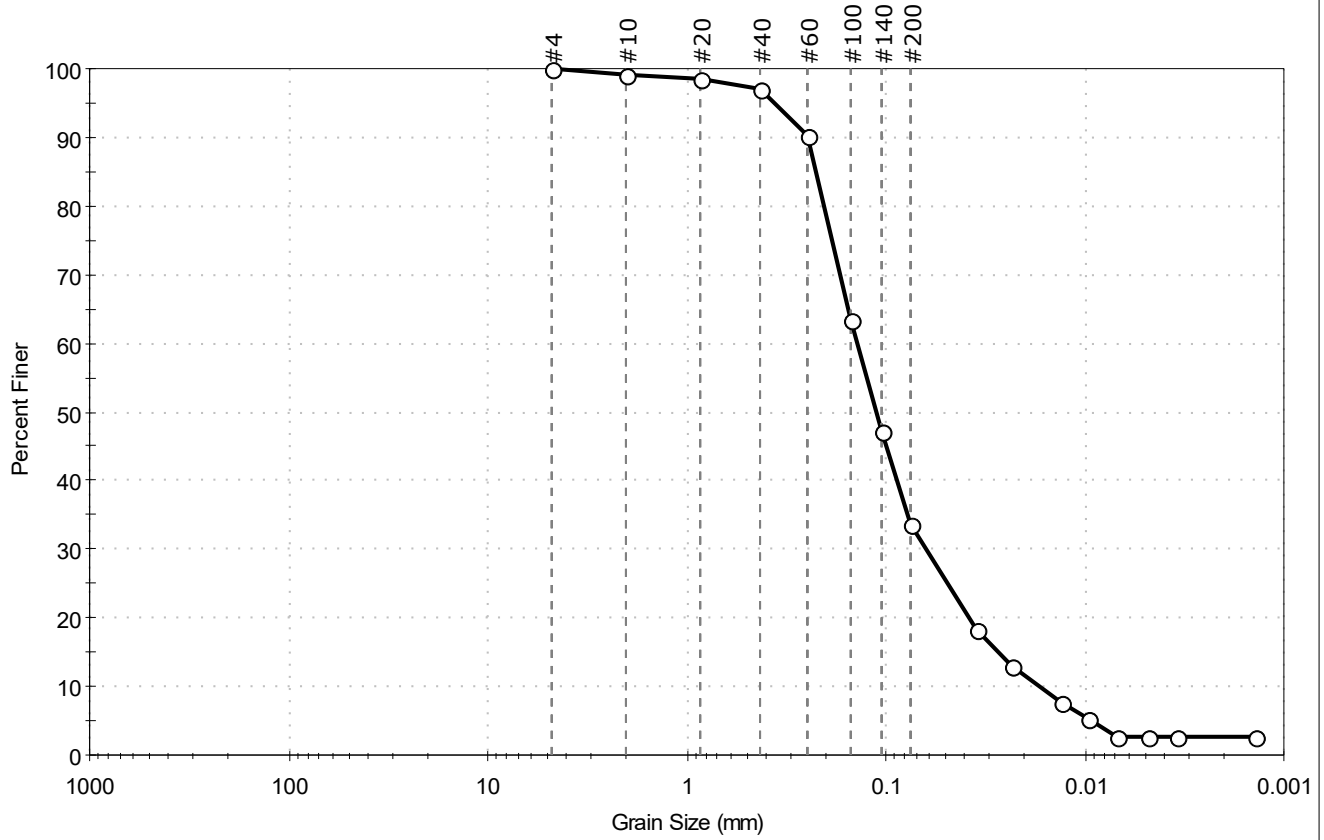
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NR-SED-19-14-DEC19 Test Date: 03/04/20 Checked By: jsc
 Depth: 0-0.5 ft Test Id: 546010
 Test Comment: ---
 Visual Description: Moist, dark gray silty sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	66.3	33.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	97		
#60	0.25	90		
#100	0.15	63		
#140	0.11	47		
#200	0.075	34		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0350	18		
---	0.0234	13		
---	0.0131	8		
---	0.0096	5		
---	0.0069	3		
---	0.0049	3		
---	0.0034	3		
---	0.0014	3		

Coefficients

D ₈₅ = 0.2260 mm	D ₃₀ = 0.0627 mm
D ₆₀ = 0.1394 mm	D ₁₅ = 0.0274 mm
D ₅₀ = 0.1128 mm	D ₁₀ = 0.0168 mm
C _u = 8.298	C _c = 1.679

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

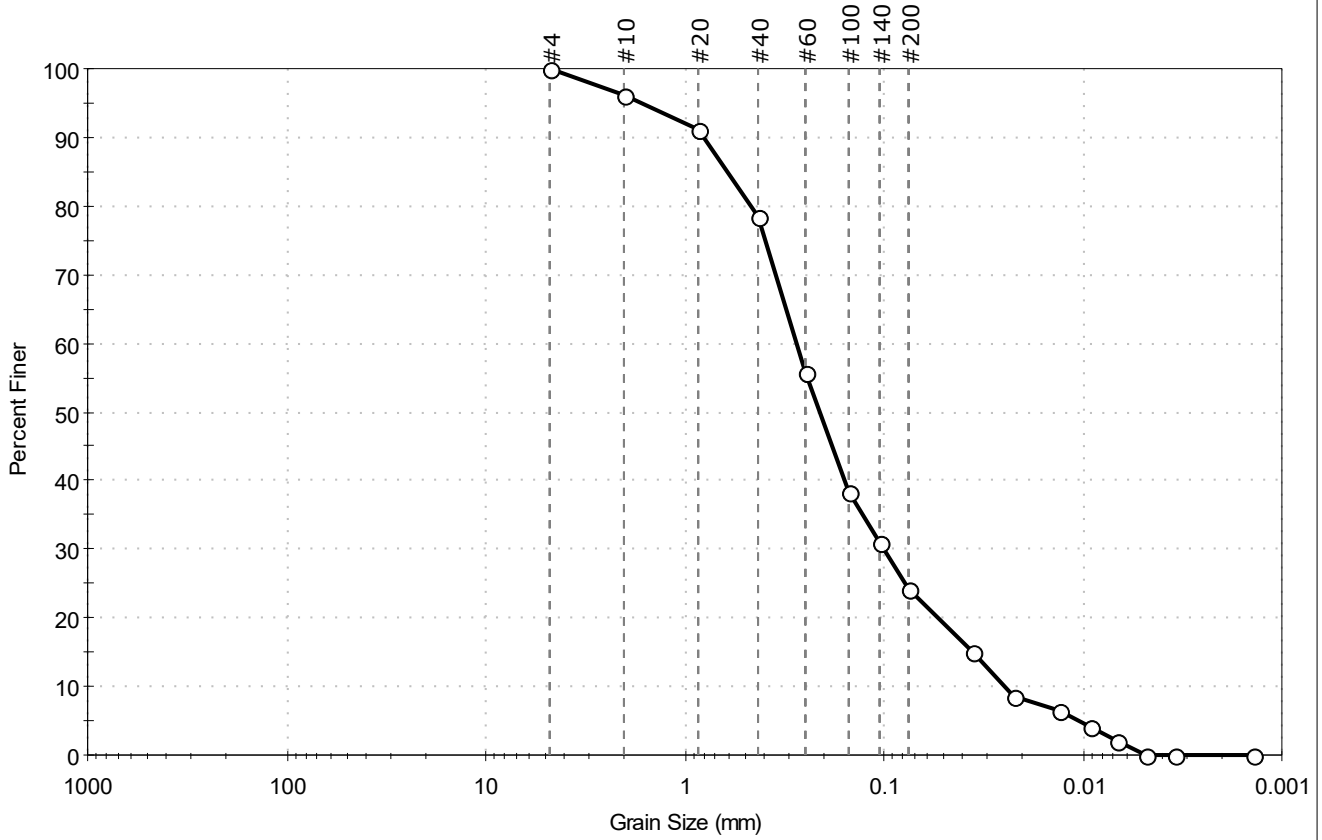
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	NRBK-SED-19-01-DEC19	Test Date:	03/04/20
Depth:	0-0.5 ft	Test Id:	546007
Test Comment:	---		
Visual Description:	Moist, dark gray silty sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	75.6	24.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	96		
#20	0.85	91		
#40	0.42	78		
#60	0.25	56		
#100	0.15	38		
#140	0.11	31		
#200	0.075	24		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0360	15		
---	0.0222	9		
---	0.0132	6		
---	0.0093	4		
---	0.0068	2		
---	0.0049	0		
---	0.0034	0		
---	0.0014	0		

Coefficients	
D ₈₅ = 0.6104 mm	D ₃₀ = 0.1013 mm
D ₆₀ = 0.2755 mm	D ₁₅ = 0.0363 mm
D ₅₀ = 0.2106 mm	D ₁₀ = 0.0248 mm
C _u = 11.109	C _c = 1.502

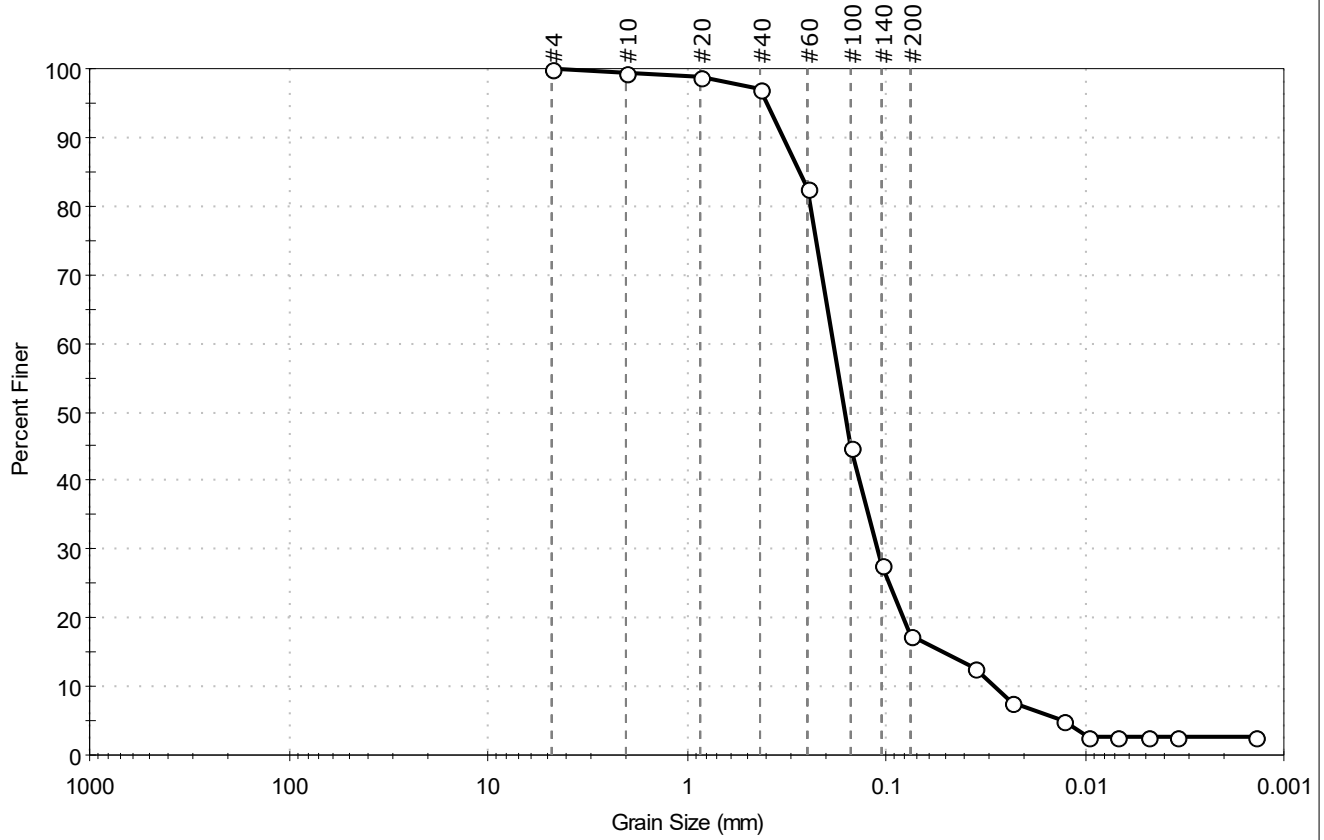
Classification	
ASTM	N/A
AASHTO	Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: NRBK-SED-19-02-DEC19 Test Date: 03/04/20 Checked By: jsc
 Depth: 0-0.5 ft Test Id: 546006
 Test Comment: ---
 Visual Description: Moist dark gray silty sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	82.5	17.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	97		
#60	0.25	83		
#100	0.15	45		
#140	0.11	28		
#200	0.075	17		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0362	13		
---	0.0233	8		
---	0.0127	5		
---	0.0096	3		
---	0.0068	3		
---	0.0048	3		
---	0.0034	3		
---	0.0014	3		

Coefficients

D ₈₅ = 0.2733 mm	D ₃₀ = 0.1112 mm
D ₆₀ = 0.1843 mm	D ₁₅ = 0.0522 mm
D ₅₀ = 0.1610 mm	D ₁₀ = 0.0289 mm
C _u = 6.377	C _c = 2.322

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

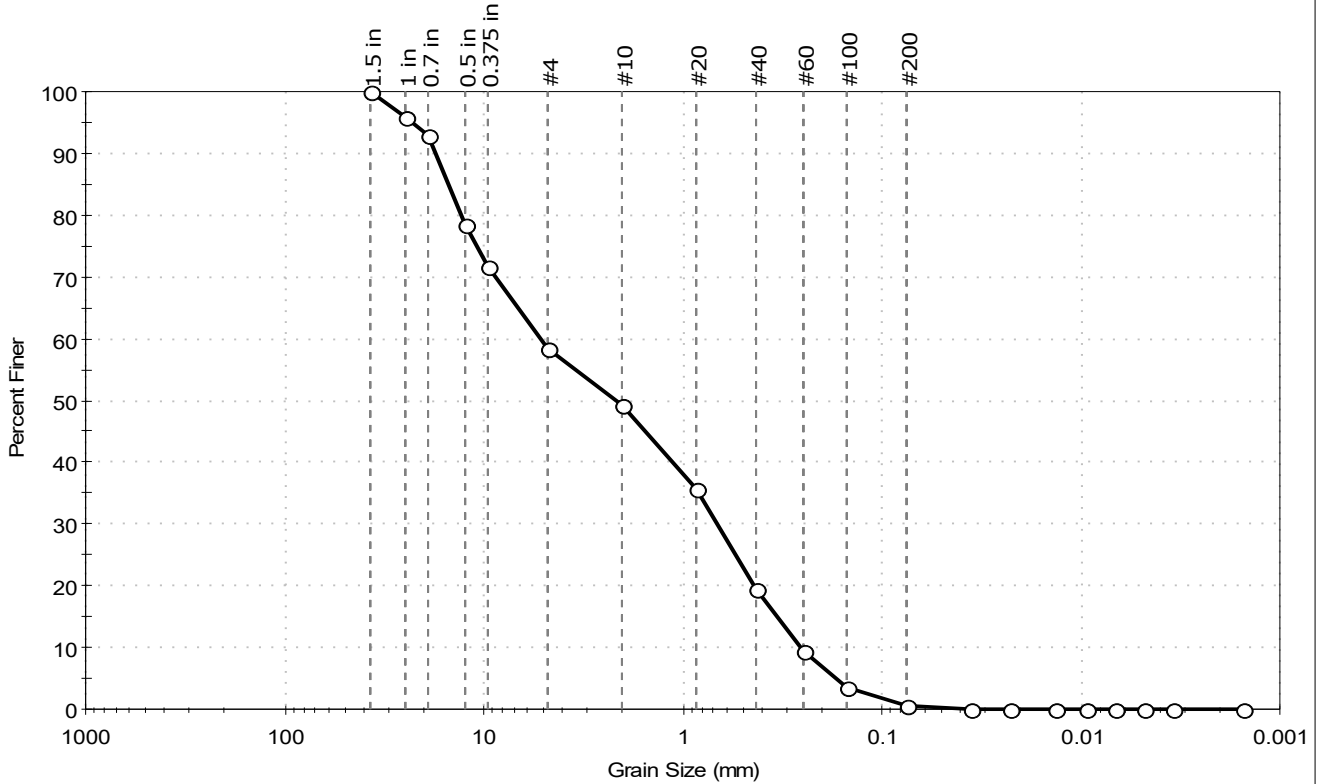
Separation of Sample: #200 Sieve

**Balch Pond
River Sediment
Grain Size
Graphs**



Client: KOMAN Government Solutions, LLC
 Project: Devens PFAS Remedial Investigation
 Location: Devens, MA
 Project No: GTX-309411
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: BP-SED-18-01-DEC18 Test Date: 02/02/19 Checked By: emm
 Depth: 0-0.5' Test Id: 489879
 Test Comment: ---
 Visual Description: Moist, dark gray sand with gravel
 Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	41.7	57.7	0.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	96		
0.7 in	19.00	93		
0.5 in	12.50	78		
0.375 in	9.50	72		
#4	4.75	58		
#10	2.00	49		
#20	0.85	36		
#40	0.42	19		
#60	0.25	9		
#100	0.15	4		
#200	0.075	0.6		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0359	0		
---	0.0230	0		
---	0.0134	0		
---	0.0095	0		
---	0.0068	0		
---	0.0048	0		
---	0.0034	0		
---	0.0015	0		

Coefficients	
D ₈₅ = 15.1105 mm	D ₃₀ = 0.6642 mm
D ₆₀ = 5.1755 mm	D ₁₅ = 0.3355 mm
D ₅₀ = 2.1264 mm	D ₁₀ = 0.2580 mm
C _u = 20.060	C _c = 0.330

Classification	
ASTM	Poorly graded SAND with Gravel (SP)
AASHTO	Stone Fragments, Gravel and Sand (A-1-a (1))

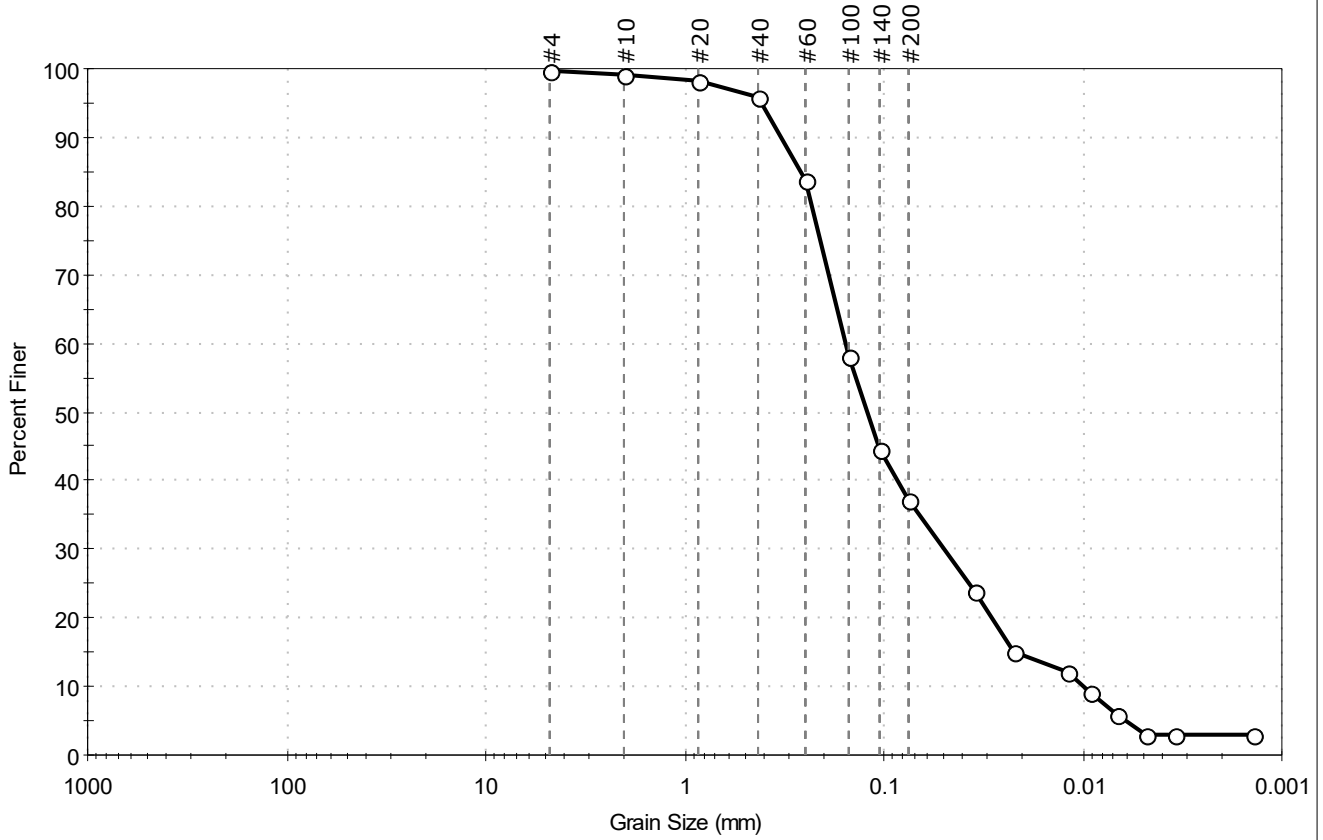
Sample/Test Description	
Sand/Gravel Particle Shape :	ROUNDED
Sand/Gravel Hardness :	HARD
Dispersion Device :	Apparatus A - Mech Mixer
Dispersion Period :	1 minute
Est. Specific Gravity :	2.65
Separation of Sample :	#200 Sieve

**Squannacook
River Sediment
Grain Size
Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: _____ Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: SR-SED-19-01-DEC19 Test Date: 03/04/20 Checked By: jsc
 Depth: 0-0.5 ft Test Id: 546009
 Test Comment: ---
 Visual Description: Moist, dark gray silty sand
 Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.1	62.7	37.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	96		
#60	0.25	84		
#100	0.15	58		
#140	0.11	44		
#200	0.075	37		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0349	24		
---	0.0224	15		
---	0.0120	12		
---	0.0092	9		
---	0.0067	6		
---	0.0048	3		
---	0.0034	3		
---	0.0014	3		

Coefficients

D ₈₅ = 0.2624 mm	D ₃₀ = 0.0494 mm
D ₆₀ = 0.1556 mm	D ₁₅ = 0.0224 mm
D ₅₀ = 0.1220 mm	D ₁₀ = 0.0100 mm
C _u = 15.560	C _c = 1.568

