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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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	perfluorononanoic 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 at 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 and is *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 quartzo-feldspathic 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], perfluorononanoic 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 (µg/kg) at 20SB-19-08 (0-0.5 feet bgs)
- PFHpA = 0.320 J µg/kg at 20SB-19-08 (3-7 feet bgs)
- PFHxS = 0.470 µg/kg at 20SB-19-01 (0-0.5 feet bgs)
- PFNA = 0.290 J µg/kg at 20SB-19-08 (0.5-3 feet bgs)
- PFOS = 13.0 µg/kg at 20SB-19-08 (0-0.5 feet bgs)
- PFOA = 1.80 µg/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 µg/kg at 21SB-19-03 (3-7 feet bgs)
- PFHpA = 0.230 J µg/kg at 21SB-19-01 (0.5-3 feet bgs)
- PFHxS = 0.560 µg/kg at 21SB-19-01 (0-0.5 feet bgs)
- PFNA = 0.260 J µg/kg at 21SB-19-03 (3-7 feet bgs)
- PFOS = 19.0 J µg/kg at 21SB-19-01 (0.5-3 feet bgs)
- PFOA = 2.20 µg/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 where 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 µg/kg at 30SB-19-01 (0.5-3 feet bgs)
- PFHpA = 0.110 J µg/kg at 30SB-19-01 (0-0.5 feet bgs)
- PFHxS = 7.20 µg/kg at 30SB-19-01 (0.5-3 feet bgs)

- PFNA = 0.330 µg/kg at 30SB-19-06 (3-7 feet bgs)
- PFOS = 100 µg/kg at 30SB-19-06 (3-7 feet bgs)
- PFOA = 5.70 µg/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 µg/kg
- PFHxS = 41.0 µg/kg
- PFNA = not-detected
- PFOS = 95.0 µg/kg
- PFOA = 4.90 µg/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 [µg/L] to 36 µg/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.

8.0 REFERENCES

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TABLES

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
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
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)

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	Groudwater 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 Contigency 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 Contigency 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 Contigency 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 Contigency Plan standards.

Table 6-1
AOC 50 Field Activities
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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

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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

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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

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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

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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 highlighlighting 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
ft = feet
GP = Geoprobe
RD = Rotosonic
V = hand driven
NA = not applicable
UKN = unknown
NAD83 = North American Datum 1983
NAVD88 = North American Vertical Datum 1988

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 (PFTrDA)	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 Contigency 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



FIGURES

SHIRLEY
GROTON
GROTON
AYER
AOC 30 - Drum Storage Area
AOC 31 - Firefighting Training Area
AOC 50 - Former Moore Army Airfield
Former
North Post
AOC 20 - WWTP Sand Infiltration Beds
AOC 21 - WWTP Sludge Beds
SHIRLEY
AYER
MacPherson Well
AOC 5 - Shepleys Hill Landfill
Grove Pond Supply Wells
Former
Main Post
AOC 32/43A - Former DRMO Yard/POL Storage Area
AYER
HARVARD
AOC 74 - Barnum Road Firefighting Exercise Site
Former
Main Post
AOC 76 - Devens Fire Station
AOC 57 - Building
3713 Fuel Oil Spill
AOC 75 - Building
T-1445 Warehouse Fire
SHIRLEY
HARVARD
AOC 43G - Former AAFES Gas Station
Former
Main Post
AOC 40 - Cold Spring Brook Landfill
AOC 43J - Former Gas Station
Patton Well
SHIRLEY
LANCASTER
Shabokin Well
South Post
N
W
E
S