Classification

ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description

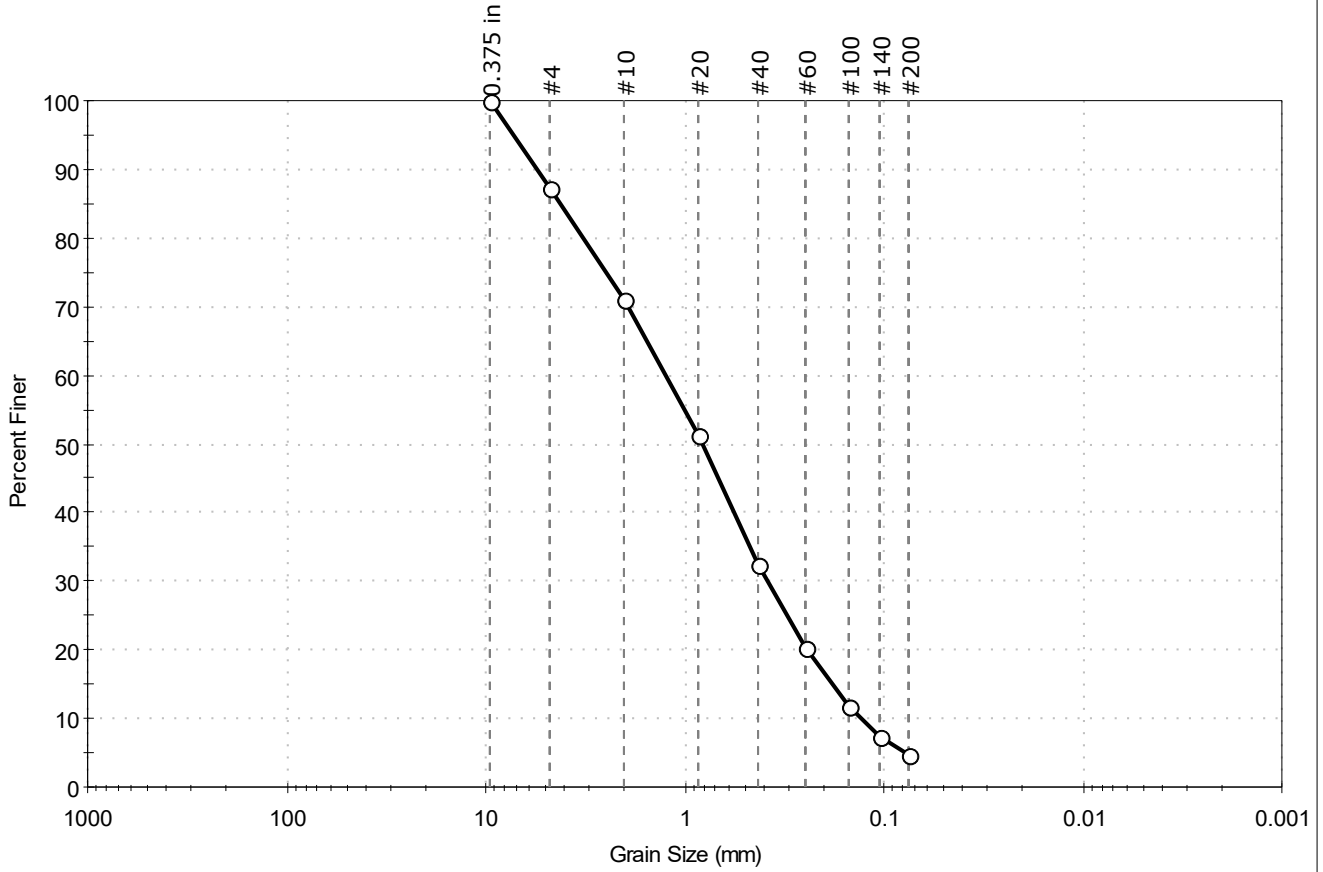
Sand/Gravel Particle Shape : ---
 Sand/Gravel Hardness : ---
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Est. Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

**Willow's
Brook
Sediment
Grain Size
Graphs**



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	WAB-SED-19-01-DEC19	Test Date:	03/04/20
Depth:	0-0.5 ft	Test Id:	546008
Test Comment:	---		
Visual Description:	Moist, very dark grayish brown sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	12.8	82.5	4.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	87		
#10	2.00	71		
#20	0.85	51		
#40	0.42	32		
#60	0.25	20		
#100	0.15	12		
#140	0.11	7		
#200	0.075	4.7		

Coefficients	
D ₈₅ = 4.2146 mm	D ₃₀ = 0.3830 mm
D ₆₀ = 1.2348 mm	D ₁₅ = 0.1816 mm
D ₅₀ = 0.8097 mm	D ₁₀ = 0.1295 mm
C _u = 9.535	C _c = 0.917

Classification	
ASTM	Poorly graded SAND (SP)
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (1))

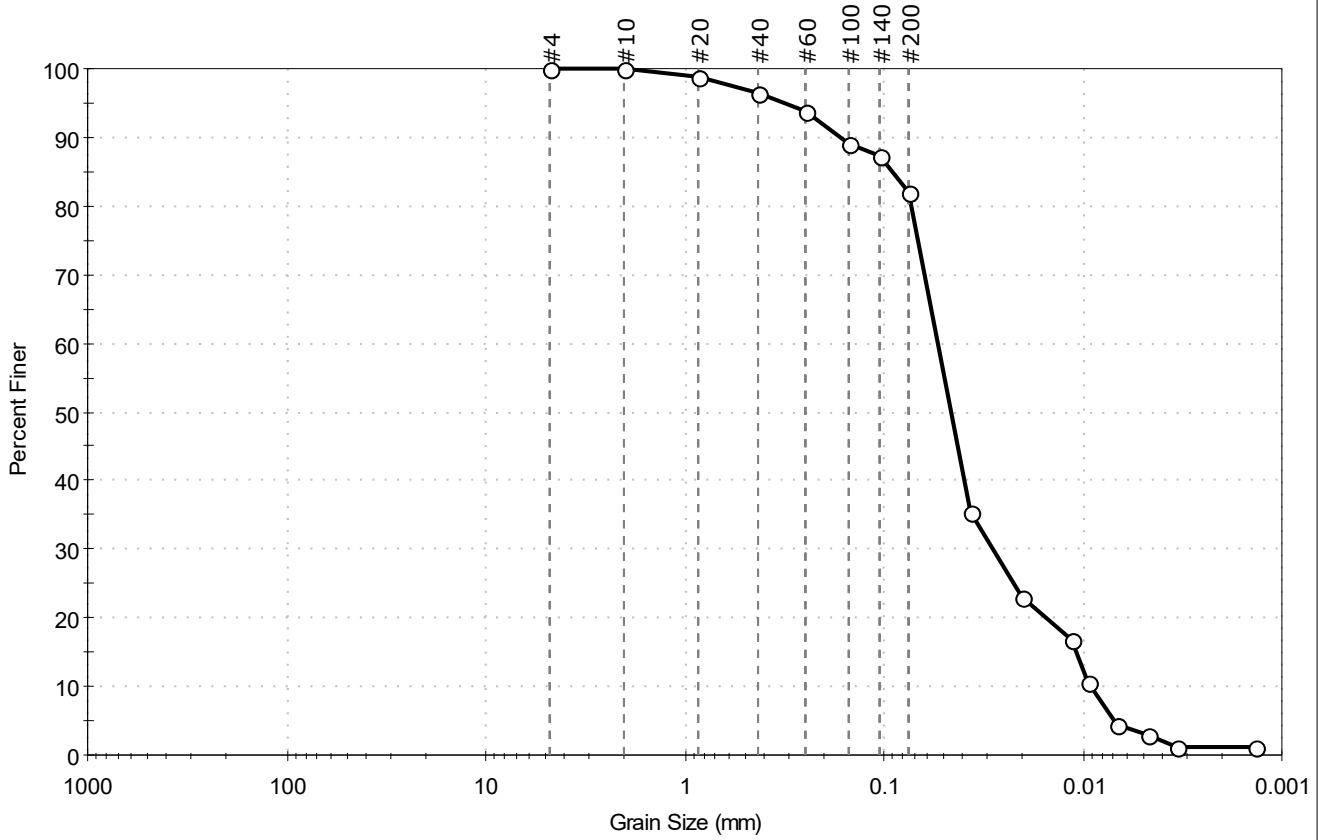
Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

**Bower's
Brook
Sediment
Grain Size
Graphs**



Client: KOMAN Government Solutions, LLC
 Project: PFAS Remedial Investigation
 Location: Project No: GTX-310909
 Boring ID: --- Sample Type: bag Tested By: ckg
 Sample ID: BB-SED-20-01-MAY20 Test Date: 08/28/20 Checked By: bfs
 Depth: --- Test Id: 572436
 Test Comment: ---
 Visual Description: Moist, very dark brown silt with sand
 Sample Comment: Sample contains organics and removed one unrepresentative 1.5 inch rock

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	18.1	81.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	97		
#60	0.25	94		
#100	0.15	89		
#140	0.11	87		
#200	0.075	82		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0368	35		
---	0.0203	23		
---	0.0114	17		
---	0.0094	11		
---	0.0067	4		
---	0.0048	3		
---	0.0034	1		
---	0.0014	1		

Coefficients	
D ₈₅ = 0.0916 mm	D ₃₀ = 0.0284 mm
D ₆₀ = 0.0536 mm	D ₁₅ = 0.0108 mm
D ₅₀ = 0.0460 mm	D ₁₀ = 0.0091 mm
C _u = 5.890	C _c = 1.654

Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

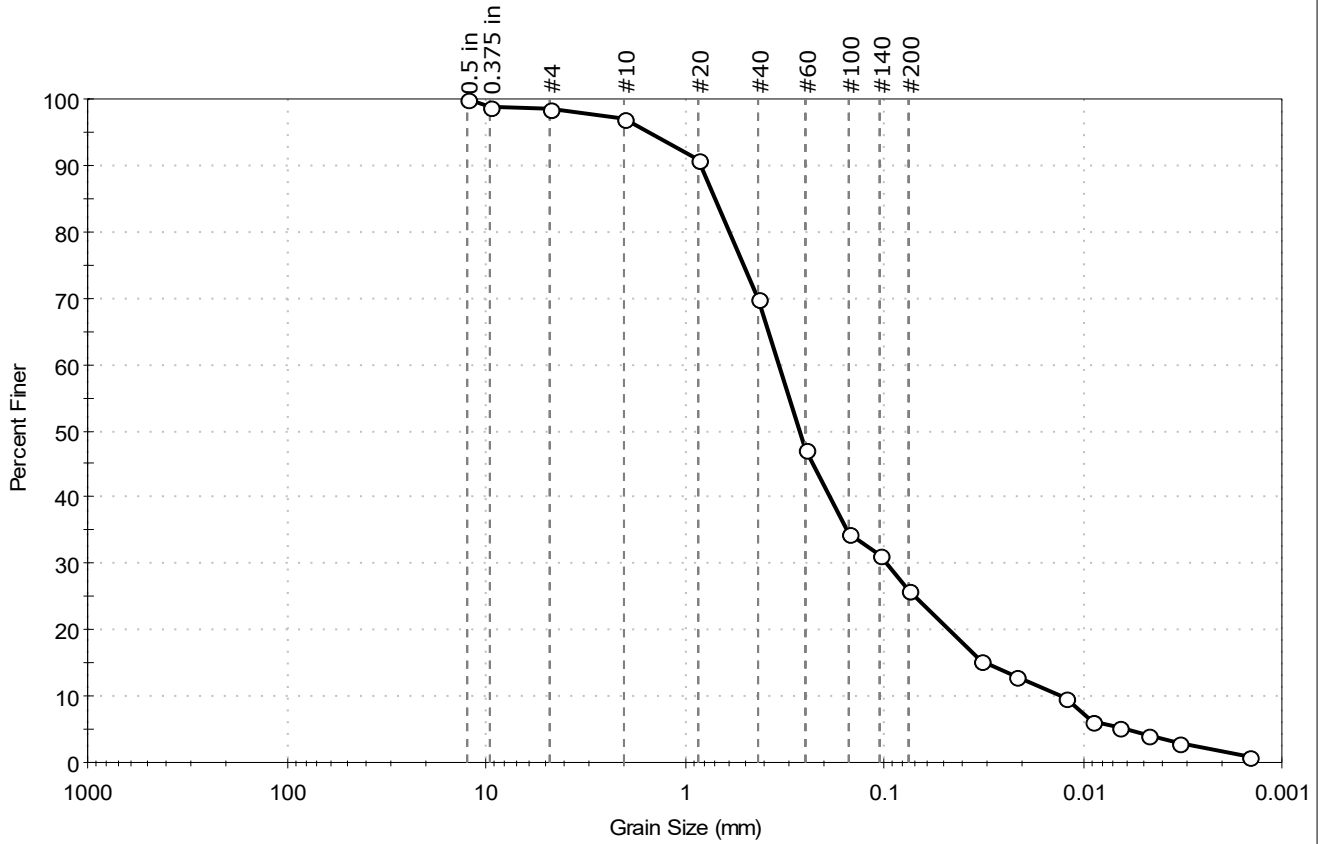
Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

**Flannagan's
Pond
Sediment
Grain Size
Graphs**



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	FP-SED-20-01-MAY20	Test Date:	08/28/20
Depth:	---	Test Id:	572438
Test Comment:	---		
Visual Description:	Moist, dark brown silty sand		
Sample Comment:	Sample contains organics		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	1.5	72.7	25.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	99		
#10	2.00	97		
#20	0.85	91		
#40	0.42	70		
#60	0.25	47		
#100	0.15	35		
#140	0.11	31		
#200	0.075	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0325	15		
---	0.0218	13		
---	0.0123	10		
---	0.0089	6		
---	0.0065	5		
---	0.0047	4		
---	0.0033	3		
---	0.0015	1		

<u>Coefficients</u>	
D ₈₅ = 0.6983 mm	D ₃₀ = 0.0980 mm
D ₆₀ = 0.3367 mm	D ₁₅ = 0.0304 mm
D ₅₀ = 0.2670 mm	D ₁₀ = 0.0133 mm
C _u = 25.316	C _c = 2.145

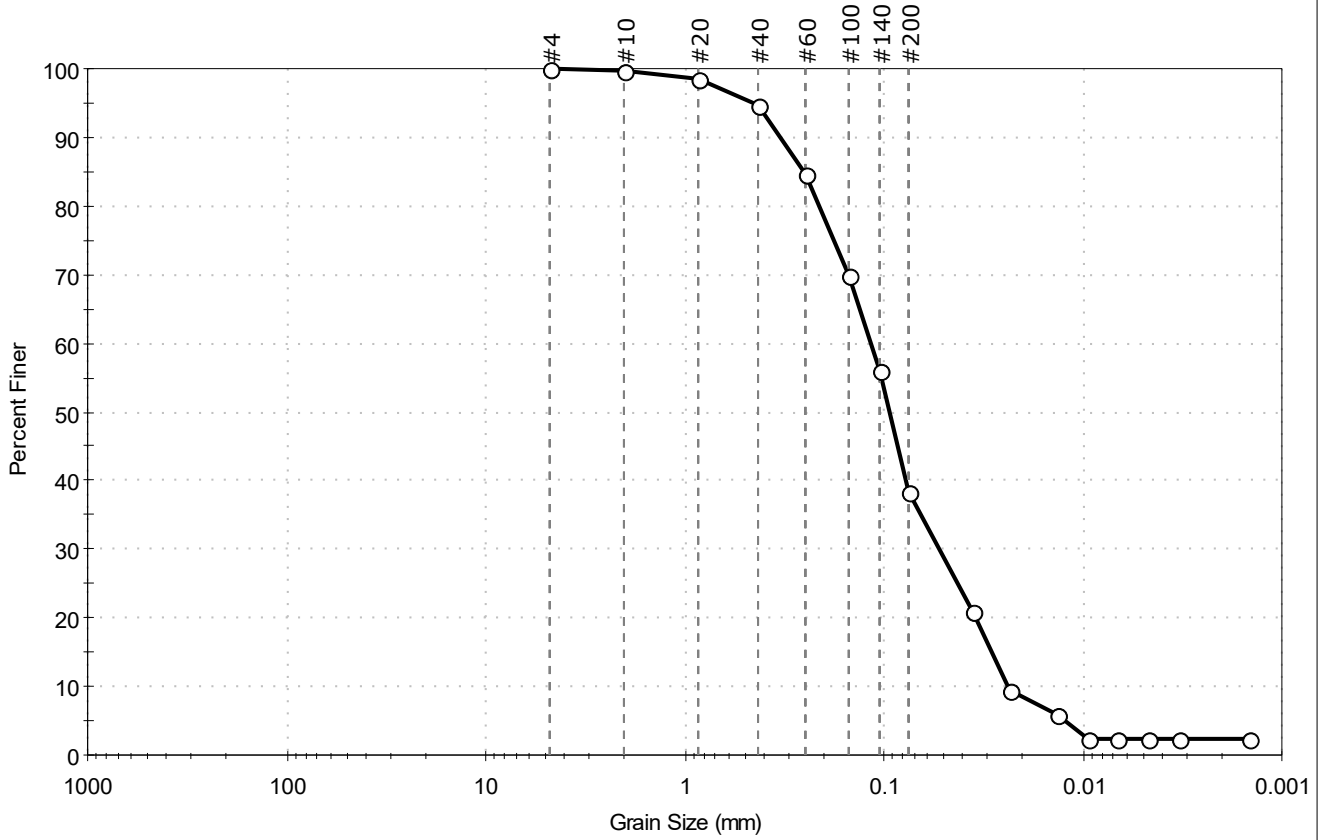
<u>Classification</u>	
<u>ASTM</u>	N/A
<u>AASHTO</u>	Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u>
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



Client:	KOMAN Government Solutions, LLC		
Project:	PFAS Remedial Investigation		
Location:		Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag
Sample ID:	FP-SED-20-02-MAY20	Test Date:	08/28/20
Depth:	---	Test Id:	572437
Test Comment:	---		
Visual Description:	Moist, brown silty sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	61.6	38.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	95		
#60	0.25	85		
#100	0.15	70		
#140	0.11	56		
#200	0.075	38		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0356	21		
---	0.0233	9		
---	0.0134	6		
---	0.0095	2		
---	0.0067	2		
---	0.0048	2		
---	0.0033	2		
---	0.0015	2		

Coefficients	
D ₈₅ = 0.2559 mm	D ₃₀ = 0.0524 mm
D ₆₀ = 0.1171 mm	D ₁₅ = 0.0286 mm
D ₅₀ = 0.0942 mm	D ₁₀ = 0.0237 mm
C _u = 4.941	C _c = 0.989

Classification	
ASTM	N/A
AASHTO	Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



APPENDIX H ANALYTICAL RESULTS

H-1

PFAS in Groundwater at Existing Monitoring Wells

AOC 20

Existing Monitoring Well Results

**PFAS in Groundwater at Monitoring Well Locations
AOC 20**

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
MW-01A	18	33	218.71	193.21	6/15/2017	N	143	205	209	33	110		43	13	6.2					3.9					
	18	33	218.71	193.21	4/30/2019	N	18.3	37.7	46.3	3.3	15	< 1.9	5.4	14	< 1.9	< 39	< 19	< 19	< 19	< 1.9	< 1.9	8.6	< 3.9	< 3.9	< 1.9
MW-02A	18	33	223.65	198.15	6/2/2017	N	103	180	193	68	35		8.8	60	8.4					13					
	18	33	223.65	198.15	4/30/2019	N	250	649	897	110	140	1.1	30	360	7.6	< 38	< 19	< 19	< 19	48	< 1.9	200	< 3.8	< 3.8	< 1.9
MW-04	7	22	214.72	200.22	6/2/2017	N	157	214	229	75	82		22	26	8.6					15					
	7	22	214.72	200.22	4/30/2019	N	168	218	250	130	38	3.7	20	15	11	< 38	< 19	< 19	< 19	6.6	< 1.9	26	< 3.8	< 3.8	< 1.9
MW-06	14	29	231.71	210.21	5/6/2019	N	0	0	0	< 3.8	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
MW-07	20.5	35.5	241.20	213.20	4/30/2019	N	0	0	0	< 3.7	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	20.5	35.5	241.20	213.20	4/30/2019	FD	0	0	0	< 3.7	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
MW-WC1A	6.45	17.95	209.69	197.49	5/6/2019	N	11.5	15.7	18.3	4.9	6.6	< 2	1.7	2.5	< 2	< 39	< 20	< 20	< 20	0.79	< 2	1.8	< 3.9	< 3.9	< 2
MW-WC2	5.4	19.9	210.40	197.75	5/6/2019	N	38.0	51.7	78.2	< 3.9	38	< 2	12	1.7	< 2	< 39	< 20	< 20	< 20	0.5	< 2	26	< 3.9	< 3.9	< 2
PZ-1	70	75	272.10	199.60	5/7/2019	N	244	317	354	150	94	5.9	23	26	18	< 38	< 19	< 19	< 19	9.7	< 1.9	27	< 3.8	< 3.8	< 1.9
PZ-2	95	100	272.10	174.60	5/7/2019	N	173	212	255	130	43	3.6	18	12	5.1	< 38	< 19	< 19	< 19	11	< 1.9	32	< 3.8	< 3.8	< 1.9
PZ-5	25	30	224.30	196.80	4/30/2019	N	142	194	245	95	47	3	25	18	5.7	< 37	< 19	< 19	< 19	9.5	< 1.9	42	< 3.7	< 3.7	< 1.9
PZ-6	15	20	218.90	201.40	4/30/2019	N	38.0	48.9	55.3	28	10	0.74	5.3	3.1	1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	6.4	< 3.7	< 3.7	< 1.8

Notes:

Results shown are displayed as parts per trillion (ppt).

bgs = below ground surface.

ft = feet.

EPA = U.S. Environmental Protection Agency.

LHA = Lifetime Health Advisory.

MassDEP = Massachusetts Department of Environmental Protection.

MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).

NAVD88 = North American Vertical Datum 1988.

Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS.

Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).

AOC 50

Existing Monitoring Well Results

PFAS in Groundwater at Monitoring Well Locations
AOC 50

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
G6M-01-01X	130	150	263.62	123.62	5/1/2019	N	64.0	129	141	50	14	<1.9	2.4	63	<1.9	<39	<19	<19	<19	3	<1.9	8.4	<3.9	<3.9	<1.9
G6M-02-01X	80	95	263.12	175.62	4/26/2019	N	427	841	923	330	97	<1.9	13	400	1	<38	<19	<19	<19	23	<1.9	58	<3.8	1.2	<1.9
	80	95	263.12	175.62	10/16/2019	N	450	865	949	330	120	<1.8	14	400	0.95	<36	<18	<18	<18	23	<1.8	61	<3.6	<3.6	<1.8
	80	95	263.12	175.62	5/7/2020	N	430	845	924	330	100	<1.8	14	400	0.96	<36	<18	<18	<18	24	<1.8	55	<3.6	<3.6	<1.8
G6M-02-06X	55	65	204.72	144.72	5/6/2019	N	70.0	155	166	52	18	<1.9	3.7	81	0.55	<39	<19	<19	<19	2.3	<1.9	8.9	<3.9	<3.9	<1.9
G6M-02-07X	30	40	207.74	172.74	4/29/2019	N	64.0	137	153	40	24	1.7	7.1	61	3.3	<38	<19	<19	<19	4.3	<1.9	12	<3.8	<3.8	<1.9
G6M-02-08X	60	70	222.72	157.72	5/2/2019	N	50.0	166	184	26	24	<2	5	110	0.96	<40	<20	<20	<20	3.7	<2	14	<4	<4	<2
G6M-02-09X	90	105	262.66	165.16	5/2/2019	N	3.90	34.9	36.2	1	2.9	<1.7	<1.7	31	<1.7	<34	<17	<17	<17	1.3	<1.7	<1.7	<3.4	<3.4	<1.7
G6M-02-13X	110	120	263.81	148.81	5/2/2019	N	54.0	120	132	42	12	<1.8	2.4	64	<1.8	<37	<18	<18	<18	2.8	<1.8	8.4	<3.7	<3.7	<1.8
G6M-03-11X	115	130	263.91	141.41	5/1/2019	N	38.0	94.0	101	28	10	<1.9	2	54	<1.9	<38	<19	<19	<19	<1.9	<1.9	6.9	<3.8	<3.8	<1.9
	115	130	263.91	141.41	5/1/2019	FD	33.0	91.3	97.8	23	10	<1.9	2.3	56	<1.9	<38	<19	<19	<19	<2	<1.9	6.5	<3.8	<3.8	<1.9
G6M-04-03X	85	95	264.78	174.78	4/26/2019	N	74.0	148	162	57	17	<1.9	3.6	70	0.89	<37	<19	<19	<19	3	<1.9	11	<3.7	<3.7	<1.9
G6M-04-06X	95	105	262.2	162.2	5/1/2019	N	24.3	98.3	114	4.3	20	<1.9	3	71	<1.9	<37	<19	<19	<19	3.3	<1.9	12	<3.7	<3.7	<1.9
G6M-04-08X	80	90	203.2	118.2	4/30/2019	N	125	165	194	93	32	3.2	16	14	6.9	<37	<18	2.6	<18	5.3	<1.8	21	<3.7	<3.7	<1.8
G6M-04-10X	52	62	222.46	165.46	4/29/2019	N	246	423	455	210	36	1.9	9.2	160	5.4	<38	<19	<19	<19	6	1	23	<3.8	0.8	1.5
	52	62	222.46	165.46	4/29/2019	FD	235	399	428	200	35	0.82	9.1	150	4.2	<39	<20	<20	<20	6.2	<2	23	<3.9	<3.9	<2
G6M-04-11X	35	45	228.27	188.27	4/25/2019	N	94.0	182	194	78	16	<1.9	3.2	83	1.4	<38	<19	<19	<19	2.4	<1.9	10	<3.8	<3.8	<1.9
G6M-04-13X	30	40	224.17	189.17	5/8/2019	N	1.00	10.8	10.8	<3.8	1	<1.9	<1.9	9.8	<1.9	<38	<19	<19	<19	<1.9	<1.9	<1.9	<3.8	<3.8	<1.9
G6M-04-14X	80	90	208.51	123.51	4/30/2019	N	96.0	222	263	57	39	1.9	10	110	3.9	<37	<19	<19	<19	5.7	11	17	1.3	4.9	1.6
G6M-13-02X	115	125	264.03	144.03	5/2/2019	N	410	846	929	300	110	<1.8	15	420	1.4	<36	<18	<18	<18	20	<1.8	63	<3.6	<3.6	<1.8
G6M-13-03X	80	90	264.78	179.78	5/3/2019	N	349	722	774	280	69	<1.7	11	360	1.5	<34	<17	<17	<17	13	<1.7	39	<3.4	<3.4	<1.7
G6M-13-05X	45	55	223.86	173.86	4/26/2019	N	570	1,060	1,200	410	160	<2	24	470	1.1	<39	<20	<20	<20	44	<2	93	<3.9	<3.9	<2
	45	55	223.86	173.86	10/10/2019	N	580	1,240	1,380	400	180	<1.8	27	630	0.98	<37	<18	<18	<18	52	<1.8	94	<3.7	<3.7	<1.8
	45	55	223.86	173.86	5/7/2020	N	510	1,190	1,340	310	200	<1.9	27	650	1	<38	<19	<19	<19	53	<1.9	100	<3.8	<3.8	<1.9
G6M-18-01	116	126	264.58	143.58	10/14/2019	N	5,200	10,580	13,500	1200	4000	<1.9	170	5200	7.9	9.8	8.2	<19	<19	160	<1.9	2700	<3.8	<3.8	<1.9
	116	126	264.58	143.58	5/7/2020	N	5,100	10,900	13,600	1500	3600	<1.7	160	5600	8.7	18	7.1	<17	<17	110	<1.7	2600	<3.4	<3.4	<1.7
G6M-92-10X	9	19	222.4	208.4	4/26/2019	N	40.4	196	212	5.4	35	<1.9	5.5	150	<1.9	<38	<19	<19	<19	2.6	<1.9	13	<3.8	<3.8	<1.9
G6M-93-13X	9	19	222.9	208.9	4/29/2019	N	13.2	27.4	30.9	7.7	5.5	<1.9	5.4	8	0.81	<39	<19	<19	<19	<1.9	<1.9	3.5	<3.9	<3.9	<1.9
G6M-95-20X	18	23	222.51	202.01	4/26/2019	N	27.0	58.5	65.2	14	13	<1.9	5.2	25	1.3	<39	<19	<19	<19	<1.9	<1.9	6.7	<3.9	<3.9	<1.9
G6M-96-22A	40	50	216.3	171.3	5/6/2019	N	178	315	338	150	28	<1.9	5.3	130	1.8	<38	<19	<19	<19	5.2	<1.9	18	<3.8	<3.8	<1.9
G6M-96-22B	65.5	70.5	216.4	148.4	5/6/2019	N	173	298	319	150	23	<2	4.3	120	1.1	<39	<20	<20	<20	5.1	<2	15	<3.9	<3.9	<2
G6M-96-25A	9	18.7	223.28	209.43	4/25/2019	N	25.7	50.7	71.5	16	9.7	<1.9	5.8	18	1.2	<38	<19	<19	<19	1.8	<1.9	19	<3.8	<3.8	<1.9
	9	18.7	223.28	209.43	4/25/2019	FD	27.0	51.1	73.8	16	11	<1.8	5.8	17	1.3	<36	<18	<18	<18	1.7	<1.8	21	<3.6	<3.6	<1.8
G6M-96-25B	48	58	223.89	170.89	5/2/2019	N	107	163	176	100	7.2	<1.9	3.1	53	<1.9	<38	<19	<19	<19	2.4	<1.9	10	<3.8	<3.8	<1.9
G6M-96-26A	8	18	222.83	209.83	5/3/2019	N	11.0	33.1	42.6	<3.8	11	0.94	3.1	17	1.1	<38	<19	<19	<19	2.3	<1.9	6.4	<3.8	<3.8	0.78
G6M-96-26B	68	78	222.89	149.89	4/25/2019	N	0.0	2.70	2.70	<3.9	<2	<2	<2	2.7	<2	<39	<20	<20	<20	<2	<2	<2	<3.9	<3.9	<2
G6M-97-09B	71.5	81.5	257.3	180.8	5/3/2019	N	5.97	24.7	35.1	0.97	5	0.45	6.8	8.9	2.6	<35	<18	<18	<18	1.8	0.6	7.3	<3.5	<3.5	0.66
G6P-97-05X	33	43	234.59	196.59	5/8/2019	N	1,140	3,900	4,890	520	620	<1.9	160	2600	2.2	7.7	<19	<19	<19	51	<1.9	930	<3.9	<3.9	<1.9
	33	43	234.59	196.59	10/15/2019	N	860	1,860	2,060	570	290	1.2	30	970	2.6	<38	<19	3	<19	31	<1.9	160	<3.8	<3.8	<1.9
	33	43	234.59	196.59	10/15/2019	FD	860	1,790	1,980	570	290	0.93	29	900	2.6	<37	<18	2.6	<18	32	<1.8	150	<3.7	<3.7	<1.8
	33	43	234.59	196.59	5/7/2020	N	1,540	2,270	2,410	1300	240	0.87	26	700	4.3	<39	<19	<19	<19	22	<1.9	120	<3.9	<3.9	<1.9
	33	43	234.59	196.59	5/7/2020	FD	1,540	2,270	2,410	1300	240	0.78	25	700	4.3	<38	<19	<19	<19	22	<1.9	120	<3.8	<3.8	<1.9
MW-6	125	135	263.59	133.59	5/8/2019	N	176	352	387	140	36	<2	5.9	170	0.51	<39	<20	<20	<20	9.3	<2	25	<3.9	<3.9	<2
MW-7 (IT)	22	32	238.2*	211.2*	10/18/2019	N	1,350	2,710	3,010	1000	350	0.79	54	1300	3.9	13	<20	<20	<20	34	<2	250	<3.9	<3.9	<2
XSA-12-96X	120	130	266.56	141.56	5/7/2019	N	182	477	547	97	85	<1.9	14	280	0.6	<38	<19	<19	<19	17	<1.9	53	<3.8	<3.8	<1.9
	120	130	266.56	141.56	11/6/2019	N	188	451	512	110	78	<1.9	12	250	0.68	<38	<19	<19	<19	16	<1.9	45	<3.8	<3.8	<1.9
	120	130	266.56	141.56	5/8/2020	N	199	493	559	120	79	<1.9	13	280	0.63	<38	<19	<19	<19	17	<1.9	49	<3.8	<3.8	<1.9
XSA-12-98X	60	70	204.14	139.14	4/29/2019	N	78.0	166	190	41	37	1.2	7.3	77	2.2	<39	<19	<19	<19	4.9	<1.9	19	<3.9	<3.9	<1.9
	60	70	204.14	139.14	10/9/2019	N	41.0	110	123	20	21	<1.9	3.7	65	<1.9	<39	<19	<19	<19	3.4	<1.9	10	<3.9	<3.9	<1.9
	60	70	204.14	139.14	5/7/2020	N	80.0	142	164	52	28	1.4	10	47	3.3	<36	<18	<18	<18	5	<1.8	17	<3.6	<3.6	<1.8

Notes:
* Ground surface and mid-point elevation for MW-7 (IT) are estimated.

Results shown are displayed as parts per trillion (ppt).

bgs = below ground surface.

ft = feet.

EPA = U.S. Environmental Protection Agency.

LHA = Lifetime Health Advisory.

H-2

PFAS in Groundwater at Vertical Profile Locations

AOCs 20 and 21

Vertical Profile Results

PFAS in Groundwater at Vertical Profile Locations
AOC 20/21

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
20VP-19-01	17	21	218.82	199.82	7/30/2019	N	23.5	27.7	30.4	19	4.5	0.89	2	<1.9	1.3	<39	<19	<19	<19	0.51	<1.9	2.2	<3.9	<3.9	<1.9
20VP-19-02	9	13	208.25	197.25	9/3/2019	N	73.0	95.3	119	62	11	6.5	7.9	3.9	4	<39	<19	<19	<19	0.79	<1.9	23	<3.9	<3.9	<1.9
	19	23	208.25	187.25	9/4/2019	N	57.4	69.6	75.8	49	8.4	1.2	4.9	4.1	2	<38	<19	<19	<19	1.3	<1.9	4.9	<3.8	<3.8	<1.9
	19	23	208.25	187.25	9/4/2019	FD	56.3	68.2	74.2	48	8.3	1.2	4.7	4.1	1.9	<39	<20	<20	<20	1.3	<2	4.7	<3.9	<3.9	<2
	29	33	208.25	177.25	9/4/2019	N	65.0	84.4	99.5	50	15	2.1	8.7	5.5	3.1	<39	<19	<19	<19	2.1	<1.9	13	<3.9	<3.9	<1.9
20VP-19-03	9	13	209.23	198.23	7/31/2019	N	31.4	41.9	51.2	9.4	22	<1.9	5.6	4.9	<1.9	<38	<19	<19	<19	2	<1.9	7.3	<3.8	<3.8	<1.9
	19	23	209.23	188.23	7/31/2019	N	17.5	23.4	33.9	2.5	15	<1.9	3.6	2.3	<1.9	<39	<19	<19	<19	1.3	<1.9	9.2	<3.9	<3.9	<1.9
	29	33	209.23	178.23	7/31/2019	N	58.3	78.2	120	6.3	52	<1.9	17	2.9	<1.9	<38	<19	<19	<19	0.69	<1.9	41	<3.8	<3.8	<1.9
	39	43	209.23	168.23	7/31/2019	N	81.0	117	162	13	68	<1.9	22	13	0.64	<39	<19	<19	<19	2.2	<1.9	43	<3.9	<3.9	<1.9
20VP-19-04	49	53	209.23	158.23	8/1/2019	N	74.4	99.8	144	7.4	67	<1.9	20	4.7	0.67	<38	<19	<19	<19	0.82	<1.9	43	<3.8	<3.8	<1.9
	54	58	209.23	153.23	8/1/2019	N	110	161	204	44	66	1.2	20	26	4.1	<39	<19	<19	<19	3.9	<1.9	39	<3.9	<3.9	<1.9
	19	23	225.1	204.1	7/22/2019	N	197	264	297	140	57	5.8	14	42	5.6	<36	<18	<18	<18	8.3	<1.8	24	<3.6	<3.6	<1.8
	29	33	225.1	194.1	7/22/2019	N	180	248	290	110	70	4.9	17	40	6.1	<37	<18	<18	<18	8.5	<1.8	33	<3.7	<3.7	<1.8
20VP-19-05	39	43	225.1	184.1	7/23/2019	N	154	229	274	89	65	5.8	20	43	6	<37	<19	<19	<19	8.3	<1.9	37	<3.7	<3.7	<1.9
	49	53	225.1	174.1	7/23/2019	N	142	204	238	81	61	3.3	19	34	5.5	<37	<19	<19	<19	5.5	<1.9	29	<3.7	<3.7	<1.9
	18	22	220.17	200.17	7/22/2019	N	19.3	28.5	35.2	8.3	11	1.7	5.9	<1.9	1.6	<37	<19	<19	<19	<1.9	<1.9	6.7	<3.7	<3.7	<1.9
	63	67	270.07	205.07	8/2/2019	N	88.0	118	162	47	41	3.3	11	12	3.8	<41	<21	<21	<21	8.9	<2.1	35	<4.1	<4.1	<2.1
20VP-19-06	73	77	270.07	195.07	8/2/2019	N	61.0	85.0	114	41	20	2.4	7.6	10	4	<39	<19	<19	<19	6.6	<1.9	22	<3.9	<3.9	<1.9
	83	87	270.07	185.07	8/5/2019	N	76.0	115	158	51	25	5.9	16	14	3	<39	<20	<20	<20	8.5	<2	33	<3.9	<3.9	1.6
	93	97	270.07	175.07	8/5/2019	N	90.0	126	162	65	25	4.9	15	10	6	<38	<19	<19	<19	4.2	<1.9	31	<3.8	<3.8	1.3
	103	107	270.07	165.07	8/5/2019	N	90.0	125	162	60	30	4.3	13	12	6	<37	<19	<19	<19	8.2	<1.9	28	<3.7	<3.7	0.69
	113	117	270.07	155.07	8/6/2019	N	95.0	128	168	66	29	4	12	11	6.4	<37	<19	3.7	<19	5.3	<1.9	30	<3.7	<3.7	0.87
	123	127	270.07	145.07	8/6/2019	N	59.0	88.2	124	38	21	3.7	12	9.7	3.8	<37	<19	<19	<19	8.2	<1.9	28	<3.7	<3.7	<1.9
	133	137	270.07	135.07	8/6/2019	N	67.0	94.0	131	40	27	2.4	12	10	2.6	<37	<19	2.8	<19	7.1	<1.9	27	<3.7	<3.7	<1.9
	143	147	270.07	125.07	8/7/2019	N	113	154	192	83	30	3.3	20	13	4.4	<37	<18	<18	<18	7.8	<1.8	30	<3.7	<3.7	<1.8
20VP-19-07	152	156	270.07	116.07	8/8/2019	N	107	143	180	75	32	4.1	13	13	5.7	<42	<21	3.6	<21	5.4	<2.1	27	<4.2	<4.2	1.5
	63	67	271.02	206.02	7/25/2019	N	93.0	119	163	70	23	0.83	11	9.2	4.6	<38	<19	<19	<19	9.5	<1.9	35	<3.8	<3.8	<1.9
	73	77	271.02	196.02	7/26/2019	N	112	158	201	72	40	5	24	14	2.6	<37	<19	<19	<19	5.9	1.9	35	<3.7	0.85	<1.9
	83	87	271.02	186.02	7/26/2019	N	173	220	252	130	43	6	14	11	16	<38	<19	<19	<19	7.8	<1.9	24	<3.8	<3.8	<1.9
	93	97	271.02	176.02	7/29/2019	N	201	259	307	160	41	5.2	30	15	8.2	<40	<20	<20	<20	10	<2	38	<4	<4	<2
	103	107	271.02	166.02	7/29/2019	N	146	195	228	110	36	4.2	22	15	7.4	<52	<26	<26	<26	6.7	<2.6	27	<5.2	<5.2	<2.6
	113	117	271.02	156.02	7/30/2019	N	141	180	220	110	31	5.1	18	11	4.8	<38	<19	<19	<19	8	<1.9	32	<3.8	<3.8	<1.9
	123	127	271.02	146.02	7/30/2019	N	149	187	238	120	29	5.7	16	11	5.1	<57	<28	<28	<28	9	4.1	35	<5.7	2.3	1.2
	123	127	271.02	146.02	7/30/2019	FD	138	179	220	110	28	6.2	17	12	5.4	<60	<30	<30	<30	8.5	<3	33	<6	<6	<3
	133	137	271.02	136.02	7/31/2019	N	149	187	223	120	29	4.2	17	11	5.5	<37	<19	<19	<19	7	<1.9	29	<3.7	<3.7	<1.9
21VP-19-01	143	147	271.02	126.02	8/1/2019	N	149	189	224	120	29	3.7	19	12	5.7	<41	<21	<21	<21	6.5	<2.1	28	<4.1	<4.1	<2.1
	153	157	271.02	116.02	8/1/2019	N	167	213	255	130	37	5.8	21	14	5.6	<50	<25	<25	<25	6.5	<2.5	35	<5	<5	<2.5
	23	27	222.08	197.08	7/23/2019	N	153	190	231	110	43	4.6	14	12	6.3	<38	<19	<19	<19	12	<1.9	29	<3.8	<3.8	<1.9
	33	37	222.08	187.08	7/23/2019	N	256	304	341	160	96	1.9	16	19	11	<38	<19	<19	<19	12	<1.9	25	<3.8	<3.8	<1.9
	43	47	222.08	177.08	7/23/2019	N	214	243	284	190	24	4.9	9.5	5.8	8.5	<37	<18	<18	<18	14	<1.8	27	<3.7	<3.7	<1.8
	53	57	222.08	167.08	7/23/2019	N	105	139	182	49	56	2.8	13	15	3	<38	<19	<19	<19	12	<1.9	31	<3.8	<3.8	<1.9
	53	57	222.08	167.08	7/23/2019	FD	105	139	181	51	54	2.6	13	15	3.2	<38	<19	<19	<19	12	<1.9	30	<3.8	<3.8	<1.9
	63	67	222.08	157.08	7/23/2019	N	81.0	114	146	54	27	2.4	15	12	3.3	<38	<19	<19	<19	8	<1.9	24	<3.8	<3.8	<1.9
21VP-19-02	73	77	222.08	147.08	7/23/2019	N	96.0	131	164	64	32	2.2	15	14	3.8	<39	<20	<20	<20	7.1	<2	26	<3.9	<3.9	<2
	83	87	222.08	137.08	7/24/2019	N	109	150	187	75	34	3.6	17	16	4.6	<38	<19	<19	<19	7.3	<1.9	29	<3.8	<3.8	<1.9
	91	95	222.08	129.08	7/24/2019	N	116	161	193	80	36	3.3	17	20	4.2	<36	<18	<18	<18	6	<1.8	26	<3.6	<3.6	<1.8
	13	17	211.99	196.99	7/24/2019	N	54.0	61.4	65.6	38	16	<1.8	3.3	4.1	<1.8	<36	<18	<18	<18	2	<1.8	2.2	<3.6	<3.6	<1.8
	23	27	211.99	186.99	7/24/2019	N	161	202	227	120	41	1.7	13	18	8	<37	<18	<18	<18	7.3	<1.8	18	<3.7	<3.7	<1.8
	33	37	211.99	176.99	7/24/2019	N	100	137	163	73	27	3.1	13	15	5.4	<37	<18	<18	<18	5.2	<1.8	21	<3.7	<3.7	<1.8
	43	47	211.99	166.99	7/25/2019	N	101	136	162	72	29	3.3	12	15	4.7	<37	<19	<19	<19	4.8	<1.9	21	<3.7	<3.7	<1.9
	53	57	211.99	156.99	7/25/2019	N	111	153	181	79	32	3.2	15	18	5.5	<37	<19	<19	<19	6.5	<1.9	22	<3.7	<3.7	<1.9
	63	67	211.99	146.99	7/25/2019	N	120	164	193	86	34	3.5	15	19	6	<38	<19	<19	<19	6.2	<1.9	23	<3.8	<3.8	<1.9
	63	67	211.99	146.99	7/25/2019	FD	119	162	192	82	37	3.1	14	20	6	<42	<21	<21	<21	5.9	<2.1	24	<4.2	<4.2	<2.1
21VP-19-02	73	77	211.99	136.99	7/25/2019	N	127	174	203	86	41	3.4	15	22	6.1	<38	<19	<19	<19	6.7	<1.9	23	<3.8	<3.8	

PFAS in Groundwater at Vertical Profile Locations
AOC 20/21

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
21VP-19-02	103	107	211.99	106.99	7/26/2019	N	114	160	189	76	38	2.7	15	22	5.8	< 37	< 19	< 19	< 19	5.7	< 1.9	24	< 3.7	< 3.7	< 1.9
	113	117	211.99	96.99	7/29/2019	N	149	200	231	100	49	4.4	16	22	9	< 42	< 21	< 21	< 21	6.7	< 2.1	24	< 4.2	< 4.2	< 2.1
	123	127	211.99	86.99	7/29/2019	N	159	214	246	100	59	3.4	16	27	8.2	< 38	< 19	3.2	< 19	6.5	< 1.9	23	< 3.8	< 3.8	< 1.9

Notes:

Results shown are displayed as parts per trillion (ppt).

bgs = below ground surface.

ft = feet.

EPA = U.S. Environmental Protection Agency.

LHA = Lifetime Health Advisory.

MassDEP = Massachusetts Department of Environmental Protection.

MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).

NAVD88 = North American Vertical Datum 1988.

Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS.

Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).