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

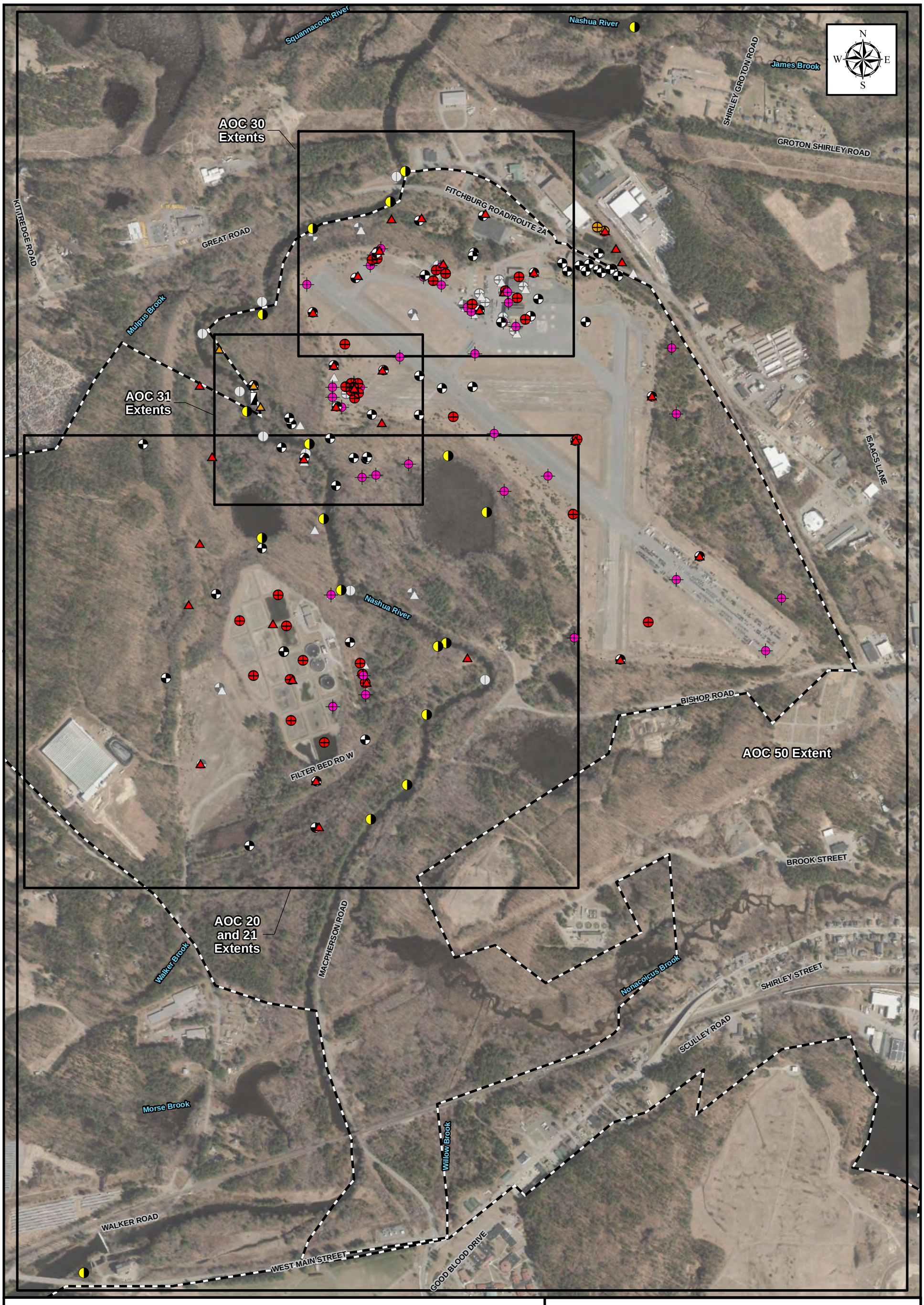
Date:
11/18/2020

Figure
1-1

KGS

File: PFAS2020_RI_WP_F1-2_Areas_v2.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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

Aerial Source: USGS, MassGIS Orthoimagery 2019

Area 3 Field Activities
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

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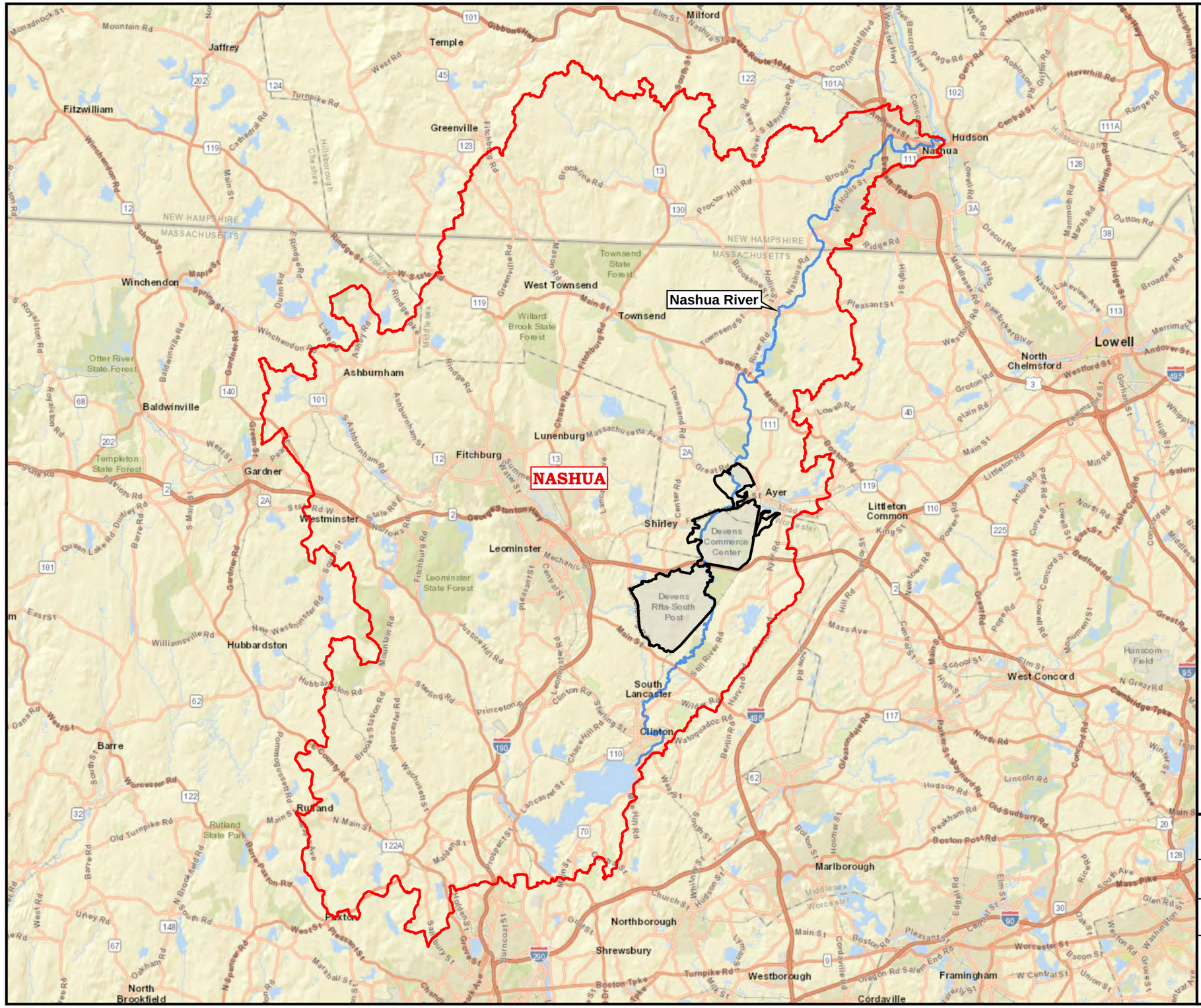
0 400 800
Feet