AOC 30

Vertical Profile Results

**PFAS in Groundwater at Vertical Profile Locations
AOC 30**

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
30VP-19-01	18	22	221.30	201.30	7/17/2019	N	14.2	29.4	33.2	11	3.2	< 1.9	1.2	14	< 1.9	< 37	< 19	< 19	< 19	0.76	< 1.9	3	< 3.7	< 3.7	< 1.9
	28	32	221.30	191.30	7/17/2019	N	127	215	227	110	17	< 1.9	6.5	80	1.2	< 38	< 19	< 19	< 19	2.4	< 1.9	9.9	< 3.8	< 3.8	< 1.9
30VP-19-02	18	22	221.88	201.88	7/18/2019	N	1.90	11.9	17.5	< 3.8	1.9	< 1.9	0.58	9.4	< 1.9	< 38	< 19	< 19	< 19	0.6	< 1.9	5	< 3.8	< 3.8	< 1.9
	28	32	221.88	191.88	7/19/2019	N	0.00	5.60	6.05	< 3.7	< 1.8	< 1.8	< 1.8	5.6	< 1.8	< 37	< 18	< 18	< 18	0.45	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	28	32	221.88	191.88	7/19/2019	FD	0.00	5.60	6.08	< 3.9	< 2	< 2	< 2	5.6	< 2	< 39	< 20	< 20	< 20	0.48	< 2	< 2	< 3.9	< 3.9	< 2
	38	42	221.88	181.88	7/19/2019	N	66.0	110	118	56	10	< 1.8	3.9	40	< 1.8	< 37	< 18	< 18	< 18	1.8	< 1.8	5.8	< 3.7	< 3.7	< 1.8
30VP-19-03	73	77	268.04	193.04	7/8/2019	N	3,530	6,330	7,880	32	3500	< 2.1	300	2500	< 2.1	< 42	< 21	< 21	< 21	49	< 2.1	1500	< 4.2	< 4.2	< 2.1
	83	87	268.04	183.04	7/8/2019	N	58.0	251	274	44	14	< 2	11	180	1.7	< 40	< 20	< 20	< 20	2.7	< 2	21	< 4	< 4	< 2
	93	97	268.04	173.04	7/10/2019	N	194	683	769	120	74	< 1.9	17	470	1.7	< 38	< 19	< 19	< 19	8.8	< 1.9	77	< 3.8	< 3.8	< 1.9
	103	107	268.04	163.04	7/11/2019	N	347	594	621	300	47	< 1.8	22	220	4.6	< 36	< 18	< 18	< 18	3.8	< 1.8	24	< 3.6	< 3.6	< 1.8
30VP-19-04	113	117	268.04	153.04	7/11/2019	N	232	465	490	180	52	< 1.9	20	210	2.7	< 38	< 19	< 19	< 19	3.3	< 1.9	22	< 3.8	< 3.8	< 1.9
	73	77	266.90	191.90	7/9/2019	N	1.40	21.5	36.6	< 3.7	1.4	< 1.9	5.1	15	< 1.9	< 37	< 19	< 19	< 19	1.1	< 1.9	14	< 3.7	< 3.7	< 1.9
	73	77	266.90	191.90	7/9/2019	FD	1.40	21.5	36.7	< 3.9	1.4	< 1.9	5.1	15	< 1.9	< 39	< 19	< 19	< 19	1.2	< 1.9	14	< 3.9	< 3.9	< 1.9
	83	87	266.90	181.90	7/9/2019	N	0.730	22.4	29.2	< 4.2	0.73	< 2.1	1.7	20	< 2.1	< 42	< 21	< 21	< 21	0.72	< 2.1	6	< 4.2	< 4.2	< 2.1
	93	97	266.90	171.90	7/9/2019	N	0.00	0.00	5.20	< 8	< 4	< 4	< 4	< 5.7	< 4	< 80	< 40	< 40	< 40	< 4	< 4	5.2	< 8	< 8	< 4
	103	107	266.90	161.90	7/10/2019	N	0.00	28.6	58.5	< 3.8	< 1.9	< 1.9	9.6	19	< 1.9	< 38	< 19	< 19	< 19	1.9	< 1.9	28	< 3.8	< 3.8	< 1.9
	113	117	266.90	151.90	7/10/2019	N	39.0	210	383	16	23	< 2.1	11	160	< 2.1	< 42	< 21	< 21	< 21	23	< 2.1	150	< 4.2	< 4.2	< 2.1
30VP-19-05	123	127	266.90	141.90	7/11/2019	N	250	515	596	130	120	< 2	23	240	1.9	< 41	< 20	< 20	< 20	9.5	< 2	72	< 4.1	< 4.1	< 2
	131	135	266.90	133.90	7/11/2019	N	370	645	740	200	170	< 2	23	250	2.2	< 40	< 20	< 20	< 20	11	< 2	84	< 4	< 4	< 2
	20	24	224.10	202.10	7/16/2019	N	53.2	86.5	91.2	51	2.2	1.7	1.3	29	1.3	< 38	< 19	< 19	< 19	1.3	< 1.9	3.4	< 3.8	< 3.8	< 1.9
	30	34	224.10	192.10	7/16/2019	N	68.0	109	124	51	17	0.81	8.1	29	2.6	< 41	< 20	< 20	< 20	1.4	< 2	14	< 4.1	< 4.1	< 2
	40	44	224.10	182.10	7/16/2019	N	84.0	140	150	70	14	0.88	6.4	46	2.3	< 38	< 19	< 19	< 19	1.7	< 1.9	9	< 3.8	< 3.8	< 1.9
30VP-19-06	45	49	224.10	177.10	7/16/2019	N	363	495	570	320	43	1.8	17	110	3.5	8.1	29	< 22	< 22	7.4	< 2.2	30	< 4.3	< 4.3	< 2.2
	73	77	267.20	192.20	7/11/2019	N	980	1,360	1,490	870	110	2.1	63	310	7.7	< 37	56	< 19	< 19	7.1	< 1.9	69	< 3.7	< 3.7	< 1.9
	83	87	267.20	182.20	7/11/2019	N	1,930	2,420	2,600	1800	130	2.3	100	380	9	15	59	< 34	< 34	10	< 3.4	98	< 6.8	< 6.8	< 3.4

Notes:
 Results shown are displayed as parts per trillion (ppt).
 bgs = below ground surface.
 ft = feet.
 EPA = U.S. Environmental Protection Agency.
 LHA = Lifetime Health Advisory.
 MassDEP = Massachusetts Department of Environmental Protection.
 MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
 NAVD88 = North American Vertical Datum 1988.
 Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS.
 Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

AOC 31

Vertical Profile Results

**PFAS in Groundwater at Vertical Profile Locations
AOC 31**

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA	
31VP-19-01	63	67	267.34	202.34	9/3/2019	N	5,830	6,910	8,310	5100	730	2	77	1000	5.3	780	500	< 19	8.6	9.7	< 1.9	100	< 3.8	< 3.8	< 1.9	
	73	77	267.34	192.34	9/3/2019	N	23.3	65.3	72.9	16	7.3	< 1.9	5	37	< 1.9	< 38	< 19	< 19	< 19	0.76	< 1.9	6.8	< 3.8	< 3.8	< 1.9	
	83	87	267.34	182.34	9/3/2019	N	43.2	88.8	111	1.2	42	< 1.9	4.6	41	< 1.9	< 38	< 19	< 19	< 19	1.9	< 1.9	20	< 3.8	< 3.8	< 1.9	
	93	97	267.34	172.34	9/3/2019	N	1,737	3,670	4,180	37	1700	< 1.9	130	1800	< 1.9	120	< 19	< 19	< 19	36	< 1.9	360	< 3.7	< 3.7	< 1.9	
	103	107	267.34	162.34	9/4/2019	N	2,520	4,660	5,440	120	2400	< 1.9	140	2000	< 1.9	160	< 19	< 19	< 19	42	< 1.9	580	< 3.8	< 3.8	< 1.9	
	113	117	267.34	152.34	9/4/2019	N	5,700	9,570	11,900	1800	3900	< 1.9	160	3700	6.8	550	5.8	< 19	< 19	< 19	73	< 1.9	1700	< 3.7	< 3.7	< 1.9
	123	127	267.34	142.34	9/4/2019	N	5,200	10,200	12,800	1100	4100	< 1.9	160	4800	6	51	16	< 19	< 19	< 19	190	< 1.9	2400	< 3.7	< 3.7	< 1.9
	133	137	267.34	132.34	9/5/2019	N	3,760	7,010	8,890	760	3000	< 2	150	3100	3.7	140	20	< 20	< 20	< 20	120	< 2	1600	< 4.1	< 4.1	< 2
	143	147	267.34	122.34	9/5/2019	N	400	780	884	280	120	< 1.9	19	360	0.83	< 38	3	< 19	< 19	< 19	29	< 1.9	72	< 3.8	< 3.8	< 1.9
	143	147	267.34	122.34	9/5/2019	FD	380	778	878	260	120	< 2.2	17	380	0.76	< 43	< 22	< 22	< 22	< 22	29	< 2.2	71	< 4.3	< 4.3	< 2.2
	153	157	267.34	112.34	9/16/2019	N	40.0	125	163	13	27	< 1.9	4.8	80	< 1.9	< 37	< 19	< 19	< 19	9.7	< 1.9	28	< 3.7	< 3.7	< 1.9	
	163	167	267.34	102.34	9/17/2019	N	1,033	2,290	2,650	33	1000	< 2.4	54	1200	< 2.4	23	< 24	< 24	< 24	< 24	13	< 2.4	330	< 4.7	< 4.7	< 2.4
	173	177	267.34	92.34	9/19/2019	N	3,230	6,150	7,710	730	2500	0.71	120	2800	3.2	31	30	< 20	< 20	< 20	95	< 2	1400	< 4	< 4	< 2
183	187	267.34	82.34	9/19/2019	N	5.50	14.8	19.5	1.7	3.8	< 1.9	0.59	8.7	< 1.9	< 37	< 19	< 19	< 19	0.85	< 1.9	3.2	< 3.7	< 3.7	0.7		
191.5	195.5	267.34	73.84	9/20/2019	N	261	481	616	91	170	0.55	18	200	1.2	10	12	< 19	< 19	< 19	3.3	< 1.9	110	< 3.7	< 3.7	< 1.9	
31VP-19-04	69	73	266.66	195.66	8/5/2019	N	140	921	1,040	40	100	< 1.8	130	650	0.92	< 37	< 18	< 18	< 18	13	< 1.8	110	< 3.7	< 3.7	< 1.8	
	79	83	266.66	185.66	8/5/2019	N	3.00	11.5	15.9	1.2	1.8	< 1.8	2.3	6.2	< 1.8	< 37	< 18	< 18	< 18	0.51	< 1.8	3.9	< 3.7	< 3.7	< 1.8	
	89	93	266.66	175.66	8/5/2019	N	4.90	25.9	32.4	< 3.7	4.9	< 1.8	1	20	< 1.8	< 37	< 18	< 18	< 18	0.55	< 1.8	5.9	< 3.7	< 3.7	< 1.8	
	99	103	266.66	165.66	8/6/2019	N	570	2,170	2,490	< 3.6	570	< 1.8	97	1500	< 1.8	< 36	< 18	< 18	< 18	13	< 1.8	310	< 3.6	< 3.6	< 1.8	
	109	113	266.66	155.66	8/6/2019	N	540	3,380	4,040	< 3.7	540	< 1.8	240	2600	< 1.8	< 37	< 18	< 18	< 18	24	< 1.8	640	< 3.7	< 3.7	< 1.8	
	109	113	266.66	155.66	8/6/2019	FD	476	2,890	3,470	16	460	< 1.8	210	2200	< 1.8	< 37	< 18	< 18	< 18	24	< 1.8	560	< 3.7	< 3.7	< 1.8	
	119	123	266.66	145.66	8/7/2019	N	386	1,810	2,160	66	320	< 1.8	120	1300	< 1.8	< 37	< 18	< 18	< 18	23	< 1.8	330	< 3.7	< 3.7	< 1.8	
128	132	266.66	136.66	8/8/2019	N	285	1,150	1,410	65	220	< 1.9	93	770	0.7	< 37	< 19	< 19	< 19	19	< 1.9	240	< 3.7	< 3.7	< 1.9		
31VP-19-05	4	8	206.26	200.26	9/4/2019	N	4.80	9.44	13.0	2.1	2.7	< 1.9	0.94	3.7	< 1.9	< 38	< 19	< 19	< 19	1.8	< 1.9	1.8	< 3.8	< 3.8	< 1.9	
	14	18	206.26	190.26	9/5/2019	N	3.10	7.10	7.10	3.1	< 2	< 2	< 2	4	< 2	< 39	< 20	< 20	< 20	< 2	< 2	< 2	< 3.9	< 3.9	< 2	
	24	28	206.26	180.26	9/5/2019	N	2.70	2.70	2.70	2.7	< 2	< 2	< 2	< 2	< 2	< 39	< 20	< 20	< 20	< 2	< 2	< 2	< 3.9	< 3.9	< 2	
	33.5	37.5	206.26	170.76	9/5/2019	N	4.10	4.10	4.60	2.9	1.2	< 2	< 2	< 2	< 2	< 39	< 20	< 20	< 20	< 2	< 2	0.5	< 3.9	< 3.9	< 2	
31VP-19-06	13	17	209.2	194.2	9/24/2019	N	830	1,470	1,790	290	540	< 1.8	39	600	0.66	44	7.9	< 18	< 18	19	< 1.8	250	< 3.7	< 3.7	< 1.8	
	13	17	209.2	194.2	9/24/2019	FD	870	1,500	1,820	310	560	< 1.8	38	590	0.75	45	7.6	< 18	< 18	20	< 1.8	250	< 3.6	< 3.6	< 1.8	
	23	27	209.2	184.2	9/24/2019	N	1,210	2,240	2,840	110	1100	< 1.8	68	960	< 1.8	38	< 18	< 18	< 18	37	< 1.8	530	< 3.7	< 3.7	< 1.8	
	33	37	209.2	174.2	9/24/2019	N	1,047	1,950	2,500	97	950	< 1.9	58	840	< 1.9	32	< 19	< 19	< 19	36	< 1.9	490	< 3.7	< 3.7	< 1.9	
	43	47	209.2	164.2	9/24/2019	N	114	204	242	38	76	< 1.8	5.4	85	< 1.8	< 36	< 18	< 18	< 18	2.7	< 1.8	35	< 3.6	< 3.6	< 1.8	
	53	57	209.2	154.2	9/25/2019	N	23.5	37.5	40.1	18	5.5	< 1.8	< 1.8	14	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	2.6	< 3.7	< 3.7	< 1.8	
	63	67	209.2	144.2	9/25/2019	N	174	335	425	34	140	< 1.9	11	150	< 1.9	< 37	< 19	< 19	< 19	6.7	< 1.9	83	< 3.7	< 3.7	< 1.9	
	73	77	209.2	134.2	9/25/2019	N	117	224	275	36	81	< 1.8	6.5	100	< 1.8	< 37	< 18	< 18	< 18	3.6	< 1.8	48	< 3.7	< 3.7	< 1.8	
83	87	209.2	124.2	9/26/2019	N	143	261	318	50	93	< 1.8	8.3	110	< 1.8	< 37	< 18	< 18	< 18	3.7	< 1.8	53	< 3.7	< 3.7	< 1.8		
31VP-19-07	8	12	206.31	196.31	9/26/2019	N	2.70	2.70	5.30	< 3.8	2.7	< 1.9	< 1.9	< 1.9	< 1.9	< 38	< 19	< 19	< 19	1.2	< 1.9	1.4	< 3.8	< 3.8	< 1.9	
	18	22	206.31	186.31	9/27/2019	N	995	1,210	1,340	930	65	< 1.8	9	200	1.7	95	23	< 18	< 18	1.6	< 1.8	20	< 3.7	< 3.7	< 1.8	
	28	32	206.31	176.31	9/27/2019	N	1,870	2,410	2,750	1700	170	< 1.8	28	510	2.8	210	40	< 18	< 18	7.4	< 1.8	79	< 3.6	< 3.6	< 1.8	
	38	42	206.31	166.31	9/27/2019	N	646	1,280	1,600	86	560	< 1.9	42	590	0.74	47	< 19	< 19	< 19	18	< 1.9	260	< 3.7	< 3.7	< 1.9	
	48	52	206.31	156.31	9/30/2019	N	392	821	1,050	62	330	< 1.9	28	400	1.1	26	< 19	< 19	< 19	12	< 1.9	190	< 3.7	< 3.7	< 1.9	
	58	62	206.31	146.31	9/30/2019	N	110	155	183	76	34	2.4	13	23	6.6	< 37	< 19	2.8	< 19	4.5	< 1.9	21	< 3.7	< 3.7	< 1.9	
	68	72	206.31	136.31	9/30/2019	N	114	167	197	75	39	2.8	14	30	6.5	< 37	< 19	2.9	< 19	4.6	< 1.9	22	< 3.7	< 3.7	< 1.9	
	78	82	206.31	126.31	10/1/2019	N	141	203	230	100	41	2.6	11	41	7.5	< 36	< 18	< 18	< 18	4.1	< 1.8	23	< 3.6	< 3.6	< 1.8	
	78	82	206.31	126.31	10/1/2019	FD	140	202	229	99	41	2.2	11	41	7.8	< 38	< 19	< 19	< 19	3.9	< 1.9	23	< 3.8	< 3.8	< 1.9	
88	92	206.31	116.31	10/1/2019	N	160	233	264	110	50	6.9	13	43	9.9	< 38	< 19	< 19	< 19	5.1	< 1.9	26	< 3.8	< 3.8	< 1.9		
31VP-19-08	13	17	206.96	191.96	10/2/2019	N	349	649	856	89	260	0.9	27	270	1.7	41	< 19	< 19	< 19	16	< 1.9	150	< 3.7	< 3.7	< 1.9	
	23	27	206.96	181.96	10/2/2019	N	91.0	169	195	49	42	1.7	8.8	64	3.3	< 39	< 19	< 19	< 19	5.2	< 1.9	21	< 3.9	< 3.9	< 1.9	
	33	37	206.96	171.96	10/2/2019	N	106	163	190	67	39	2.4	13	35	6.5	< 37	< 19	< 19	< 19	5.5	< 1.9	22	< 3.7	< 3.7	< 1.9	
	43	47	206.96	161.96	10/3/2019	N	104	159	188	65	39	2.4	12	35	5.5	< 37	< 19	2.8	< 19	5	< 1.9	21	< 3.7	< 3.7	< 1.9	
	53	57	206.96	151.96	10/3/2019	N	116	166	199																	