Date: 01/11/2021

Figure 1-2

File: PFAS_RI_A3_PSCS_F1-2_Area3_FieldActivities.mxd



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

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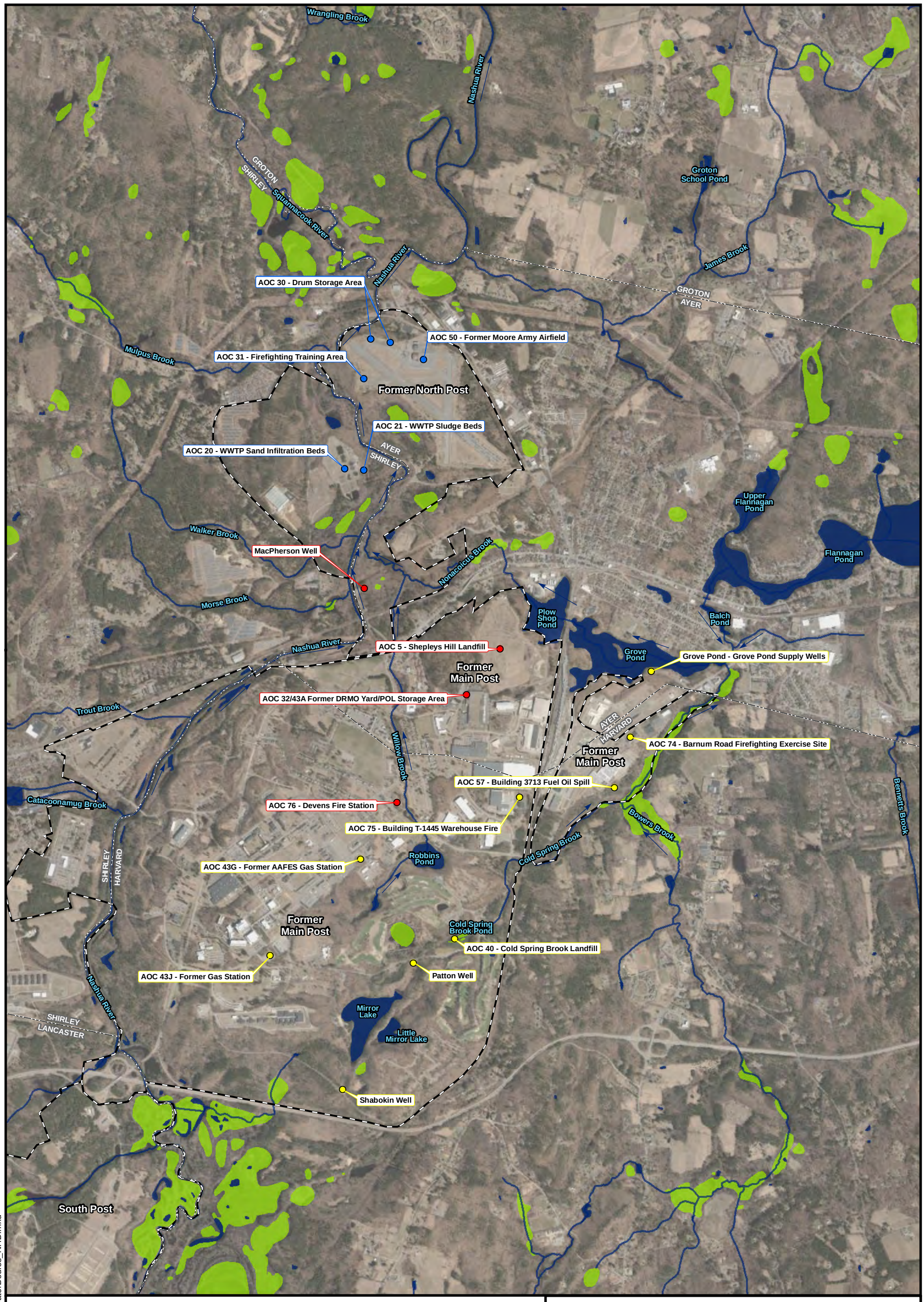
0 2 4
Miles

Date: 07/30/2020

Figure 2-1

File: PFAS_RI_A2_PSCS_F2-1_NashuaRiverBasin.mxd



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
- Surface Water Flow Direction
- City/Town Boundary
- Former Fort Devens Boundary

National Hydrography Dataset

- Stream/River
- Lake/Pond
- Swamp/Marsh

N W E S

Surface Water Bodies
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 1,250 2,500
Feet

Date: 02/03/2021

Figure 2-2

KGS

File: PFAS_RI_A3_PSCS_F2-2_SurfaceWaterBodies_NHD.mxd

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 30 - Drum Storage Area
AOC 50 - Former Moore Army Airfield
AOC 31 - Firefighting Training Area
AOC 21 - WWTP Sludge Beds
AOC 20 - WWTP Sand Infiltration Beds
MacPherson Well
AOC 5 - Shepleys Hill Landfill
Grove Pond Supply Wells
AOC 69W
AOC 32/43A - Former DRMO Yard/POL Storage Area
AOC 74 - Barnum Road Firefighting Exercise Site
AOC 75 - Building T-1445 Warehouse Fire
AOC 76 - Devens Fire Station
AOC 57 - Building 3713 Fuel Oil Spill
AOC 43G - Former AAFES Gas Station
AOC 40 - Cold Spring Brook Landfill
AOC 43J - Former Gas Station
Patton Well
Shabokin Well

Legend

AOC Location

Former Fort Devens Boundary

Surficial Geology (1:24,000)

- Abundant Outcrop and Shallow Bedrock
- Artificial Fill
- Swamp and Marsh Deposits
- Alluvium
- Inland Dune
- Coarse
- Glaciolacustrine Fine
- Thick Till
- Bedrock Outcrop
- Thin Till

USGS Overburden Geology
Devens PFAS RI Area 3 PSCS

Former Army Installation Devens
Devens, Massachusetts

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293 Boston Post Road West, Suite 100, Marlborough, MA 01752

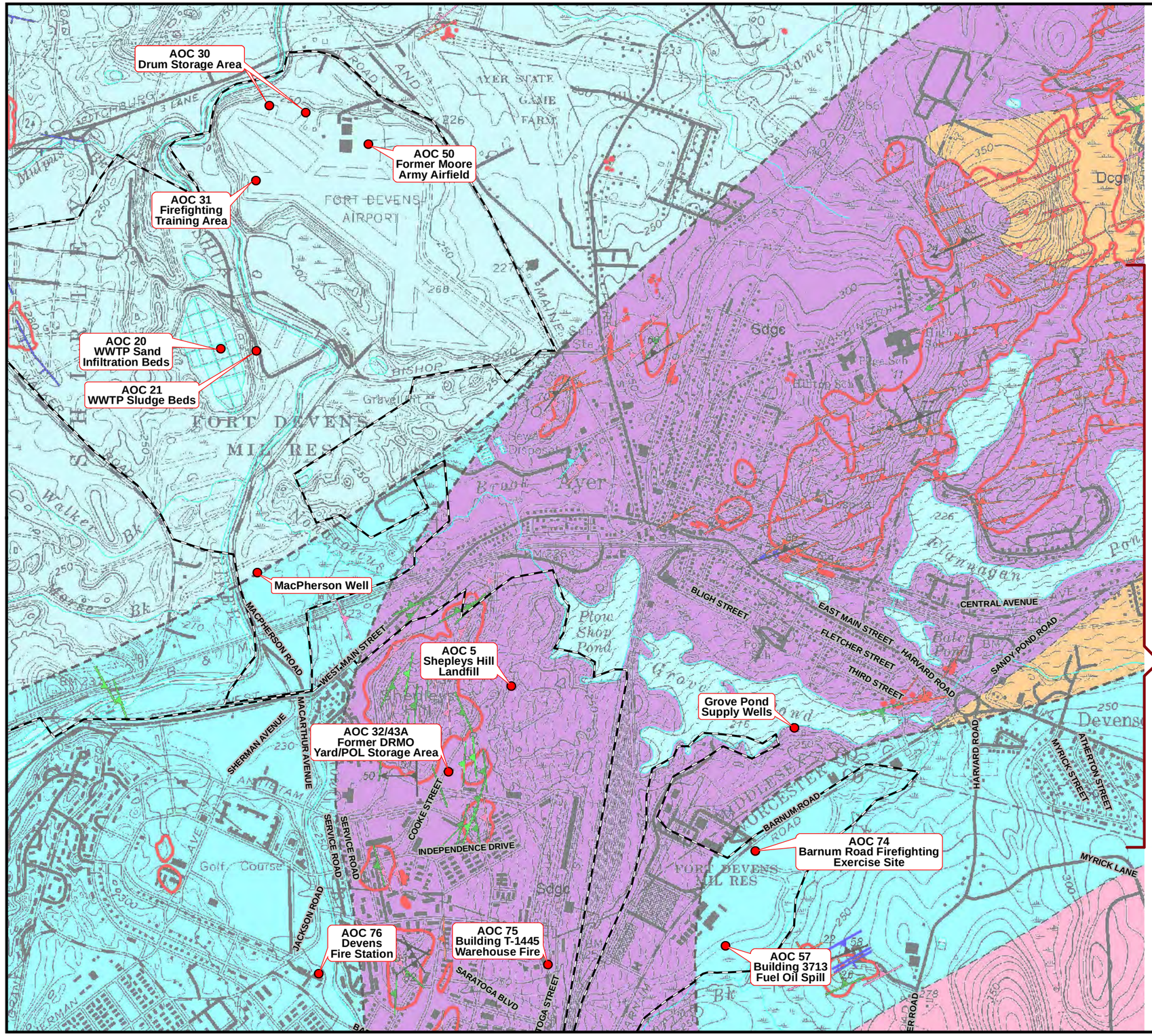
0 1,000 2,000
Feet

Date: 10/06/2020

Figure 2-3

File: PFAS_RI_A3_PSCS_F2-3_USGS_OverburdenGeol.mxd

Aerial Source: 2019, USGS, MassGIS



N
W E
S

Legend

- AOC Location
- Former Fort Devens Boundary

Lithologic Units

- Sb / Sbbks — Berwick Formation (Silurian)
- So — Oakdale Formation (Silurian)
- Dcgrm / Dcgr / Dcgm — Chelmsford Granite (Devonian)
- Saygr / Saygn — Ayer Granite (Silurian)
- Sdgc — 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