AOC 50

Vertical Profile Results

**PFAS in Groundwater at Vertical Profile Locations
AOC 50**

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
G6M-18-01	60	64	264.58	202.58	10/24/2018	N	9.76	70.2	77.1	1.04	8.72	< 1.87	4.67	55.8	< 1.87	< 37.3	< 18.7	< 18.7	< 18.7	1.01	< 1.87	5.84	< 3.73	< 3.73	< 1.87
	70	74	264.58	192.58	10/24/2018	N	0.778	31.2	36.6	< 3.65	0.778	< 1.83	2.92	27.5	< 1.83	< 36.5	< 18.3	< 18.3	< 18.3	0.624	< 1.83	4.81	< 3.65	< 3.65	< 1.83
	80	84	264.58	182.58	10/24/2018	N	24.3	65.5	90.6	1.58	22.7	< 2.23	6	35.2	< 2.23	< 44.6	< 22.3	< 22.3	< 22.3	2.16	< 2.23	23	< 4.46	< 4.46	< 2.23
	90	94	264.58	172.58	10/24/2018	N	2,700	6,010	6613	< 3.76	2700	< 1.88	48.7	3260	< 1.88	7.3	< 18.8	< 18.8	< 18.8	22.4	< 1.88	575	< 3.76	< 3.76	< 1.88
	100	104	264.58	162.58	10/24/2018	FD	3,040	5,430	5966	13.9	3030	< 1.86	139	2250	< 1.86	73.2	< 18.6	< 18.6	< 18.6	30	< 1.86	430	< 3.73	< 3.73	< 1.86
	100	104	264.58	162.58	10/24/2018	N	3,310	5,540	6096	15.3	3290	< 1.85	131	2100	< 1.85	76.3	< 18.5	< 18.5	< 18.5	29.4	< 1.85	454	< 3.69	< 3.69	< 1.85
110	114	264.58	152.58	10/25/2018	N	4,660	8,590	9608	1380	3280	< 1.94	83.8	3840	2.46	154	< 19.4	< 19.4	< 19.4	33.2	< 1.94	834	< 3.88	< 3.88	< 1.94	
G6M-18-02	64	68	266.64	200.64	10/22/2018	N	153	305	341	57.1	95.6	< 1.93	6.2	146	< 1.93	16.4	< 19.3	< 19.3	< 19.3	1.94	< 1.93	18.2	< 3.85	< 3.85	< 1.93
	74	78	266.64	190.64	10/22/2018	N	207	943	1,087	28.5	178	< 1.93	24.4	712	< 1.93	67	< 19.3	< 19.3	< 19.3	7.21	< 1.93	69.4	< 3.86	< 3.86	< 1.93
	84	88	266.64	180.64	10/22/2018	N	10,500	17,800	23,736	1180	9310	< 1.97	579	6690	2.61	1720	< 19.7	< 19.7	< 19.7	244	< 1.97	4010	< 3.94	< 3.94	< 1.97
	94	98	266.64	170.64	10/23/2018	N	6,800	11,900	15,111	480	6320	< 1.94	297	4820	2.65	834	< 19.4	< 19.4	< 19.4	117	< 1.94	2240	< 3.89	< 3.89	< 1.94
	104	108	266.64	160.64	10/23/2018	N	3,160	5,940	7,414	737	2420	< 1.94	172	2610	4.38	344	< 19.4	< 19.4	< 19.4	76.9	< 1.94	1050	< 3.89	< 3.89	< 1.94
	114	118	266.64	150.64	10/23/2018	FD	2,910	5,220	6,699	874	2040	< 1.95	163	2140	3.93	383	4.27	< 19.5	< 19.5	117	< 1.95	974	< 3.89	< 3.89	< 1.95
	114	118	266.64	150.64	10/23/2018	N	2,950	5,090	6,619	908	2040	0.497	163	1970	4.22	379	3.93	< 20	< 20	120	< 2	1030	< 4	< 4	< 2
124	128	266.64	140.64	10/23/2018	N	2,520	4,790	5,856	806	1710	< 1.93	144	2130	4.13	244	< 19.3	< 19.3	< 19.3	65.6	< 1.93	752	< 3.85	< 3.85	< 1.93	
50VP-19-01	9	13	218.90	207.90	8/28/2019	N	306	361	373	290	16	0.72	3.8	48	2.8	< 37	< 19	< 19	< 19	< 1.9	< 1.9	12	< 3.7	< 3.7	< 1.9
	19	23	218.90	197.90	8/28/2019	N	185	275	289	160	25	< 1.8	4.9	83	1.7	< 37	< 18	< 18	< 18	< 2.7	< 1.8	14	< 3.7	< 3.7	< 1.8
	29	33	218.90	187.90	8/28/2019	N	201	449	492	150	51	< 1.9	7.6	240	0.65	< 37	< 19	< 19	< 19	10	< 1.9	33	< 3.7	< 3.7	< 1.9
	39	43	218.90	177.90	8/28/2019	N	9.90	70.9	80.5	2.4	7.5	< 1.9	0.97	60	< 1.9	< 38	< 19	< 19	< 19	4.1	< 1.9	5.5	< 3.8	< 3.8	< 1.9
	49	53	218.90	167.90	8/29/2019	N	227	395	424	190	37	< 1.9	6.8	160	1.6	< 38	< 19	< 19	< 19	5.6	< 1.9	23	< 3.8	< 3.8	< 1.9
	59	63	218.90	157.90	8/29/2019	N	411	753	813	340	71	< 1.9	11	330	1.1	< 38	< 19	< 19	< 19	14	< 1.9	46	< 3.8	< 3.8	< 1.9
69	72	218.90	148.40	8/29/2019	N	388	638	681	340	48	< 1.9	8.3	240	1.4	< 37	< 19	< 19	< 19	11	< 1.9	32	< 3.7	< 3.7	< 1.9	
50VP-19-02	9	13	215.91	204.91	8/26/2019	N	7.40	104	109	1.1	6.3	< 1.9	1.2	95	< 1.9	< 37	< 19	< 19	< 19	3.4	< 1.9	1.6	< 3.7	< 3.7	< 1.9
	19	23	215.91	194.91	8/26/2019	N	0.800	82.8	89.2	< 3.7	0.8	< 1.9	< 1.9	82	< 1.9	< 37	< 19	< 19	< 19	5.6	< 1.9	0.82	< 3.7	< 3.7	< 1.9
	29	33	215.91	184.91	8/27/2019	N	0.550	80.6	83.7	< 3.8	0.55	< 1.9	< 1.9	80	< 1.9	< 38	< 19	< 19	< 19	3.1	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
	39	43	215.91	174.91	8/27/2019	N	0.00	58.0	60.5	< 3.7	< 1.8	< 1.8	< 1.8	58	< 1.8	< 37	< 18	< 18	< 18	2.5	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	49	53	215.91	164.91	8/27/2019	N	107	295	341	64	43	< 1.9	7.7	180	< 1.9	< 37	< 19	< 19	< 19	6.2	< 1.9	40	< 3.7	< 3.7	< 1.9
	54	58	215.91	159.91	8/27/2019	N	114	321	358	73	41	< 1.7	6.5	200	0.45	< 34	< 17	< 17	< 17	8.4	< 1.7	29	< 3.4	< 3.4	< 1.7
50VP-19-03	14	18	220.54	204.54	8/23/2019	N	15.8	18.9	19.5	14	1.8	< 1.9	< 1.9	3.1	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	0.62	< 3.7	< 3.7	< 1.9
	24	28	220.54	194.54	8/23/2019	N	14.1	25.0	30.1	8.9	5.2	< 1.9	0.94	10	< 1.9	< 37	< 19	< 19	< 19	< 1.9	1.3	2.7	< 3.7	1.1	< 1.9
	34	38	220.54	184.54	8/23/2019	N	0.0	0.0	0.820	< 3.7	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 37	< 18	< 18	< 18	0.82	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	44	48	220.54	174.54	8/23/2019	N	1.76	12.8	12.8	1.1	0.66	< 1.8	< 1.8	11	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	54	56	220.54	165.54	8/26/2019	N	2.60	28.6	31.5	1.4	1.2	< 1.9	< 1.9	26	< 1.9	< 37	< 19	< 19	< 19	2	< 1.9	0.85	< 3.7	< 3.7	< 1.9
	9	13	220.54	209.54	8/26/2019	N	19.5	27.0	30.4	12	7.5	< 1.8	2.3	4.7	0.5	< 37	< 18	< 18	< 18	0.72	< 1.8	2.7	< 3.7	< 3.7	< 1.8
50VP-19-04	49	53	249.78	198.78	7/17/2019	N	18.0	154	205	< 3.8	18	< 1.9	6.2	130	< 1.9	< 38	< 19	< 19	< 19	20	< 1.9	31	< 3.8	< 3.8	< 1.9
	59	63	249.78	188.78	7/17/2019	N	278	564	632	180	98	< 1.9	15	270	0.94	< 37	< 19	< 19	< 19	14	< 1.9	54	< 3.7	< 3.7	< 1.9
	69	73	249.78	178.78	7/17/2019	N	400	807	886	290	110	< 1.8	15	390	1.5	< 37	< 18	< 18	< 18	22	< 1.8	57	< 3.7	< 3.7	< 1.8
	79	83	249.78	168.78	7/18/2019	N	162	321	355	120	42	< 1.9	8.2	150	1.2	< 37	< 19	< 19	< 19	7	< 1.9	27	< 3.7	< 3.7	< 1.9
	89	93	249.78	158.78	7/18/2019	N	93.0	229	252	63	30	< 1.9	5.9	130	< 1.9	< 37	< 19	< 19	< 19	6	< 1.9	17	< 3.7	< 3.7	< 1.9
50VP-19-05	63	67	263.89	198.89	10/18/2019	N	670	1,700	1,870	180	490	< 1.9	32	1000	1.4	13	< 19	< 19	< 19	22	< 1.9	130	< 3.9	< 3.9	< 1.9
	73	77	263.89	188.89	10/18/2019	N	88.0	152	166	70	18	< 1.8	4.1	59	1.1	< 37	< 18	< 18	< 18	2.9	< 1.8	11	< 3.7	< 3.7	< 1.8
	83	87	263.89	178.89	10/18/2019	N	6.10	13.8	14.3	2.6	3.5	< 1.9	< 1.9	7.7	< 1.9	< 38	< 19	< 19	< 19	0.46	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
	93	97	263.89	168.89	10/21/2019	N	13.5	23.0	24.3	8.1	5.4	< 2	0.73	8.8	< 2	< 40	< 20	< 20	< 20	1.3	< 2	< 3	< 4	< 4	< 2
	103	107	263.89	158.89	10/21/2019	N	490	696	802	330	160	< 1.8	16	190	< 1.8	14	< 18	< 18	< 18	26	< 1.8	66	< 3.6	< 3.6	< 1.8
50VP-19-06	63	67	265.21	200.21	7/1/2019	N	197	869	1,540	6.8	190	< 2	62	610	< 2	7.3	< 20	< 20	< 20	120	< 2	540	< 4.1	< 4.1	< 2
	73	77	265.21	190.21	7/1/2019	N	1,750	2,090	2,270	1600	150	0.49	30	310	1.5	48	< 19	< 19	< 19	42	< 1.9	87	< 3.9	< 3.9	< 1.9
	83	87	265.21	180.21	7/2/2019	N	240	437	550	160	80	< 2.6	17	180	< 2.6	14	< 26	< 26	< 26	24	< 2.6	75	< 5.2	< 5.2	< 2.6
	92	96	265.21	171.21	7/2/2019	N	1,070	1,420	1,570	950	120	0.57	35	310	2.5	25	3.7	< 21	< 21	32	< 2.1	89	< 4.1	< 4.1	< 2.1
50VP-19-07	63	67	264.55	199.55	10/7/2019	N	24.0	80.6	106	2	22	< 2	6.6	50	< 2	< 40	< 20	< 20	< 20						

**PFAS in Groundwater at Vertical Profile Locations
AOC 50**

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	Total PFAS	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
50VP-19-08	9	13	208.50	197.50	9/6/2019	N	5.90	9.30	11.8	2.5	3.4	<1.9	1.1	2.3	<1.9	<38	<19	<19	<19	0.92	<1.9	1.6	<3.8	<3.8	<1.9
	19	23	208.50	187.50	9/6/2019	N	158	202	242	120	38	3.5	18	15	7.4	<37	<19	2.7	<19	5.8	<1.9	32	<3.7	<3.7	<1.9
	29	33	208.50	177.50	9/6/2019	N	155	200	235	120	35	3	19	15	8.3	<39	<19	<19	<19	5.9	<1.9	29	<3.9	<3.9	<1.9
	39	43	208.50	167.50	9/6/2019	N	135	181	216	93	42	3	19	16	7.7	<38	<19	<19	<19	6.1	<1.9	29	<3.8	<3.8	<1.9
	49	53	208.50	157.50	9/6/2019	N	135	180	225	98	37	3.2	17	17	7.3	<38	<19	3.7	<19	18	<1.9	24	<3.8	<3.8	<1.9
	59	63	208.50	147.50	9/6/2019	N	130	174	207	96	34	3.5	17	16	7.1	<38	<19	3.3	<19	5.4	<1.9	25	<3.8	<3.8	<1.9
	69	73	208.50	137.50	9/10/2019	N	125	169	202	87	38	3.1	17	16	7.8	<61	<30	<30	<30	6.1	<3	27	<6.1	<6.1	<3
79	83	208.50	127.50	9/10/2019	N	140	189	224	91	49	2.9	19	18	9.5	<44	<22	<22	<22	6.5	<2.2	28	<4.4	<4.4	<2.2	
50VP-19-09	53	57	255.61	200.61	8/16/2019	N	58.0	110	121	49	9	0.95	3.1	47	0.82	<39	<20	<20	<20	1.5	<2	10	<3.9	<3.9	<2
	63	67	255.61	190.61	8/19/2019	N	66.7	123	132	57	9.7	0.99	3.6	49	2.3	<38	<19	<19	<19	1.5	<1.9	7.9	<3.8	<3.8	<1.9
	73	77	255.61	180.61	8/19/2019	N	177	327	349	140	37	<1.9	8.4	140	1.2	<37	<19	<19	<19	3	<1.9	19	<3.7	<3.7	<1.9
	83	87	255.61	170.61	8/19/2019	N	6.00	33.0	37.9	2.2	3.8	<4	<4	27	<4	<81	<40	<40	<40	3.2	<4	1.7	<8.1	<8.1	<4
	103	107	255.61	150.61	8/21/2019	N	16.9	30.3	32.2	14	2.9	0.67	0.74	12	<1.9	<39	<19	<19	<19	<1.9	<1.9	1.9	<3.9	<3.9	<1.9
43	47	255.61	210.61	8/23/2019	N	42.2	71.1	77.2	33	9.2	<1.9	2.8	25	1.1	<38	<19	<19	<19	1.4	<1.9	4.7	<3.8	<3.8	<1.9	
50VP-19-10	53	57	256.99	201.99	8/14/2019	N	1.50	13.0	17.0	<3.8	1.5	<1.9	1.8	9.7	<1.9	<38	<19	<19	<19	0.71	<1.9	3.3	<3.8	<3.8	<1.9
	63	67	256.99	191.99	8/14/2019	N	0	8.80	10.6	<3.7	<1.9	<1.9	<1.9	8.8	<1.9	<37	<19	<19	<19	0.59	<1.9	1.2	<3.7	<3.7	<1.9
	73	77	256.99	181.99	8/15/2019	N	0	3.60	3.60	<3.9	<2	<2	<2	3.6	<2	<39	<20	<20	<20	<2	<2	<2	<3.9	<3.9	<2
50VP-19-11	43	47	256.16	211.16	8/23/2019	N	0.990	0.990	0.99	<4.2	0.99	<2.1	<2.1	<2.1	<2.1	<42	<21	<21	<21	<2.1	<2.1	<2.1	<4.2	<4.2	<2.1
	53	57	256.16	201.16	8/26/2019	N	6.60	8.68	10.2	3.6	3	<2	1.4	<2	0.68	<41	<20	<20	<20	<2	<2	1.5	<4.1	<4.1	<2
	63	67	256.16	191.16	8/26/2019	N	0.760	0.760	0.760	<3.8	0.76	<1.9	<1.9	<1.9	<1.9	<38	<19	<19	<19	<1.9	<1.9	<1.9	<3.8	<3.8	<1.9
	73	77	256.16	181.16	8/26/2019	N	1.30	1.30	1.30	<4.5	1.3	<2.2	<2.2	<2.2	<2.2	<45	<22	<22	<22	<2.2	<2.2	<2.2	<4.5	<4.5	<2.2
	83	87	256.16	171.16	8/27/2019	N	0.00	0.00	0	<5.5	<2.7	<2.7	<2.7	<2.7	<2.7	<55	<27	<27	<27	<2.7	<2.7	<2.7	<5.5	<5.5	<2.7
	93	97	256.16	161.16	8/27/2019	N	1.50	1.50	1.50	<5.8	1.5	<2.9	<2.9	<2.9	<2.9	<58	<29	<29	<29	<2.9	<2.9	<2.9	<5.8	<5.8	<2.9
	103	107	256.16	151.16	8/28/2019	N	5.86	7.66	7.66	4.9	0.96	<2	<2	1.8	<2	<39	<20	<20	<20	<2	<2	<2	<3.9	<3.9	<2
	111	115	256.16	143.16	8/28/2019	N	3.80	5.40	5.40	2.8	1	<2	<2	1.6	<2	<39	<20	<20	<20	<2	<2	<2	<3.9	<3.9	<2
50VP-19-12	53	57	256.03	201.03	8/9/2019	N	4.60	17.8	30.1	<3.9	4.6	<2	9	4.2	<2	<39	<20	<20	<20	1.5	<2	9.9	0.89	<3.9	<2
	63	67	256.03	191.03	8/9/2019	N	3.90	10.9	16.5	<3.7	3.9	<1.9	2.9	4.1	<1.9	<37	<19	<19	<19	1.3	<1.9	4.3	<3.7	<3.7	<1.9
	73	77	256.03	181.03	8/12/2019	N	4.40	10.9	14.3	1.3	3.1	<2.1	1.9	4.6	<2.1	<41	<21	<21	<21	1.1	<2.1	2.3	<4.1	<4.1	<2.1
	83	87	256.03	171.03	8/12/2019	N	4.60	26.3	30.6	2.7	1.9	<1.8	7.7	14	<1.8	<37	<18	<18	<18	0.7	<1.8	3.6	<3.7	<3.7	<1.8
	93	97	256.03	161.03	8/12/2019	N	5.10	14.0	17.5	2	3.1	<1.8	2.8	6.1	<1.8	<36	<18	<18	<18	0.47	<1.8	3	<3.6	<3.6	<1.8
50VP-19-13	69	73	267.03	196.03	8/12/2019	N	201	1,730	1,890	1	200	<1.8	28	1500	<1.8	<37	<18	<18	<18	7.6	<1.8	150	<3.7	<3.7	<1.8
	79	83	267.03	186.03	8/12/2019	N	131	896	966	1.1	130	<1.8	15	750	<1.8	<37	<18	<18	<18	4.7	<1.8	65	<3.7	<3.7	<1.8
	89	93	267.03	176.03	8/12/2019	N	12.4	26.6	30.0	7.4	5	<1.9	2.2	12	<1.9	<38	<19	<19	<19	0.47	<1.9	2.9	<3.8	<3.8	<1.9
	99	103	267.03	166.03	8/13/2019	N	1.70	9.00	12.6	<3.7	1.7	<1.9	2	5.3	<1.9	<37	<19	<19	<19	<1.9	<1.9	3.6	<3.7	<3.7	<1.9
	109	113	267.03	156.03	8/14/2019	N	75.3	113	145	66	9.3	1.2	3.3	32	1.1	<37	<18	<18	<18	2.5	<1.8	28	<3.7	<3.7	1.5
	119	123	267.03	146.03	8/14/2019	N	660	1,560	1,870	310	350	<1.8	66	830	1.9	<36	<18	<18	<18	60	<1.8	250	<3.6	<3.6	<1.8
	129	133	267.03	136.03	8/15/2019	N	73.0	225	650	26	47	<1.9	12	140	<1.9	<38	<19	<19	<19	65	<1.9	360	<3.8	<3.8	<1.9
	139	143	267.03	126.03	8/15/2019	N	380	1,010	1,260	230	150	<1.9	33	600	1.3	<38	<19	<19	<19	42	<1.9	200	<3.8	<3.8	<1.9
	154	158	267.03	111.03	8/19/2019	N	990	2,180	2,660	440	550	<1.9	87	1100	2.5	<38	<19	<19	<19	110	<1.9	370	<3.8	<3.8	<1.9
	164	168	267.03	101.03	8/20/2019	N	960	1,740	2,000	720	240	<2	79	700	3.8	<43	<20	<20	<20	56	<2	200	<4	<4	<2
174	178	267.03	91.03	8/20/2019	N	1,240	2,320	2,660	830	410	1.3	76	1000	3.8	<44	<22	<22	<22	64	<2.2	270	<4.4	<4.4	0.93	

Notes:
 Results shown are displayed as parts per trillion (ppt).
 bgs = below ground surface.
 ft = feet.
 EPA = U.S. Environmental Protection Agency.
 LHA = Lifetime Health Advisory.
 MassDEP = Massachusetts Department of Environmental Protection.
 MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).
 NAVD88 = North American Vertical Datum 1988.
 Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS.
 Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHPA, PFHXS, PFNA).

H-3

PFAS in Soil

AOCs 20 and 21

Soil Results

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-01	20SB-19-01	20SB-19-01	20SB-19-01
	Field Sample ID	20SB-19-01-0-0.5	20SB-19-01-0.5-3	20SB-19-01-3-7	20SB-19-01-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/18/2019	10/18/2019	10/18/2019	10/18/2019
	SDG	320554781	320554781	320554781	320554781
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.00 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	0.980 U	0.980 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		4.50 J	0.800 J	0.980 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.90	2.40	0.480 J	0.340 J
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.350	0.200 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		1.30	0.200 J	0.110 J	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.470	0.100 J	0.0730 J	0.200 U
Perfluorohexanoic acid (PFHxA)		0.170 J	0.200 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.110 J	0.200 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	6.00 J	1.10	0.570 J	0.490 J
Perfluorooctanoic acid (PFOA)	0.720	0.300	0.200 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.700	0.300 U	0.290 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.420	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.420	0.200 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above

Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-02	20SB-19-02	20SB-19-02	20SB-19-02	20SB-19-02
	Field Sample ID	20SB-19-02-0-0.5	20SB-19-02-0.5-3	20SB-19-02-3-7	20SB-19-02-7-15	20SB-19-02-52-54
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	52.00 - 54.00
	Sampling Date	10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019
	SDG	320556141	320556141	320556141	320556141	320556141
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.20 U	2.20 U	2.30 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.10 U	1.10 U	1.20 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.570 J	0.330 J	1.10 U	1.20 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 J	0.570 J	0.450 J	1.20 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.200 U	0.200 U	0.210 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.160 J	0.220 U	0.220 U	0.230 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorohexanoic acid (PFHxA)		0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.990 J	0.550 U	0.330 J	0.580 U	0.520 U
Perfluorooctanoic acid (PFOA)	0.720	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.110 J	0.330 U	0.330 U	0.350 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.220 U	0.220 U	0.230 U	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-03	20SB-19-03	20SB-19-03	20SB-19-03
Field Sample ID		20SB-19-03-0-0.5	20SB-19-03-0.5-3	20SB-19-03-3-7	20SB-19-03-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		10/18/2019	10/18/2019	10/18/2019	10/18/2019
SDG		320554781	320554781	320554781	320554781
Sample Type		Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.10 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.00 U	0.990 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.40 J	0.560 J	1.00 U	0.990 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		3.90	0.620 J	0.300 J	0.990 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.150 J	0.210 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.530	0.160 J	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.150 J	0.210 U	0.200 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.210 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	2.50	1.00	0.540 J	0.540 J
Perfluorooctanoic acid (PFOA)	0.720	0.190 J	0.210 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.360 J	0.310 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTTrDA)		0.210 J	0.210 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.130 J	0.210 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-04	20SB-19-04	20SB-19-04	20SB-19-04	20SB-19-04
Field Sample ID		20SB-19-04-0-0.5	20SB-19-04-0.5-3	20SB-19-04-3-7	20SB-19-04-7-15	A3-SB-DUP01-101819
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00
Sampling Date		10/18/2019	10/18/2019	10/18/2019	10/18/2019	10/18/2019
SDG		320554781	320554781	320554781	320554781	320554781
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		1.90 U	2.00 U	2.00 U	2.30 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		0.970 U	0.990 U	1.00 U	1.20 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.80 J	0.480 J	1.00 U	1.20 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.80 J	0.990 J	0.310 J	1.20 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.170 U	0.180 U	0.180 U	0.210 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.0950 J	0.200 U	0.200 U	0.230 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.480	0.110 J	0.200 U	0.230 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.190 U	0.200 U	0.200 U	0.230 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.170 J	0.120 J	0.0670 J	0.230 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.190 U	0.200 U	0.200 U	0.230 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.190 U	0.200 U	0.200 U	0.230 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.60	0.720 J	0.500 J	0.380 J	0.420 J
Perfluorooctanoic acid (PFOA)	0.720	0.100 J	0.200 U	0.200 U	0.230 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.210 J	0.300 U	0.300 U	0.350 U	0.300 U
Perfluorotridecanoic acid (PFTTrDA)		0.130 J	0.200 U	0.200 U	0.230 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.180 J	0.200 U	0.200 U	0.230 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-05	20SB-19-05	20SB-19-05	20SB-19-05
Field Sample ID		20SB-19-05-0-0.5	20SB-19-05-0.5-3	20SB-19-05-3-7	20SB-19-05-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		10/18/2019	10/18/2019	10/18/2019	10/18/2019
SDG		320554781	320554781	320554781	320554781
Sample Type		Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		1.90 U	2.00 U	2.10 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		0.970 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.590 J	0.360 J	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		2.40	1.60 J	0.820 J	0.550 J
Perfluorobutanesulfonic acid (PFBS)		0.170 U	0.180 U	0.190 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.0860 J	0.200 U	0.210 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.160 J	0.200 U	0.210 U	0.140 J
Perfluoroheptanoic acid (PFHpA)	0.500	0.190 U	0.200 U	0.210 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.100 J	0.110 J	0.0780 J	0.210 U
Perfluorohexanoic acid (PFHxA)		0.190 U	0.200 U	0.210 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.190 U	0.200 U	0.210 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.60	0.970 J	0.510 J	0.450 J
Perfluorooctanoic acid (PFOA)	0.720	0.110 J	0.200 U	0.210 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.150 J	0.110 J	0.310 U	0.310 U
Perfluorotridecanoic acid (PFTTrDA)		0.190 U	0.200 U	0.210 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.190 U	0.200 U	0.210 U	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

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Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-06	20SB-19-06	20SB-19-06	20SB-19-06	20SB-19-06
	Field Sample ID	20SB-19-06-0-0.5	20SB-19-06-0.5-3	20SB-19-06-3-7	20SB-19-06-7-15	20SB-19-06-52-54
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	52.00 - 54.00
	Sampling Date	10/21/2019	10/21/2019	10/21/2019	10/21/2019	10/21/2019
	SDG	320556141	320556141	320556141	320556141	320556141
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.00 U	2.00 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.00 U	0.980 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.510 J	0.430 J	0.980 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.900 J	0.620 J	0.360 J	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.430 J	0.460 J	0.240 J	0.310 J	0.590 J
Perfluorooctanoic acid (PFOA)	0.720	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.320 U	0.300 U	0.290 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTTrDA)		0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.200 U	0.200 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-07	20SB-19-07	20SB-19-07	20SB-19-07	20SB-19-07
Field Sample ID		20SB-19-07-0-0.5	20SB-19-07-0.5-3	20SB-19-07-3-7	A3-SB-DUP01-102219	20SB-19-07-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019
SDG		320556141	320556141	320556141	320556141	320556141
Sample Type		Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	2.30 U	2.20 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.20 U	1.10 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.20 U	1.10 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.20 U	0.570 J	0.490 J	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.210 U	0.200 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.150 J	0.230 U	0.220 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.240 U	0.230 U	0.0890 J	0.0700 J	0.0670 J
Perfluorohexanoic acid (PFHxA)		0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.400 J	0.280 J	0.380 J	0.340 J	0.310 J
Perfluorooctanoic acid (PFOA)	0.720	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.140 J	0.350 U	0.340 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTTrDA)		0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.240 U	0.230 U	0.220 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above

Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 20, Waste Water Treatment Plant Sand Filter Beds

	Location	20SB-19-08	20SB-19-08	20SB-19-08	20SB-19-08	20SB-19-08	20SB-19-08
Field Sample ID		20SB-19-08-0-0.5	20SB-19-08-0.5-3	20SB-19-08-3-7	20SB-19-08-7-15	A3-SB-DUP01-102119	20SB-19-08-62-64
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00	62.00 - 64.00
Sampling Date		10/21/2019	10/21/2019	10/21/2019	10/21/2019	10/21/2019	10/21/2019
SDG		320556141	320556141	320556141	320556141	320556141	320556141
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.10 U	2.40 U	2.50 U	2.00 U	1.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.20 U	1.20 U	1.00 U	0.970 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 J	1.00 U	1.20 U	1.20 U	1.00 U	0.970 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		3.00	1.00 U	1.20 U	1.20 U	0.370 J	0.970 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.190 U	0.210 U	0.220 U	0.180 U	0.170 U
Perfluorodecanoic acid (PFDA)	0.300	0.880	0.210 U	0.240 U	0.250 U	0.200 U	0.190 U
Perfluorododecanoic acid (PFDoA)		0.430	0.210 U	0.240 U	0.250 U	0.200 U	0.190 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.210 U	0.320 J	0.250 U	0.200 U	0.190 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.230 J	0.210 U	0.400	0.130 J	0.130 J	0.190 U
Perfluorohexanoic acid (PFHxA)		0.200 U	0.210 U	0.210 J	0.250 U	0.200 U	0.190 U
Perfluorononanoic acid (PFNA)	0.320	0.170 J	0.290 J	0.190 J	0.250 U	0.200 U	0.190 U
Perfluorooctanesulfonic acid (PFOS)	2.00	13.0	6.20	2.50	1.80	2.50	0.480 U
Perfluorooctanoic acid (PFOA)	0.720	0.270 J	0.160 J	1.80	0.300 J	0.340	0.190 U
Perfluorotetradecanoic acid (PFTA)		0.170 J	0.310 U	0.350 U	0.370 U	0.310 U	0.290 U
Perfluorotridecanoic acid (PFTTrDA)		0.200 U	0.210 U	0.240 U	0.250 U	0.200 U	0.190 U
Perfluoroundecanoic acid (PFUnA)		0.260 J	0.210 U	0.240 U	0.250 U	0.200 U	0.190 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 21, Waste Water Treatment Plant Sludge Drying Beds

	Location	21SB-19-01	21SB-19-01	21SB-19-01	21SB-19-01	21SB-19-01	21SB-19-01
	Field Sample ID	21SB-19-01-0-0.5	21SB-19-01-0.5-3	21SB-19-01-3-7	A3-SB-DUP01-111419	21SB-19-01-7-10	21SB-19-01-10-12
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00	7.00 - 10.00	12.00 - 12.00
	Sampling Date	11/14/2019	11/14/2019	11/14/2019	11/14/2019	11/14/2019	11/14/2019
	SDG	320563431	320563431	320563431	320563431	320563431	320563431
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	2.50 U	2.10 U	2.30 U	2.00 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.30 U	1.10 U	1.20 U	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.490 J	2.60	1.10 U	1.20 U	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.540 J	0.970 J	1.10 U	1.20 U	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.230 U	0.190 U	0.210 U	0.180 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 J	0.400	0.210 U	0.230 U	0.200 U	0.220 U
Perfluorododecanoic acid (PFDoA)		0.290 J	0.250 U	0.210 U	0.230 U	0.200 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.250 U	0.230 J	0.210 U	0.230 U	0.200 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.560	0.370 J	0.280 J	0.280 J	0.0840 J	0.220 U
Perfluorohexanoic acid (PFHxA)		0.250 U	0.140 J	0.210 U	0.130 J	0.200 U	0.220 U
Perfluorononanoic acid (PFNA)	0.320	0.250 U	0.170 J	0.210 U	0.230 U	0.200 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	5.80 J	19.0 J	5.20 J	7.10 J	0.350 J	0.950 J
Perfluorooctanoic acid (PFOA)	0.720	0.130 J	1.90	2.20	2.10	0.380	0.220 U
Perfluorotetradecanoic acid (PFTA)		0.370 U	0.380 U	0.320 U	0.350 U	0.310 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.250 U	0.250 U	0.210 U	0.230 U	0.200 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		0.140 J	0.250 U	0.210 U	0.230 U	0.200 U	0.220 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 21, Waste Water Treatment Plant Sludge Drying Beds

	Location	21SB-19-02	21SB-19-02	21SB-19-02	21SB-19-02
	Field Sample ID	21SB-19-02-0-0.5	21SB-19-02-0.5-3	21SB-19-02-3-7	21SB-19-02-7-11
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 11.00
	Sampling Date	11/14/2019	11/14/2019	11/14/2019	11/14/2019
	SDG	320563431	320563431	320563431	320563431
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.50 U	2.20 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.20 U	1.10 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.20 U	2.20	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.20 U	0.690 J	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.220 U	0.200 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.290 J	0.290 J	0.120 J	0.220 U
Perfluorododecanoic acid (PFDoA)		0.200 J	0.250 U	0.220 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.250 U	0.150 J	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.130 J	0.0960 J	0.160 J	0.220 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.250 U	0.220 U	0.220 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.250 U	0.110 J	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.40 J	1.80 J	9.00 J	0.420 J
Perfluorooctanoic acid (PFOA)	0.720	0.130 J	0.250 U	0.930	0.400
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.370 U	0.330 U	0.330 U
Perfluorotridecanoic acid (PFTTrDA)		0.210 U	0.250 U	0.220 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		0.140 J	0.250 U	0.220 U	0.220 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 21, Waste Water Treatment Plant Sludge Drying Beds

	Location	21SB-19-03	21SB-19-03	21SB-19-03	21SB-19-03	21SB-19-03
Field Sample ID		21SB-19-03-0-0.5	21SB-19-03-0.5-3	21SB-19-03-3-7	21SB-19-03-7-11	A3-SB-DUP02-111419
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 11.00	7.00 - 11.00
Sampling Date		11/14/2019	11/14/2019	11/14/2019	11/14/2019	11/14/2019
SDG		320563431	320563431	320563431	320563431	320563431
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	2.60 U	2.20 U	2.30 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.30 U	1.10 U	1.10 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	2.50 J	8.50	0.630 J	0.890 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	4.60	1.80 J	1.10 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.210 U	0.230 U	0.200 U	0.200 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.140 J	0.270 J	0.460	0.150 J	0.190 J
Perfluorododecanoic acid (PFDoA)		0.250 J	0.260 U	0.220 U	0.230 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.240 U	0.260 U	0.220 U	0.230 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.240 U	0.210 J	0.120 J	0.230 U	0.210 U
Perfluorohexanoic acid (PFHxA)		0.240 U	0.260 U	0.220 U	0.230 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.240 U	0.160 J	0.260 J	0.230 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.960 J	10.0 J	13.0 J	2.30 J	3.00 J
Perfluorooctanoic acid (PFOA)	0.720	0.240 U	0.370 J	0.410	0.230 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.360 U	0.390 U	0.330 U	0.340 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.260 U	0.220 U	0.230 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.140 J	0.260 U	0.220 U	0.230 U	0.210 U

Notes:

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AOC 30

Soil Results

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-01	30SB-19-01	30SB-19-01	30SB-19-01	30SB-19-01
	Field Sample ID	30SB-19-01-0-0.5	30SB-19-01-0.5-3	30SB-19-01-3-7	30SB-19-01-7-15	30SB-19-01-58-60
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	58.00 - 60.00
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	10/14/2019	10/14/2019
	SDG	320554491	320554491	320554491	320554491	320554491
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.10 U	2.00 U	2.00 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.00 U	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.00 U	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.00 U	1.00 U	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.180 U	0.180 U	0.0830 J	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.230 J	0.200 U	0.200 U	0.220 U
Perfluorododecanoic acid (PFDoA)		0.150 J	0.210 U	0.200 U	0.200 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.110 J	0.210 U	0.200 U	0.200 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	5.60	7.20	5.00	3.80	0.520
Perfluorohexanoic acid (PFHxA)		0.960	0.400	0.200 U	0.0920 J	0.220 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.210 U	0.200 U	0.200 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	14.0	35.0	1.00 U	1.00 U	0.550 U
Perfluorooctanoic acid (PFOA)	0.720	0.930	1.50	2.20	1.00	0.120 J
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.310 U	0.300 U	0.300 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.210 U	0.200 U	0.200 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		0.120 J	0.210 U	0.200 U	0.200 U	0.220 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-02	30SB-19-02	30SB-19-02	30SB-19-02	30SB-19-02
	Field Sample ID	30SB-19-02-0-0.5	30SB-19-02-0.5-3	30SB-19-02-3-7	30SB-19-02-7-15	A3-SB-DUP-101419
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	10/14/2019	10/14/2019
	SDG	320554491	320554491	320554491	320554491	320554491
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		1.90 U	2.10 U	1.90 U	2.20 U	1.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		0.970 U	1.00 U	0.950 U	1.10 U	0.960 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.970 U	1.00 U	0.950 U	1.10 U	0.960 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.970 U	1.00 U	0.950 U	1.10 U	0.960 U
Perfluorobutanesulfonic acid (PFBS)		0.170 U	0.190 U	0.170 U	0.190 U	0.170 U
Perfluorodecanoic acid (PFDA)	0.300	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluorododecanoic acid (PFDoA)		0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluorohexanoic acid (PFHxA)		0.270 J	0.320	0.190 U	0.220 U	0.190 U
Perfluorononanoic acid (PFNA)	0.320	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.480 U	1.00 U	0.480 U	0.540 U	0.960 U
Perfluorooctanoic acid (PFOA)	0.720	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluorotetradecanoic acid (PFTA)		0.290 U	0.310 U	0.290 U	0.320 U	0.290 U
Perfluorotridecanoic acid (PFTrDA)		0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
Perfluoroundecanoic acid (PFUnA)		0.190 U	0.210 U	0.190 U	0.220 U	0.190 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-03	30SB-19-03	30SB-19-03	30SB-19-03
	Field Sample ID	30SB-19-03-0-0.5	30SB-19-03-0.5-3	30SB-19-03-3-7	30SB-19-03-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	10/14/2019
	SDG	320554491	320554491	320554491	320554491
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.10 U	2.50 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.00 U	1.30 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.00 U	1.30 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.00 U	1.30 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.0890 J	0.230 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.210 U	0.250 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.210 U	0.250 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.210 U	0.250 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.0890 J	0.240 J	0.110 J	0.200 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.330	0.110 J	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.210 U	0.250 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.10 U	0.510 U	1.30 U	0.500 U
Perfluorooctanoic acid (PFOA)	0.720	0.160 J	0.150 J	0.250 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.320 U	0.310 U	0.380 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.210 U	0.250 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.210 U	0.250 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above

Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-04	30SB-19-04	30SB-19-04	30SB-19-04	30SB-19-04	30SB-19-04
	Field Sample ID	30SB-19-04-0-0.5	30SB-19-04-0.5-3	A3-SB-DUP01-101519	30SB-19-04-3-7	30SB-19-04-7-15	30SB-19-04-67-69
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	67.00 - 69.00
	Sampling Date	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019
	SDG	320554481	320554481	320554481	320554481	320554481	320554481
	Sample Type	Normal	Normal	Field Duplicate	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.10 U	2.00 U	2.00 U	1.90 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		0.990 U	1.00 U	1.00 U	1.00 U	0.970 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.990 U	1.00 U	1.00 U	1.00 U	0.970 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.990 U	1.00 U	1.00 U	1.00 U	0.970 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.190 U	0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.200 U	0.210 U	0.200 U	0.0670 J	0.290 U	0.290 J
Perfluorohexanoic acid (PFHxA)		0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.300 U
Perfluorononanoic acid (PFNA)	0.320	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.490 U	0.580 J	0.650 J	0.600 J	5.90	0.500 U
Perfluorooctanoic acid (PFOA)	0.720	0.200 U	0.210 U	0.200 U	0.200 U	0.110 J	0.900
Perfluorotetradecanoic acid (PFTA)		0.300 U	0.310 U	0.300 U	0.300 U	0.290 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-05	30SB-19-05	30SB-19-05	30SB-19-05
	Field Sample ID	30SB-19-05-0-0.5	30SB-19-05-0.5-3	30SB-19-05-3-7	30SB-19-05-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	10/14/2019
	SDG	320554491	320554491	320554491	320554491
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.00 U	2.00 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.00 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.180 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.200 U	0.200 U	0.200 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.180 J	0.270 J	1.10	2.20
Perfluorohexanoic acid (PFHxA)		0.200 U	0.200 U	0.200 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	3.30	1.00 U	1.70	3.80
Perfluorooctanoic acid (PFOA)	0.720	0.200 U	0.100 J	1.70	5.70
Perfluorotetradecanoic acid (PFTA)		0.300 U	0.300 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.200 U	0.200 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.200 U	0.200 U	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Soil Boring Samples-Area 3
 AOC 30, Former Moore Army Air Field Drum Storage Area

	Location	30SB-19-06	30SB-19-06	30SB-19-06	30SB-19-06
	Field Sample ID	30SB-19-06-0-0.5	30SB-19-06-0.5-3	30SB-19-06-3-7	30SB-19-06-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/15/2019	10/15/2019	10/15/2019	10/15/2019
	SDG	320554491	320554491	320554481	320554481
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.20 U	2.00 U	2.10 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	0.980 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	0.980 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	0.980 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.180 U	0.190 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.220 U	0.200 U	0.140 J	0.210 U
Perfluorododecanoic acid (PFDoA)		0.220 U	0.200 U	0.210 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.220 U	0.200 U	0.210 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.300 J	0.110 J	0.850	0.980
Perfluorohexanoic acid (PFHxA)		0.160 J	0.200 U	0.310 U	0.310 U
Perfluorononanoic acid (PFNA)	0.320	0.220 U	0.200 U	0.330	0.200 J
Perfluorooctanesulfonic acid (PFOS)	2.00	1.60	0.980 U	100	54.0
Perfluorooctanoic acid (PFOA)	0.720	0.320 J	0.110 J	0.650	2.50
Perfluorotetradecanoic acid (PFTA)		0.330 U	0.290 U	0.310 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.220 U	0.200 U	0.210 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.220 U	0.200 U	0.210 U	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

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AOC 31

Soil/Concrete Results

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-01	31SB-19-01	31SB-19-01	31SB-19-01	31SB-19-01
Field Sample ID		31SB-19-01-0-0.5	31SB-19-01-0.5-3	31SB-19-01-3-7	31SB-19-01-7-15	31SB-19-01-65-67
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	65.00 - 67.00
Sampling Date		10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019
SDG		320554481	320554481	320554481	320554481	320554481
Sample Type		Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		5.10	1.90 J	1.30 J	3.30 J	4.00 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		15.0	49.0	42.0 J	50.0 J	3.50
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	0.980 U	0.970 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.60 J	0.670 J	0.300 J	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.320 J	0.120 J	0.0690 J	0.160 J	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.520	0.960	0.340	0.250 J	0.200 U
Perfluorododecanoic acid (PFDoA)		0.110 J	0.200 U	0.190 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.430	0.510	0.430	0.380	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	5.50	5.80	13.0	11.0 J	0.380
Perfluorohexanoic acid (PFHxA)		1.00	1.60	1.20	1.30	0.310 U
Perfluorononanoic acid (PFNA)	0.320	0.120 J	0.120 J	0.450	0.410	0.0960 J
Perfluorooctanesulfonic acid (PFOS)	2.00	65.0	33.0	530	470	95.0
Perfluorooctanoic acid (PFOA)	0.720	1.80	2.50	1.80	2.00	0.330
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.290 U	0.290 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTTrDA)		0.210 U	0.200 U	0.190 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.160 J	0.130 J	0.190 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-02	31SB-19-02	31SB-19-02	31SB-19-02	31SB-19-02
Field Sample ID		31SB-19-02-0-0.5	31SB-19-02-0.5-3	31SB-19-02-3-7	A3-SB-DUP01-101719	31SB-19-02-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		10/17/2019	10/17/2019	10/17/2019	10/17/2019	10/17/2019
SDG		320554781	320554781	320554781	320554781	320554781
Sample Type		Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		1.60 J	1.30 J	2.40 J	2.40 J	2.80 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		3.30 J	3.70	43.0	34.0	62.0
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.20 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.380 J	0.480 J	3.30	1.80 J	3.60
Perfluorobutanesulfonic acid (PFBS)		0.0690 J	0.180 U	0.100 J	0.0850 J	0.210 J
Perfluorodecanoic acid (PFDA)	0.300	0.190 J	0.270 J	0.430	0.280 J	0.240 J
Perfluorododecanoic acid (PFDoA)		0.210 U	0.100 J	0.170 J	0.210 J	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.120 J	0.230 J	0.500	0.470	0.170 J
Perfluorohexanesulfonic acid (PFHxS)	0.300	2.00	2.80	5.40	6.50	7.60
Perfluorohexanoic acid (PFHxA)		0.490	0.430	1.60	1.60	0.930
Perfluorononanoic acid (PFNA)	0.320	0.150 J	0.150 J	0.310 J	0.370	0.280 J
Perfluorooctanesulfonic acid (PFOS)	2.00	29.0 J	49.0 J	76.0 J	71.0 J	230 J
Perfluorooctanoic acid (PFOA)	0.720	0.640	1.10	2.00	2.30	1.50
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.300 U	0.360 U	0.310 U	0.310 U
Perfluorotridecanoic acid (PFTTrDA)		0.210 U	0.200 U	0.240 U	0.210 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.200 U	0.140 J	0.130 J	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-03	31SB-19-03	31SB-19-03	31SB-19-03
Field Sample ID		31SB-19-03-0-0.5	31SB-19-03-0.5-3	31SB-19-03-3-7	31SB-19-03-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		10/17/2019	10/17/2019	10/17/2019	10/17/2019
SDG		320554781	320554781	320554781	320554781
Sample Type		Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.00 U	1.50 J	0.730 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.40 J	6.00	29.0 J	17.0
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	0.400 J	0.440 J	0.330 J
Perfluorobutanesulfonic acid (PFBS)		0.0930 J	0.0860 J	0.500	0.120 J
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.300 J	0.140 J	0.120 J
Perfluorododecanoic acid (PFDoA)		0.210 U	0.200 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.120 J	0.150 J	0.210 J	0.140 J
Perfluorohexanesulfonic acid (PFHxS)	0.300	2.50	1.60	7.80	3.60
Perfluorohexanoic acid (PFHxA)		0.420	0.310	0.990	0.390
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.0900 J	0.230 J	0.190 J
Perfluorooctanesulfonic acid (PFOS)	2.00	18.0 J	25.0 J	190 J	180 J
Perfluorooctanoic acid (PFOA)	0.720	0.630	0.760	2.60	1.30
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.310 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.200 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-04	31SB-19-04	31SB-19-04	31SB-19-04
	Field Sample ID	31SB-19-04-0-0.5	31SB-19-04-0.5-3	31SB-19-04-3-7	31SB-19-04-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/16/2019	10/16/2019	10/16/2019	10/16/2019
	SDG	320554481	320554481	320554481	320554481
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		0.730 J	20.0 U	1.90 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		3.50	27.0	84.0	20.0
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.00 U	0.950 U	0.990 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	0.760 J	1.10 J	0.430 J
Perfluorobutanesulfonic acid (PFBS)		0.0690 J	0.180 U	0.170 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 J	0.530	0.230 J	0.120 J
Perfluorododecanoic acid (PFDoA)		0.120 J	0.200 U	0.190 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.160 J	0.200 J	0.130 J	0.0950 J
Perfluorohexanesulfonic acid (PFHxS)	0.300	2.00	1.50	1.30	2.40
Perfluorohexanoic acid (PFHxA)		0.380	0.370	0.440	0.370
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.130 J	0.100 J	0.0900 J
Perfluorooctanesulfonic acid (PFOS)	2.00	13.0 J	26.0 J	31.0 J	74.0 J
Perfluorooctanoic acid (PFOA)	0.720	0.700	0.770	0.700	0.830
Perfluorotetradecanoic acid (PFTA)		0.320 U	0.300 U	0.290 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.200 U	0.190 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.130 J	0.130 J	0.190 U	0.200 U

Notes:

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‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-05	31SB-19-05	31SB-19-05	31SB-19-05
	Field Sample ID	31SB-19-05-0-0.5	31SB-19-05-0.5-3	31SB-19-05-3-7	31SB-19-05-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/17/2019	10/17/2019	10/17/2019	10/17/2019
	SDG	320554781	320554781	320554781	320554781
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		0.810 J	200 U	56.0	26.0 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		13.0	16.0	0.320 J	5.20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.680 J	1.00 U	1.00 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		2.10	0.360 J	1.00 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.100 J	0.180 U	0.180 U	0.220 U
Perfluorodecanoic acid (PFDA)	0.300	0.610	0.200 U	0.200 U	0.240 U
Perfluorododecanoic acid (PFDoA)		0.190 J	0.200 U	0.200 U	0.240 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.390	0.310	0.370	0.240 J
Perfluorohexanesulfonic acid (PFHxS)	0.300	2.60	35.0	67.0	25.0
Perfluorohexanoic acid (PFHxA)		0.860	0.680	0.540	0.530
Perfluorononanoic acid (PFNA)	0.320	0.450	0.250 J	0.200 U	0.130 J
Perfluorooctanesulfonic acid (PFOS)	2.00	35.0 J	360	53.0 J	150 J
Perfluorooctanoic acid (PFOA)	0.720	2.50	12.0	53.0	22.0
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.300 U	0.300 U	0.360 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.200 U	0.200 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		0.230 J	0.200 U	0.200 U	0.240 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

Location	31SB-19-06	31SB-19-06
Field Sample ID	31SB-19-06-0-1	31SB-19-06-3-7
Sampling Depth	0.00 - 1.00	3.00 - 7.00
Sampling Date	10/16/2019	10/16/2019
SDG	320554481	320554481

Sample Type	Normal	Normal
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PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.230 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.0940 J	0.230 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.330	0.960
Perfluorohexanoic acid (PFHxA)		0.310 U	0.0980 J
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.120 J
Perfluorooctanesulfonic acid (PFOS)	2.00	7.10	140 J
Perfluorooctanoic acid (PFOA)	0.720	0.110 J	0.140 J
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.340 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.230 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 31, Former Moore Army Air Field Fire Training Area