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
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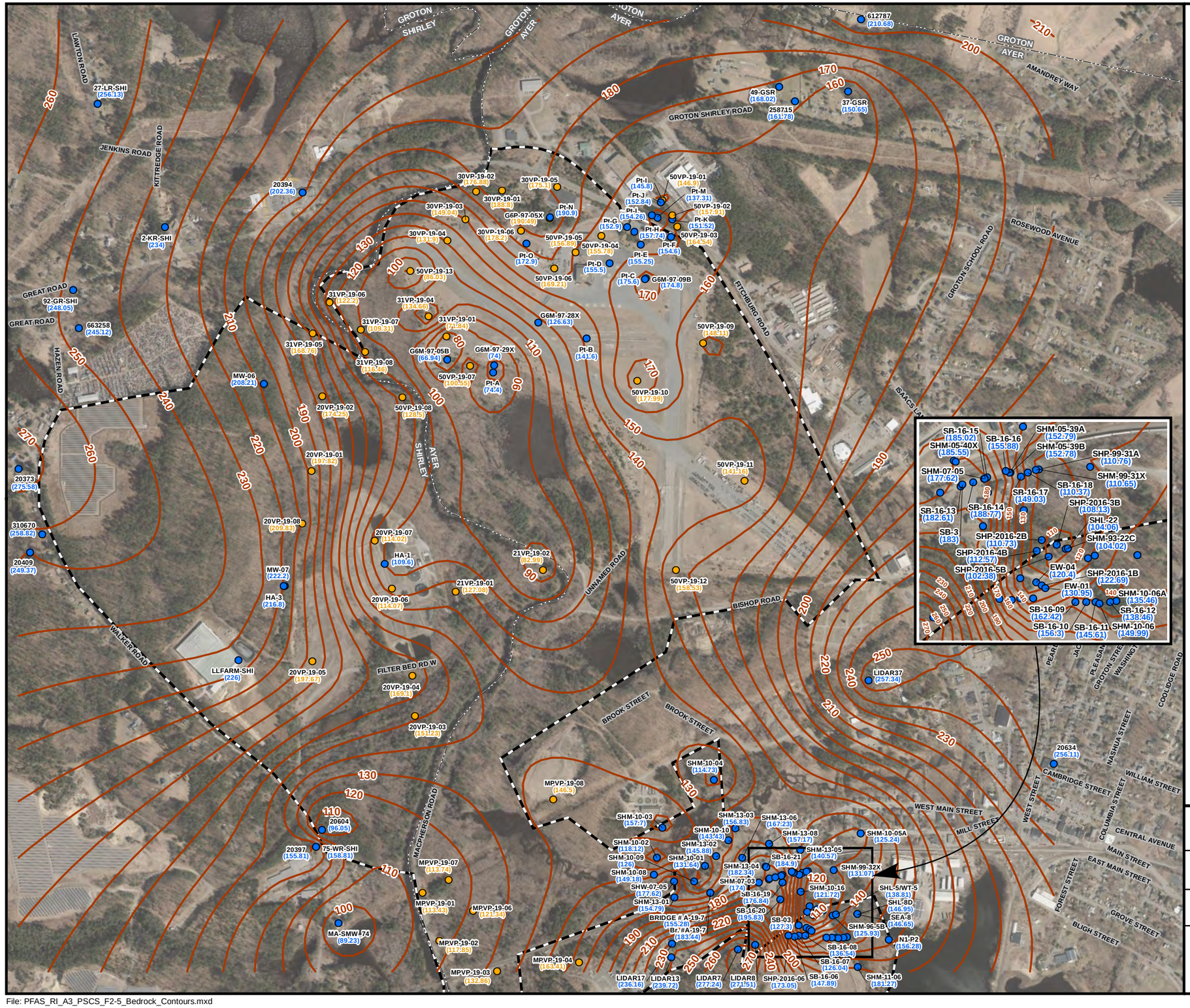
0 750 1,500
Feet

Date: 09/14/2020

Figure 2-4

KGS

File: PFAS_RI_A3_PSCS_F2-4_BedGeology_JPG.mxd



Bedrock Contours
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

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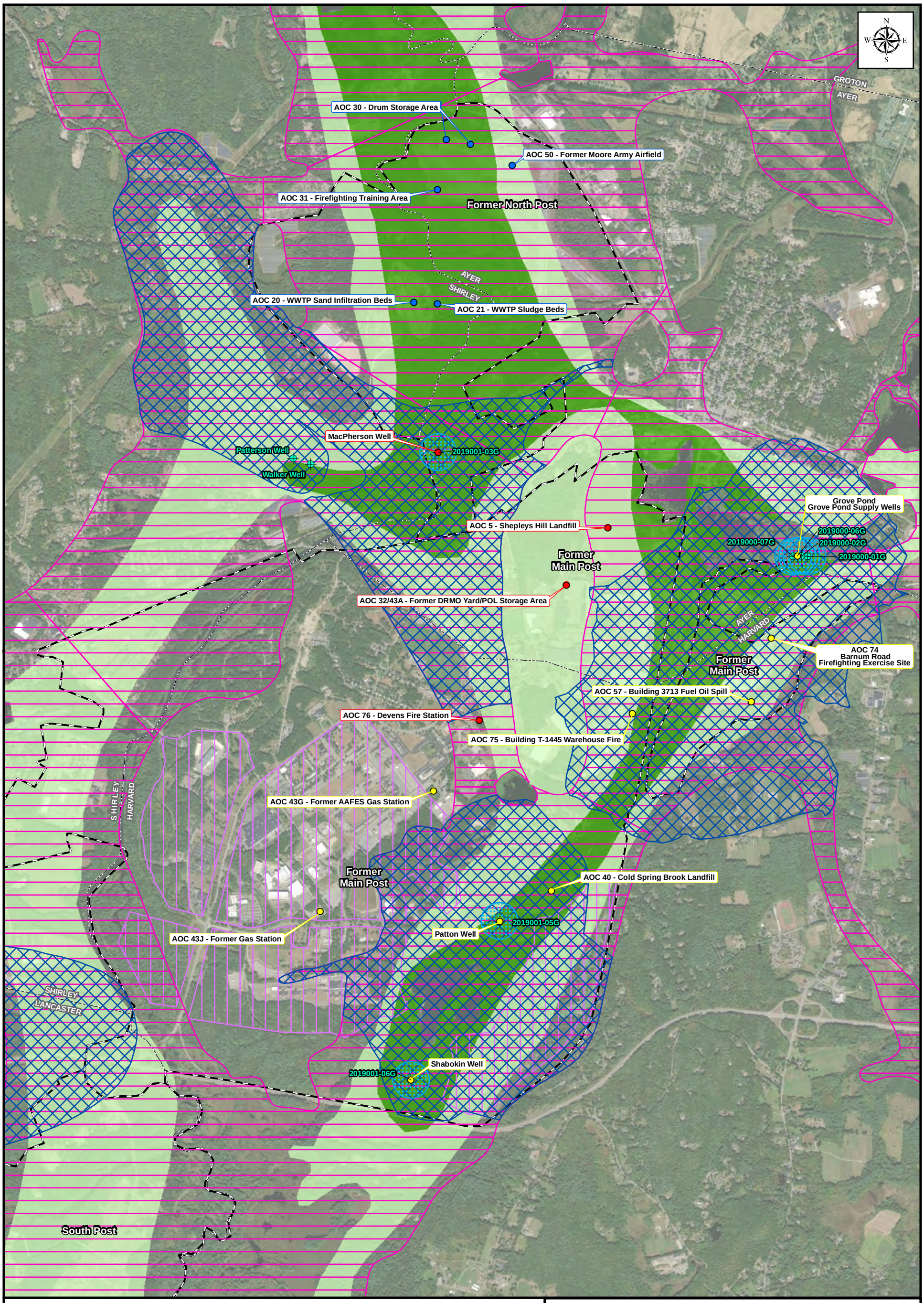
0 500 1,000
Feet

Date: 01/13/2021

Figure 2-5

KGS

File: PFAS_RI_A3_PSCS_F2-5_Bedrock_Contours.mxd



Legend

- Public Water Supply Well
- 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
- City/Town Boundary
- Former Fort Devens Boundary
- MassDEP Approved Zone I
- MassDEP Approved Zone II
- Devens Watershed Protection District
- Devens Aquifer Protection District