	Location	31SB-19-07	31SB-19-07	31SB-19-07	31SB-19-07
Field Sample ID	31- CONCRETE_OCT19	31SB-19-07-0-1	31SB-19-07-3-7	A3-SB-DUP01- 101619	
Sampling Depth	0.00 - 1.00	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00	
Sampling Date	10/16/2019	10/16/2019	10/16/2019	10/16/2019	
SDG	320554482	320554481	320554481	320554481	
Sample Type	Normal	Normal	Normal	Field Duplicate	
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		9.50	2.10 U	2.00 U	2.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		7.20	0.840 J	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	0.600 J	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	2.60	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		2.50	0.190 U	0.110 J	0.100 J
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.210 U	0.200 U	0.230 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.210 U	0.200 U	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	1.60	0.120 J	0.170 J	0.190 J
Perfluorohexanesulfonic acid (PFHxS)	0.300	41.0	12.0	15.0	17.0
Perfluorohexanoic acid (PFHxA)		7.30	0.460 U	0.500	0.540
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.210 U	0.0960 J	0.0990 J
Perfluorooctanesulfonic acid (PFOS)	2.00	95.0	120	250	220
Perfluorooctanoic acid (PFOA)	0.720	4.90	2.10	3.00	3.50
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.310 U	0.310 U	0.340 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.210 U	0.200 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.210 U	0.200 U	0.230 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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AOC 50

Soil Results

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-01	50SB-19-01	50SB-19-01	50SB-19-01	50SB-19-01
Field Sample ID		50SB-19-01-0-0.5	50SB-19-01-0.5-3	50SB-19-01-3-7	50SB-19-01-7-15	50SB-19-01-44-46
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	44.00 - 46.00
Sampling Date		10/24/2019	10/24/2019	10/24/2019	10/24/2019	10/24/2019
SDG		320557011	320557011	320557011	320557011	320557011
Sample Type		Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	2.10 U	2.10 UJ	2.00 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.00 U	1.10 UJ	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 J	1.00 U	1.10 UJ	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.00 U	1.10 UJ	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.190 U	0.190 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.410	0.210 J	0.210 U	0.110 J	0.210 U
Perfluorododecanoic acid (PFDoA)		0.690	0.210 U	0.210 U	0.200 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.250 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.230 J	0.210 U	0.210 U	0.0800 J	0.210 U
Perfluorohexanoic acid (PFHxA)		0.250 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.250 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.60 U	1.00 U	2.20	1.00 U	1.10 U
Perfluorooctanoic acid (PFOA)	0.720	0.120 J	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.270 J	0.310 U	0.320 U	0.300 U	0.320 U
Perfluorotridecanoic acid (PFTrDA)		0.220 J	0.210 U	0.210 U	0.200 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.610	0.210 U	0.210 U	0.200 U	0.210 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-02	50SB-19-02	50SB-19-02	50SB-19-02
Field Sample ID		50SB-19-02-0-0.5	50SB-19-02-0.5-3	50SB-19-02-3-7	50SB-19-02-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00
Sampling Date		10/24/2019	10/24/2019	10/24/2019	10/24/2019
SDG		320557011	320557011	320557011	320557011
Sample Type		Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.20 U	2.10 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.10 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.10 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.10 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.200 U	0.190 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.210 U	0.220 U	0.210 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.220 U	0.210 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.220 U	0.210 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.490	0.530	1.70	0.620
Perfluorohexanoic acid (PFHxA)		0.0840 J	0.110 J	0.0790 J	0.0960 J
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.220 U	0.210 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.50 U	12.0	5.60	2.30
Perfluorooctanoic acid (PFOA)	0.720	0.110 J	0.220 U	0.580	0.230 J
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.330 U	0.310 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.220 U	0.210 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.220 U	0.210 U	0.210 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-03	50SB-19-03	50SB-19-03	50SB-19-03	50SB-19-03
Field Sample ID		50SB-19-03-0-0.5	50SB-19-03-0.5-3	50SB-19-03-3-7	50SB-19-03-7-15	A3-SB-DUP1-102319
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00
Sampling Date		10/23/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019
SDG		320556101	320556101	320556101	320556101	320556101
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.00 U	2.50 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.20 U	0.980 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.20 U	0.980 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.00 U	1.20 U	0.980 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.180 U	0.220 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.200 U	0.250 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.200 U	0.200 U	0.250 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.190 J	0.130 J	0.480	0.320
Perfluorohexanesulfonic acid (PFHxS)	0.300	12.0	19.0	6.80	6.80 J	3.40 J
Perfluorohexanoic acid (PFHxA)		0.0950 J	0.130 J	0.250 U	0.240 J	0.160 J
Perfluorononanoic acid (PFNA)	0.320	0.100 J	0.200 U	0.250 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	45.0 J	0.600 J	0.680 J	0.770 J	0.420 J
Perfluorooctanoic acid (PFOA)	0.720	22.0	26.0	11.0	15.0 J	7.80 J
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.300 U	0.370 U	0.290 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.200 U	0.250 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.200 U	0.250 U	0.200 U	0.200 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-04	50SB-19-04	50SB-19-04	50SB-19-04
	Field Sample ID	50SB-19-04-0-0.5	50SB-19-04-0.5-3	50SB-19-04-3-7	50SB-19-04-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/23/2019	10/23/2019	10/23/2019	10/23/2019
	SDG	320556101	320556101	320556101	320556101
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.30 U	2.10 U	2.00 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.10 U	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.10 U	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.10 U	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.190 U	0.180 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.230 U	0.210 U	0.200 U	0.220 U
Perfluorododecanoic acid (PFDoA)		0.230 U	0.210 U	0.200 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.230 U	0.210 U	0.200 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.230 U	0.110 J	0.200 U	0.220 U
Perfluorohexanoic acid (PFHxA)		0.230 U	0.210 U	0.200 U	0.220 U
Perfluorononanoic acid (PFNA)	0.320	0.230 U	0.210 U	0.200 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.570 U	0.350 J	0.480 J	0.560 U
Perfluorooctanoic acid (PFOA)	0.720	0.230 U	0.210 U	0.200 U	0.220 U
Perfluorotetradecanoic acid (PFTA)		0.340 U	0.320 U	0.310 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.230 U	0.210 U	0.200 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		0.230 U	0.210 U	0.200 U	0.220 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-05	50SB-19-05	50SB-19-05	50SB-19-05	50SB-19-05	50SB-19-05
	Field Sample ID	50SB-19-05-0-0.5	50SB-19-05-0.5-3	50SB-19-05-3-7	50SB-19-05-7-15	A3-SB-DUP02-102319	50SB-19-05-51-53
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00	51.00 - 53.00
	Sampling Date	10/23/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019	10/23/2019
	SDG	320556101	320556101	320556101	320556101	320556101	320556101
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	2.10 U	2.30 U	2.30 U	1.90 U	2.80 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.10 U	1.10 U	1.20 U	0.970 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.10 U	1.10 U	1.20 U	0.970 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.10 U	1.10 U	1.20 U	0.970 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.210 U	0.190 U	0.200 U	0.210 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.270 J	1.10	0.390	0.230 J	0.460	7.30
Perfluorohexanoic acid (PFHxA)		0.0850 J	0.170 J	0.230 U	0.230 U	0.190 U	0.330
Perfluorononanoic acid (PFNA)	0.320	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	2.00 J	0.330 J	0.350 J	0.430 J	0.640 J	0.540 U
Perfluorooctanoic acid (PFOA)	0.720	0.200 J	1.20	0.550	0.140 J	0.220 J	12.0
Perfluorotetradecanoic acid (PFTA)		0.360 U	0.320 U	0.340 U	0.350 U	0.290 U	0.320 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above

Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-06	50SB-19-06	50SB-19-06	50SB-19-06	50SB-19-06
Field Sample ID		50SB-19-06-0-0.5	50SB-19-06-0.5-3	50SB-19-06-3-7	50SB-19-06-7-15	50SB-19-06-60-62
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	60.00 - 62.00
Sampling Date		10/28/2019	10/28/2019	10/28/2019	10/28/2019	10/28/2019
SDG		320558522	320558522	320558522	320558522	320558522
Sample Type		Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	2.00 U	2.00 U	1.90 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	0.980 U	1.00 U	0.960 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	0.980 U	1.00 U	0.960 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	0.980 U	1.00 U	0.960 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.180 U	0.180 U	0.170 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	0.130 J	0.200 U	0.200 U	0.190 U	0.220 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.10 U	0.980 U	1.00 U	0.960 U	0.560 U
Perfluorooctanoic acid (PFOA)	0.720	0.210 U	0.200 U	0.160 J	0.190 U	0.220 U
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.290 U	0.300 U	0.290 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		0.210 U	0.200 U	0.200 U	0.190 U	0.220 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-07	50SB-19-07	50SB-19-07	50SB-19-07
Field Sample ID		50SB-19-07-0-0.5	50SB-19-07-3-7	50SB-19-07-7-15	A3-SB-DUP01-102519
Sampling Depth		0.00 - 0.50	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00
Sampling Date		10/25/2019	10/25/2019	10/25/2019	10/25/2019
SDG		320557011	320557011	320557011	320557011
Sample Type		Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		3.10 U	2.00 U	2.10 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.60 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.60 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.60 U	1.00 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.280 U	0.180 U	0.190 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.160 J	0.200 U	0.210 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.310 U	0.200 U	0.210 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.310 U	0.200 U	0.210 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.310 U	0.200 U	0.210 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.310 U	0.200 U	0.210 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.310 U	0.200 U	0.210 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.80 U	1.00 U	1.00 U	1.00 U
Perfluorooctanoic acid (PFOA)	0.720	0.310 U	0.160 J	0.210 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.470 U	0.300 U	0.310 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.310 U	0.200 U	0.210 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.310 U	0.200 U	0.210 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-08	50SB-19-08	50SB-19-08	50SB-19-08
	Field Sample ID	50SB-19-08-0-0.5	50SB-19-08-0.5-3	50SB-19-08-3-7	50SB-19-08-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	10/25/2019	10/25/2019	10/25/2019	10/25/2019
	SDG	320557011	320557011	320557011	320557011
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
		2.70 U	2.40 U	2.00 U	2.00 U
6:2 Fluorotelomer sulfonate (6:2 FTS)		1.40 U	1.20 U	0.990 U	1.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.40 U	1.20 U	0.990 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.40 U	1.20 U	0.990 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.40 U	1.20 U	0.990 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.240 U	0.220 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.260 J	0.240 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.270 U	0.240 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.170 J	0.240 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.0840 J	0.240 U	0.200 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.160 J	0.240 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.210 J	0.240 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	2.40	1.20 U	0.490 U	0.500 U
Perfluorooctanoic acid (PFOA)	0.720	0.770	0.240 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.410 U	0.370 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.270 U	0.240 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.160 J	0.240 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-09	50SB-19-09	50SB-19-09	50SB-19-09	50SB-19-09
	Field Sample ID	50SB-19-09-0-0.5	50SB-19-09-0.5-3	A3-SB-DUP01-103119	50SB-19-09-3-5	50SB-19-09-5-7
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00	3.00 - 5.00	5.00 - 7.00
	Sampling Date	10/31/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019
	SDG	320559202	320559202	320559202	320559202	320559202
	Sample Type	Normal	Normal	Field Duplicate	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.80 U	2.60 U	2.70 U	2.40 U	2.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.40 U	1.30 U	1.30 U	1.20 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.40 U	1.30 U	1.30 U	1.20 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.40 U	1.30 U	1.30 U	1.20 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.260 U	0.230 U	0.240 U	0.0760 J	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	0.280 U	0.260 U	0.270 U	0.240 U	0.240 U
Perfluorododecanoic acid (PFDoA)		0.280 U	0.260 U	0.270 U	0.240 U	0.240 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.120 J	0.120 J	0.140 J	0.100 J	0.240 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	2.10	2.40	1.80	1.70	0.120 J
Perfluorohexanoic acid (PFHxA)		0.210 J	0.240 J	0.280 J	0.240 J	0.240 U
Perfluorononanoic acid (PFNA)	0.320	0.130 J	0.260 U	0.270 U	0.240 U	0.240 U
Perfluorooctanesulfonic acid (PFOS)	2.00	10.0	8.20	5.90	4.90	0.970 J
Perfluorooctanoic acid (PFOA)	0.720	0.740	0.730	0.730	0.580	0.240 U
Perfluorotetradecanoic acid (PFTA)		0.430 U	0.390 U	0.400 U	0.360 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.280 U	0.260 U	0.270 U	0.240 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		0.280 U	0.260 U	0.270 U	0.240 U	0.240 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-10	50SB-19-10	50SB-19-10	50SB-19-10	50SB-19-10
	Field Sample ID	50SB-19-10-0-0.5	50SB-19-10-0.5-3	50SB-19-10-3-5	A3-SB-DUP02-103119	50SB-19-10-5-7
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 5.00	3.00 - 5.00	5.00 - 7.00
	Sampling Date	10/31/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019
	SDG	320559202	320559202	320559202	320559202	320559202
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	2.20 U	2.50 U	2.30 U	2.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.10 U	1.30 U	1.10 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.10 U	1.30 U	1.10 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.10 U	1.30 U	1.10 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.210 U	0.200 U	0.230 U	0.210 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	0.120 J	0.220 U	0.250 U	0.230 U	0.230 U
Perfluorododecanoic acid (PFDoA)		0.240 U	0.220 U	0.250 U	0.230 U	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.150 J	0.370	0.250 U	0.230 U	0.230 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	1.50	1.70	1.50	1.50	0.110 J
Perfluorohexanoic acid (PFHxA)		0.290 J	0.610	0.250 J	0.210 J	0.230 U
Perfluorononanoic acid (PFNA)	0.320	0.160 J	0.150 J	0.250 U	0.230 U	0.230 U
Perfluorooctanesulfonic acid (PFOS)	2.00	6.40	4.70	0.540 J	1.10 U	1.20 U
Perfluorooctanoic acid (PFOA)	0.720	0.660	1.80	0.210 J	0.190 J	0.230 U
Perfluorotetradecanoic acid (PFTA)		0.350 U	0.330 U	0.380 U	0.340 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.220 U	0.250 U	0.230 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		0.240 U	0.220 U	0.250 U	0.230 U	0.230 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-11	50SB-19-11	50SB-19-11	50SB-19-11
	Field Sample ID	50SB-19-11-0-0.5	50SB-19-11-0.5-3	50SB-19-11-3-7	50SB-19-11-7-15
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
	Sampling Date	11/25/2019	11/25/2019	11/25/2019	11/25/2019
	SDG	320566652	320566652	320566652	320566652
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.20 U	2.00 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.00 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.220 U	0.200 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.220 U	0.200 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.220 U	0.200 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.220 U	0.200 U	0.200 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.220 U	0.200 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.130 J	0.200 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.00 J	0.390 J	0.330 J	0.260 J
Perfluorooctanoic acid (PFOA)	0.720	0.150 J	0.140 J	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.330 U	0.300 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.220 U	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.220 U	0.200 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

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PFAS Summary Report – Soil, Sediment, and Surface Water

Former Fort Devens, PFAS Remedial Investigation

KOMAN, PFAS RI, Soil Boring Samples-Area 3

AOC 50, Former Moore Army Air Field

	Location	50SB-19-12	50SB-19-12	50SB-19-12	50SB-19-12
Field Sample ID		50SB-19-12-0-0.5	50SB-19-12-0.5-3	50SB-19-12-3-7	50SB-19-12-7-15
Sampling Depth		0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00
Sampling Date		11/18/2019	11/18/2019	11/18/2019	11/18/2019
SDG		320564851	320564851	320564851	320564851
Sample Type		Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.20 U	2.20 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.10 U	1.00 U	0.990 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.10 U	1.00 U	0.990 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.10 U	1.00 U	0.990 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.200 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.120 J	0.220 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.220 U	0.220 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.220 U	0.220 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.220 U	0.220 U	0.200 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.220 U	0.220 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.0990 J	0.220 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	1.40	0.690 J	0.500 U	0.490 U
Perfluorooctanoic acid (PFOA)	0.720	0.220 U	0.220 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.330 U	0.330 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.220 U	0.220 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.220 U	0.220 U	0.200 U	0.200 U

Notes:

ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above

Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

H-4

PFAS in Surface Water and Sediment and TOC in Sediment

AOC 20 Unnamed Pond

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 AOC 20, Waste Water Treatment Plant Sand Filter Beds

Location	UP-19-01
Field Sample ID	UP-19-01-SW-OCT19
Sampling Depth	0.00 - 0.00
Sampling Date	10/17/2019
SDG	320554761
Sample Type	Normal

PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		10.0 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		10.0 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		10.0 U
Perfluorobutanesulfonic acid (PFBS)	2030000	3.10
Perfluorodecanoic acid (PFDA)		2.30
Perfluorododecanoic acid (PFDoA)		1.50 U
Perfluoroheptanoic acid (PFHpA)		9.90
Perfluorohexanesulfonic acid (PFHxS)		6.40
Perfluorohexanoic acid (PFHxA)		11.0
Perfluorononanoic acid (PFNA)		5.90
Perfluorooctanesulfonic acid (PFOS)	2030	82.0
Perfluorooctanoic acid (PFOA)	2030	19.0
Perfluorotetradecanoic acid (PFTA)		3.00 U
Perfluorotridecanoic acid (PFTrDA)		3.00 U
Perfluoroundecanoic acid (PFUnA)		1.50 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 AOC 20, Waste Water Treatment Plant Sand Filter Beds

Location	UP-19-01
Field Sample ID	UP-19-01-SE-OCT19
Sampling Depth	0.00 - 0.50
Sampling Date	10/17/2019
SDG	320554761
Sample Type	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.60 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.230 U
Perfluorodecanoic acid (PFDA)		0.260 U
Perfluorododecanoic acid (PFDoA)		0.260 U
Perfluoroheptanoic acid (PFHpA)		0.260 U
Perfluorohexanesulfonic acid (PFHxS)		0.260 U
Perfluorohexanoic acid (PFHxA)		0.260 U
Perfluorononanoic acid (PFNA)		0.260 U
Perfluorooctanesulfonic acid (PFOS)	609	1.30 U
Perfluorooctanoic acid (PFOA)	609	0.260 U
Perfluorotetradecanoic acid (PFTA)		0.380 U
Perfluorotridecanoic acid (PFTrDA)		0.260 U
Perfluoroundecanoic acid (PFUnA)		0.260 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

AOC 21 Unnamed Stream

Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 AOC 21, Waste Water Treatment Plant Sludge Drying Beds

Location	US-19-01
Field Sample ID	US-19-01-SE-OCT19
Sampling Depth	0.00 - 0.50
Sampling Date	10/18/2019
SDG	320554761
Sample Type	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		5.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		2.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		2.00 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.860 J
Perfluorobutanesulfonic acid (PFBS)	609000	0.480 U
Perfluorodecanoic acid (PFDA)		0.640 J
Perfluorododecanoic acid (PFDoA)		0.620 J
Perfluoroheptanoic acid (PFHpA)		0.530 U
Perfluorohexanesulfonic acid (PFHxS)		0.530 U
Perfluorohexanoic acid (PFHxA)		0.530 U
Perfluorononanoic acid (PFNA)		0.210 J
Perfluorooctanesulfonic acid (PFOS)	609	6.70
Perfluorooctanoic acid (PFOA)	609	0.460 J
Perfluorotetradecanoic acid (PFTA)		0.800 U
Perfluorotridecanoic acid (PFTrDA)		0.280 J
Perfluoroundecanoic acid (PFUnA)		0.660 J

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

Airfield Wetland

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 AOC 50, Former Moore Army Air Field

Location	AFW-19-01	AFW-19-02
Field Sample ID	AFW-19-01_SW-OCT19	AFW-19-02_SW-OCT19
Sampling Depth	0.00 - 0.00	0.00 - 0.00
Sampling Date	10/18/2019	10/18/2019
SDG	320554761	320554761
Sample Type	Normal	Normal

PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		20.0 U	20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.80 U	10.0 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.80 U	10.0 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.80 U	10.0 U
Perfluorobutanesulfonic acid (PFBS)	2030000	0.510 J	1.50 J
Perfluorodecanoic acid (PFDA)		0.600 J	0.820 J
Perfluorododecanoic acid (PFDoA)		1.50 U	1.50 U
Perfluoroheptanoic acid (PFHpA)		3.40	4.40
Perfluorohexanesulfonic acid (PFHxS)		4.90	12.0
Perfluorohexanoic acid (PFHxA)		3.00	6.20
Perfluorononanoic acid (PFNA)		1.00 J	1.60 J
Perfluorooctanesulfonic acid (PFOS)	2030	6.70	13.0
Perfluorooctanoic acid (PFOA)	2030	4.50	9.30
Perfluorotetradecanoic acid (PFTA)		2.90 U	3.00 U
Perfluorotridecanoic acid (PFTrDA)		2.90 U	3.00 U
Perfluoroundecanoic acid (PFUnA)		1.50 U	1.50 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 AOC 50, Former Moore Army Air Field

Location	AFW-19-01	AFW-19-02
Field Sample ID	AFW-19-01_SE-OCT19	AFW-19-02_SE-OCT19
Sampling Depth	0.00 - 0.50	0.00 - 0.50
Sampling Date	10/18/2019	10/18/2019
SDG	320554761	320554761
Sample Type	Normal	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		11.0 U	12.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		5.40 U	5.90 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		5.40 U	2.00 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		5.40 U	5.90 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.980 U	1.10 U
Perfluorodecanoic acid (PFDA)		0.530 J	1.10 J
Perfluorododecanoic acid (PFDoA)		1.10 U	0.640 J
Perfluoroheptanoic acid (PFHpA)		1.10 U	1.20 U
Perfluorohexanesulfonic acid (PFHxS)		1.10 J	1.90
Perfluorohexanoic acid (PFHxA)		1.10 U	1.20 U
Perfluorononanoic acid (PFNA)		1.10 U	0.640 J
Perfluorooctanesulfonic acid (PFOS)	609	5.30 J	16.0
Perfluorooctanoic acid (PFOA)	609	0.770 J	1.20 J
Perfluorotetradecanoic acid (PFTA)		1.60 U	1.80 U
Perfluorotridecanoic acid (PFTrDA)		1.10 U	1.20 U
Perfluoroundecanoic acid (PFUnA)		1.10 U	1.40 J

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

Nashua River

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

	Location	NR-19-01	NR-19-02	NR-19-02	NR-19-03	NR-19-04	NR-19-05
	Field Sample ID	NR-19-01-SW-OCT19	A3-SW-DUP-101619	NR-19-02-SW-OCT19	NR-19-03-SW-OCT19	NR-19-04-SW-OCT19	NR-19-05-SW-OCT19
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	10/17/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019
	SDG	320554761	320554451	320554451	320554451	320554451	320554451
	Sample Type	Normal	Field Duplicate	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		20.0 U	18.0 U	19.0 U	18.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.80 U	9.10 U	9.30 U	9.20 U	8.90 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.80 U	9.10 U	9.30 U	9.20 U	8.90 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.80 U	9.10 U	9.30 U	9.20 U	8.90 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)	2030000	7.10	11.0	9.90	9.70	9.70	9.20
Perfluorodecanoic acid (PFDA)		1.30 J	0.780 J	0.810 J	0.850 J	0.770 J	0.770 J
Perfluorododecanoic acid (PFDoA)		1.50 U	1.40 U	1.40 U	1.40 U	1.30 U	0.950 J
Perfluoroheptanoic acid (PFHpA)		6.90	10.0	9.70	9.50	9.30	9.70
Perfluorohexanesulfonic acid (PFHxS)		2.20	2.90	2.90	2.70	2.80	3.80
Perfluorohexanoic acid (PFHxA)		14.0	20.0	19.0	19.0	18.0	19.0
Perfluorononanoic acid (PFNA)		1.60 J	1.40 J	1.30 J	1.40 J	1.30 J	1.30 J
Perfluorooctanesulfonic acid (PFOS)	2030	7.90	6.80	6.40	6.10	6.40	7.20
Perfluorooctanoic acid (PFOA)	2030	13.0	16.0	16.0	16.0	16.0	15.0
Perfluorotetradecanoic acid (PFTA)		3.00 U	2.70 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		3.00 U	2.70 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		1.50 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

	Location	NR-19-06	NR-19-07	NR-19-08	NR-19-09	NR-19-10	NR-19-11
Field Sample ID		NR-19-06-SW-OCT19	NR-19-07-SW-OCT19	NR-19-08-SW-OCT19	NR-19-09-SW-OCT19	NR-19-10-SW-OCT19	A3-SW-DUP-101419
Sampling Depth		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sampling Date		10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/14/2019
SDG		320554451	320554451	320554451	320554451	320554451	320554451
Sample Type		Normal	Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		18.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.20 U	9.50 U	9.40 U	9.30 U	9.30 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.20 U	9.50 U	9.40 U	9.30 U	9.30 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.20 U	9.50 U	9.40 U	9.30 U	9.30 U	9.40 U
Perfluorobutanesulfonic acid (PFBS)	2030000	8.40	7.70	7.90	8.10	7.30	7.20
Perfluorodecanoic acid (PFDA)		3.10	0.900 J	0.820 J	0.900 J	0.860 J	0.860 J
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.40 U	0.710 J	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)		14.0	9.30	9.30	9.10	8.50	7.60
Perfluorohexanesulfonic acid (PFHxS)		8.50	4.10	12.0	8.30	4.50	4.30
Perfluorohexanoic acid (PFHxA)		20.0	17.0	19.0	18.0	17.0	16.0
Perfluorononanoic acid (PFNA)		2.80	1.50 J	1.40 J	1.40 J	1.40 J	1.30 J
Perfluorooctanesulfonic acid (PFOS)	2030	56.0	10.0	8.10	9.00	8.10	7.90
Perfluorooctanoic acid (PFOA)	2030	28.0	15.0	17.0	17.0	15.0	14.0
Perfluorotetradecanoic acid (PFTA)		2.80 U	2.80 U	2.80 U	2.80 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.80 U	2.80 U	2.80 U	2.80 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		0.990 J	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

	Location	NR-19-11	NR-19-12	NR-19-13	NR-19-14
	Field Sample ID	NR-19-11-SW-OCT19	NR-19-12-SW-OCT19	NR-19-13-SW-OCT19	NR-SW-19-14-DEC19
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	12/18/2019
	SDG	320554451	320554451	320554451	320572931
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		18.0 U	18.0 U	18.0 U	17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.20 U	9.20 U	9.00 U	8.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.20 U	9.20 U	9.00 U	8.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.20 U	9.20 U	9.00 U	8.70 U
Perfluorobutanesulfonic acid (PFBS)	2030000	7.40	6.80	6.60	1.80
Perfluorodecanoic acid (PFDA)		0.850 J	1.00 J	1.00 J	0.650 J
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.40 U	1.30 U
Perfluoroheptanoic acid (PFHpA)		7.50	8.40	8.30	5.00
Perfluorohexanesulfonic acid (PFHxS)		4.40	4.30	6.30	1.20 J
Perfluorohexanoic acid (PFHxA)		16.0	15.0	15.0	8.10
Perfluorononanoic acid (PFNA)		1.40 J	1.20 J	1.60 J	1.40 J
Perfluorooctanesulfonic acid (PFOS)	2030	8.20	8.20	10.0	6.10
Perfluorooctanoic acid (PFOA)	2030	13.0	14.0	15.0	10.0
Perfluorotetradecanoic acid (PFTA)		2.80 U	2.80 U	2.70 U	2.60 U
Perfluorotridecanoic acid (PFTrDA)		2.80 U	2.80 U	2.70 U	2.60 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.40 U	1.40 U	1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

Location	NR-19-01	NR-19-02	NR-19-02	NR-19-03	NR-19-04	NR-19-05
Field Sample ID	NR-19-01-SE-OCT19	A3-SE-DUP-101619	NR-19-02-SE-OCT19	NR-19-03-SE-OCT19	NR-19-04-SE-OCT19	NR-19-05-SE-OCT19
Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
Sampling Date	10/17/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019
SDG	320554761	320554451	320554451	320554451	320554451	320554451
Sample Type	Normal	Field Duplicate	Normal	Normal	Normal	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		6.50 U	3.30 U	3.20 U	5.10 U	3.30 U	4.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		3.30 U	1.70 U	1.60 U	2.60 U	1.70 U	2.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.50	0.710 J	0.570 J	1.20 J	1.70 U	4.90 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		3.70 J	1.70 U	1.60 U	2.60 U	1.70 U	0.840 J
Perfluorobutanesulfonic acid (PFBS)	609000	0.590 U	0.300 U	0.290 U	0.460 U	0.300 U	0.400 U
Perfluorodecanoic acid (PFDA)		0.920 J	0.160 J	0.320 U	0.510 U	0.300 J	0.440 U
Perfluorododecanoic acid (PFDoA)		1.10	0.330 U	0.320 U	0.260 J	0.330 U	0.440 U
Perfluoroheptanoic acid (PFHpA)		0.650 U	0.330 U	0.320 U	0.510 U	0.330 U	0.440 U
Perfluorohexanesulfonic acid (PFHxS)		0.650 U	0.200 J	0.150 J	0.290 J	0.120 J	0.770 J
Perfluorohexanoic acid (PFHxA)		0.650 U	0.160 J	0.140 J	0.330 J	0.150 J	0.440 U
Perfluorononanoic acid (PFNA)		0.650 U	0.330 U	0.320 U	0.510 U	0.160 J	0.440 U
Perfluorooctanesulfonic acid (PFOS)	609	4.20	2.10	1.80	1.30 J	2.90	1.80 J
Perfluorooctanoic acid (PFOA)	609	0.590 J	0.400 J	0.330 J	0.360 J	0.360 J	0.440 U
Perfluorotetradecanoic acid (PFTA)		0.370 J	0.500 U	0.490 U	0.770 U	0.500 U	0.670 U
Perfluorotridecanoic acid (PFTrDA)		0.380 J	0.330 U	0.320 U	0.510 U	0.330 U	0.270 J
Perfluoroundecanoic acid (PFUnA)		2.20	0.330 U	0.320 U	0.510 U	0.330 U	0.440 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

Location	NR-19-06	NR-19-07	NR-19-08	NR-19-09	NR-19-10	NR-19-11
Field Sample ID	NR-19-06-SE-OCT19	NR-19-07-SE-OCT19	NR-19-08-SE-OCT19	NR-19-09-SE-OCT19	NR-19-10-SE-OCT19	A3-SE-DUP-101419
Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
Sampling Date	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/14/2019
SDG	320554451	320554451	320554451	320554451	320554451	320554451
Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	3.20 U	3.50 U	2.70 U	2.90 U	3.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.60 U	1.70 U	1.30 U	1.40 U	1.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	3.70	1.70 U	1.30 U	1.40 U	0.590 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.520 J	1.50 J	1.70 U	1.30 U	1.40 U	1.60 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.220 U	0.290 U	0.310 U	0.240 U	0.260 U	0.290 U
Perfluorodecanoic acid (PFDA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U
Perfluorododecanoic acid (PFDoA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U
Perfluoroheptanoic acid (PFHpA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U
Perfluorohexanesulfonic acid (PFHxS)		0.240 U	0.270 J	1.50	0.0970 J	0.170 J	0.300 J
Perfluorohexanoic acid (PFHxA)		0.240 U	0.110 J	0.200 J	0.270 U	0.320 J	0.330 U
Perfluorononanoic acid (PFNA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U
Perfluorooctanesulfonic acid (PFOS)	609	0.930 J	2.10	2.10	0.700 J	0.720 J	1.20 J
Perfluorooctanoic acid (PFOA)	609	0.240 U	0.320 U	0.570	0.270 U	0.140 J	0.330 U
Perfluorotetradecanoic acid (PFTA)		0.360 U	0.480 U	0.520 U	0.400 U	0.430 U	0.490 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U
Perfluoroundecanoic acid (PFUnA)		0.240 U	0.320 U	0.350 U	0.270 U	0.290 U	0.330 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Area3
 Nashua River

	Location	NR-19-11	NR-19-12	NR-19-13	NR-19-14
	Field Sample ID	NR-19-11-SE-OCT19	NR-19-12-SE-OCT19	NR-19-13-SE-OCT19	NR-SED-19-14-DEC19
	Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
	Sampling Date	10/14/2019	10/14/2019	10/14/2019	12/18/2019
	SDG	320554451	320554451	320554451	320572931
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		3.10 U	4.50 U	2.40 U	3.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.60 U	2.20 U	1.20 U	1.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		0.520 J	2.00 J	1.20 U	0.760 J
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.60 U	1.70 J	1.20 U	1.00 J
Perfluorobutanesulfonic acid (PFBS)	609000	0.280 U	0.400 U	0.210 U	0.300 U
Perfluorodecanoic acid (PFDA)		0.310 U	0.660 J	0.240 U	0.210 J
Perfluorododecanoic acid (PFDoA)		0.310 U	0.570 J	0.240 U	0.300 J
Perfluoroheptanoic acid (PFHpA)		0.310 U	0.450 U	0.240 U	0.330 U
Perfluorohexanesulfonic acid (PFHxS)		0.390 J	0.390 J	0.240 U	0.500 U
Perfluorohexanoic acid (PFHxA)		0.310 U	0.450 U	0.240 U	0.330 U
Perfluorononanoic acid (PFNA)		0.310 U	0.450 U	0.240 U	0.330 U
Perfluorooctanesulfonic acid (PFOS)	609	1.20 J	5.20	1.20 U	1.60 J
Perfluorooctanoic acid (PFOA)	609	0.310 U	0.340 J	0.240 U	0.170 J
Perfluorotetradecanoic acid (PFTA)		0.470 U	0.250 J	0.350 U	0.500 U
Perfluorotridecanoic acid (PFTrDA)		0.310 U	0.320 J	0.240 U	0.300 J
Perfluoroundecanoic acid (PFUnA)		0.310 U	0.590 J	0.240 U	0.440 J

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

Background Locations

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Background
 Background

	Location	BB-20-01	FP-20-01	FP-20-02	FP-20-02	NRBK-19-01	NRBK-19-02
	Field Sample ID	BB-20-01-SW_MAY20	FP-20-01-SW_MAY20	BK-SW-DUP_052020	FP-20-02-SW_MAY20	NRBK-SW-19-01-DEC19	NRBK-SW-19-02-DEC19
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	05/20/2020	05/20/2020	05/20/2020	05/20/2020	12/20/2019	12/20/2019
	SDG	320610571	320610571	320610571	320610571	320572951	320572951
	Sample Type	Normal	Normal	Field Duplicate	Normal	Normal	Normal
PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		16.0 U	17.0 U	19.0 U	17.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.20 U	8.50 U	9.50 U	8.40 U	9.40 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.20 U	8.50 U	9.50 U	8.40 U	9.40 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.20 U	8.50 U	9.50 U	8.40 U	9.40 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	2030000	1.10 J	0.780 J	0.950 J	0.830 J	2.90	3.20
Perfluorodecanoic acid (PFDA)		0.820 U	0.510 J	0.950 U	0.680 J	0.940 U	0.950 U
Perfluorododecanoic acid (PFDoA)		1.20 U	1.30 U	1.40 U	1.30 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)		1.50 J	1.50 J	4.10	4.50	5.20	5.30
Perfluorohexanesulfonic acid (PFHxS)		0.600 J	0.640 J	0.920 J	0.770 J	1.30 J	1.30 J
Perfluorohexanoic acid (PFHxA)		1.90	1.70	5.00	5.10	8.70	8.80
Perfluorononanoic acid (PFNA)		0.420 J	0.550 J	1.50 J	1.40 J	1.10 J	1.20 J
Perfluorooctanesulfonic acid (PFOS)	2030	2.40 J	3.20 J	5.40	5.70	4.00	4.20
Perfluorooctanoic acid (PFOA)	2030	3.30	4.30	10.0	11.0	10.0	10.0
Perfluorotetradecanoic acid (PFTA)		2.50 U	2.60 U	2.90 U	2.50 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.50 U	2.60 U	2.90 U	2.50 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		1.20 U	1.30 U	1.40 U	1.30 U	1.40 U	1.40 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Background
 Background

Location	SR-19-01	SR-19-01	WAB-19-01
Field Sample ID	BK-SW-DUP-121819	SR-SW-19-01-DEC19	WAB-SW-19-01-DEC19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sampling Date	12/18/2019	12/18/2019	12/18/2019
SDG	320572951	320572951	320572951
Sample Type	Field Duplicate	Normal	Normal

PFAS Isotope Dilution	Limits (ng/l)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		19.0 U	20.0 U	20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.50 U	9.80 U	9.90 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.50 U	9.80 U	9.90 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.50 U	9.80 U	9.90 U
Perfluorobutanesulfonic acid (PFBS)	2030000	0.550 J	0.600 J	7.80
Perfluorodecanoic acid (PFDA)		0.950 U	0.980 U	0.990 U
Perfluorododecanoic acid (PFDoA)		1.40 U	1.50 U	1.50 U
Perfluoroheptanoic acid (PFHpA)		2.50	2.40	6.10
Perfluorohexanesulfonic acid (PFHxS)		0.920 J	0.890 J	1.20 J
Perfluorohexanoic acid (PFHxA)		8.00	8.20	33.0
Perfluorononanoic acid (PFNA)		0.630 J	0.620 J	1.50 U
Perfluorooctanesulfonic acid (PFOS)	2030	2.60 J	2.80 J	1.50 J
Perfluorooctanoic acid (PFOA)	2030	7.90	7.80	6.20
Perfluorotetradecanoic acid (PFTA)		2.90 U	2.90 U	3.00 U
Perfluorotridecanoic acid (PFTrDA)		2.90 U	2.90 U	3.00 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.50 U	1.50 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Background
 Background

Location	BB-20-01	FP-20-01	FP-20-02	FP-20-02	NRBK-19-01	NRBK-19-02
Field Sample ID	BB-20-01- SED_MAY20	FP-20-01- SED_MAY20	BK-SED- DUP_052020	FP-20-02- SED_MAY20	NRBK-SED-19-01- DEC19	NRBK-SED-19-02- DEC19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.50	0.00 - 0.50
Sampling Date	05/20/2020	05/20/2020	05/20/2020	05/20/2020	12/20/2019	12/20/2019
SDG	320610571	320610571	320610571	320610571	320572951	320572951
Sample Type	Normal	Normal	Field Duplicate	Normal	Normal	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		110 U	3.60 U	4.40 U	2.80 U	3.00 U	2.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		53.0 U	1.80 U	2.20 U	1.40 U	1.50 U	1.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		53.0 U	1.80 U	2.20 U	1.40 U	1.50 U	1.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		53.0 U	1.80 U	2.20 U	1.40 U	1.50 U	1.40 U
Perfluorobutanesulfonic acid (PFBS)	609000	9.60 U	0.330 U	0.400 U	0.250 U	0.270 U	0.260 U
Perfluorodecanoic acid (PFDA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.170 J
Perfluorododecanoic acid (PFDoA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U
Perfluoroheptanoic acid (PFHpA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U
Perfluorohexanesulfonic acid (PFHxS)		11.0 U	0.120 J	0.440 U	0.280 U	0.300 U	0.430 U
Perfluorohexanoic acid (PFHxA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U
Perfluorononanoic acid (PFNA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U
Perfluorooctanesulfonic acid (PFOS)	609	27.0 U	0.910 U	1.10 U	0.700 U	0.420 J	0.750 J
Perfluorooctanoic acid (PFOA)	609	11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.180 J
Perfluorotetradecanoic acid (PFTA)		16.0 U	0.540 U	0.670 U	0.420 U	0.460 U	0.430 U
Perfluorotridecanoic acid (PFTrDA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U
Perfluoroundecanoic acid (PFUnA)		11.0 U	0.360 U	0.440 U	0.280 U	0.300 U	0.290 U

Notes:

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
 KOMAN, PFAS RI, Surface Water/Sediment-Background
 Background

Location	SR-19-01	SR-19-01	WAB-19-01
Field Sample ID	BK-SED-DUP-121819	SR-SED-19-01-DEC19	WAB-SED-19-01-DEC19
Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
Sampling Date	12/18/2019	12/18/2019	12/18/2019
SDG	320572951	320572951	320572951
Sample Type	Field Duplicate	Normal	Normal

PFAS Isotope Dilution Sediment	Limits (ug/kg)	Results (ug/kg)	Results (ug/kg)	Results (ug/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		3.40 U	3.30 U	2.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.70 U	1.60 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.70 U	1.60 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		0.530 J	0.620 J	1.20 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.300 U	0.290 U	0.220 U
Perfluorodecanoic acid (PFDA)		0.540	0.550	0.240 U
Perfluorododecanoic acid (PFDoA)		0.340 U	0.330 U	0.240 U
Perfluoroheptanoic acid (PFHpA)		0.830	0.800	0.240 U
Perfluorohexanesulfonic acid (PFHxS)		0.500 U	0.490 U	0.240 U
Perfluorohexanoic acid (PFHxA)		0.850	0.850	0.140 J
Perfluorononanoic acid (PFNA)		0.840	0.770	0.240 U
Perfluorooctanesulfonic acid (PFOS)	609	7.50	7.90	0.720 J
Perfluorooctanoic acid (PFOA)	609	2.80	2.70	0.240 U
Perfluorotetradecanoic acid (PFTA)		0.500 U	0.490 U	0.370 U
Perfluorotridecanoic acid (PFTrDA)		0.340 U	0.330 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		0.190 J	0.210 J	0.240 U

Notes:

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All Locations

TOC Results

KOMAN, PFAS RI, Sediment-Area3

Total Organic Carbon Data

	UP-19-01	US-19-01	AFW-19-01	AFW-19-02
Locations:	UP-19-01	US-19-01	AFW-19-01	AFW-19-02
Field Sample ID:	UP-19-01-SE-OCT19	US-19-01-SE-OCT19	AFW-19-01_SE-OCT19	AFW-19-02_SE-OCT19
Sample Begin Depth:	0	0	0	0
Sample End Depth:	0.5	0.5	0.5	0.5
Sample Date:	10/17/2019	10/18/2019	10/18/2019	10/18/2019
Gen. Chemistry (MG/KG)				
Total Organic Carbon	7,000	130,000	160,000	300,000

Detects are displayed in bold font

Units

MG/KG = milligrams per kilogram

KOMAN, PFAS RI, Sediment-Area3

Total Organic Carbon Data

Locations: NR-19-01	NR-19-02	NR-19-02 (FD)	NR-19-03	NR-19-04	NR-19-05
Field Sample ID: NR-19-01-SE-OCT19	NR-19-02-SE-OCT19	A3-SE-DUP-101619	NR-19-03-SE-OCT19	NR-19-04-SE-OCT19	NR-19-05-SE-OCT19
Sample Begin Depth: 0	0	0	0	0	0
Sample End Depth: 0.5	0.5	0.5	0.5	0.5	0.5
Sample Date: 10/17/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/16/2019

Gen. Chemistry (MG/KG)

Total Organic Carbon	130,000	11,000	10,000	67,000	17,000	22,000
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Detects are displayed in bold font

J = estimated result

Units

MG/KG = milligrams per kilogram

KOMAN, PFAS RI, Sediment-Area3

Total Organic Carbon Data

	NR-19-06	NR-19-07	NR-19-08	NR-19-09	NR-19-10	NR-19-11
Locations:	NR-19-06	NR-19-07	NR-19-08	NR-19-09	NR-19-10	NR-19-11
Field Sample ID:	NR-19-06-SE-OCT19	NR-19-07-SE-OCT19	NR-19-08-SE-OCT19	NR-19-09-SE-OCT19	NR-19-10-SE-OCT19	NR-19-11-SE-OCT19
Sample Begin Depth:	0	0	0	0	0	0
Sample End Depth:	0.5	0.5	0.5	0.5	0.5	0.5
Sample Date:	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/14/2019
Gen. Chemistry (MG/KG)						
Total Organic Carbon	1,500 J	21,000	12,000	5,400	6,700	13,000

Detects are displayed in bold font

J = estimated result

Units

MG/KG = milligrams per kilogram

KOMAN, PFAS RI, Sediment-Area3

Total Organic Carbon Data

Locations:	NR-19-11 (FD)	NR-19-12	NR-19-13	NR-19-14
Field Sample ID:	A3-SE-DUP-101419	NR-19-12-SE-OCT19	NR-19-13-SE-OCT19	NR-SED-19-14-DEC19
Sample Begin Depth:	0	0	0	0
Sample End Depth:	0.5	0.5	0.5	0.5
Sample Date:	10/14/2019	10/14/2019	10/14/2019	12/18/2019

Gen. Chemistry (MG/KG)

Total Organic Carbon	13,000	62,000	3,000	25,000
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Detects are displayed in bold font

J = estimated result

Units

MG/KG = milligrams per kilogram

Former Fort Devens

KOMAN, PFAS

RI, Sediment Background

Locations: BB-20-01	FP-20-01	FP-20-02	FP-20-02 (FD)	NRBK-19-01	NRBK-19-02
Field Sample ID: BB-20-01-SED_MAY20	FP-20-01-SED_MAY20	FP-20-02-SED_MAY20	BK-SED-DUP_052020	NRBK-SED-19-01-DEC19	NRBK-SED-19-
Sample Begin Depth: 0	0	0	0	0	0
Sample End Depth: 0	0	0	0	0.5	0.5
Sample Date: 05/20/2020	05/20/2020	05/20/2020	05/20/2020	12/20/2019	12/20/2019

Gen. Chemistry (MG/KG)

Total Organic Carbon	230,000 J	28,000	8,400	7,900	11,000	22,000
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Detects are displayed in bold font

Data Qualifier Definitions

J: The analyte was positively identified, but the associated numerical value is estimated.

Units

MG/KG = milligrams per kilogram

Former Fort Devens

KOMAN, PFAS RI, Sediment Background

Locations:	SR-19-01	SR-19-01 (FD)	WAB-19-01
Field Sample ID: -02-DEC19	SR-SED-19-01-DEC19	BK-SED-DUP-121819	WAB-SED-19-01-DEC19
Sample Begin Depth:	0	0	0
Sample End Depth:	0.5	0.5	0.5
Sample Date:	12/18/2019	12/18/2019	12/18/2019

Gen. Chemistry (MG/KG)

Total Organic Carbon	26,000	23,000	2,200
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Detects are displayed in bold font

Data Qualifier Definitions

J: The analyte was positively identified, but the associated numerical value is estimated.

Units

MG/KG = milligrams per kilogram