Potentially Productive Aquifers

- High Yield
- Medium Yield

Devens Groundwater
Devens PFAS RI - Area 3 PSCS

Former Army Installation Devens
Devens, Massachusetts

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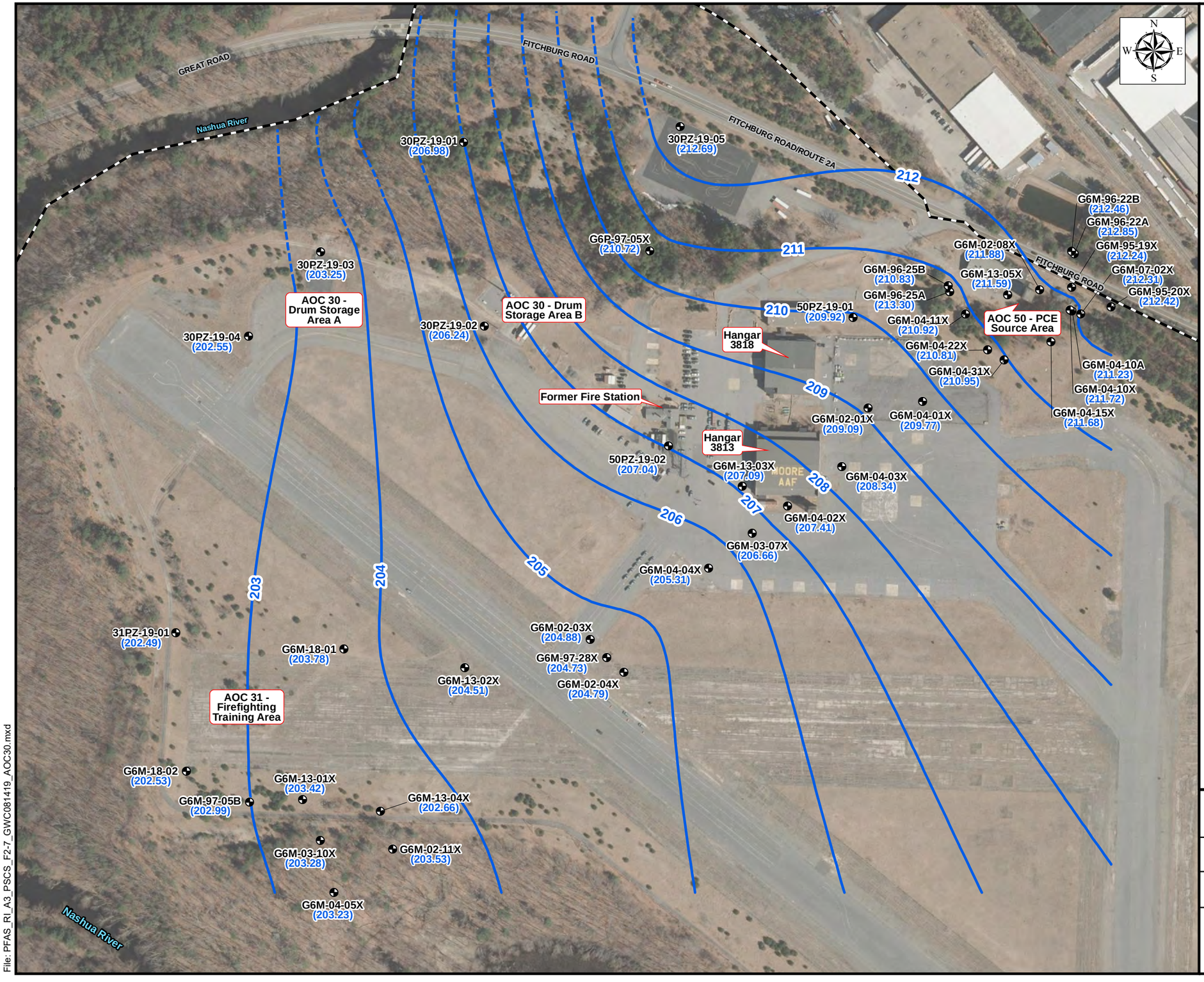
0 1,000 2,000
Feet

Date: 02/03/2021

Figure 2-6

File: PFAS_RI_A3_PSCS_F2-6_Aquifer.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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

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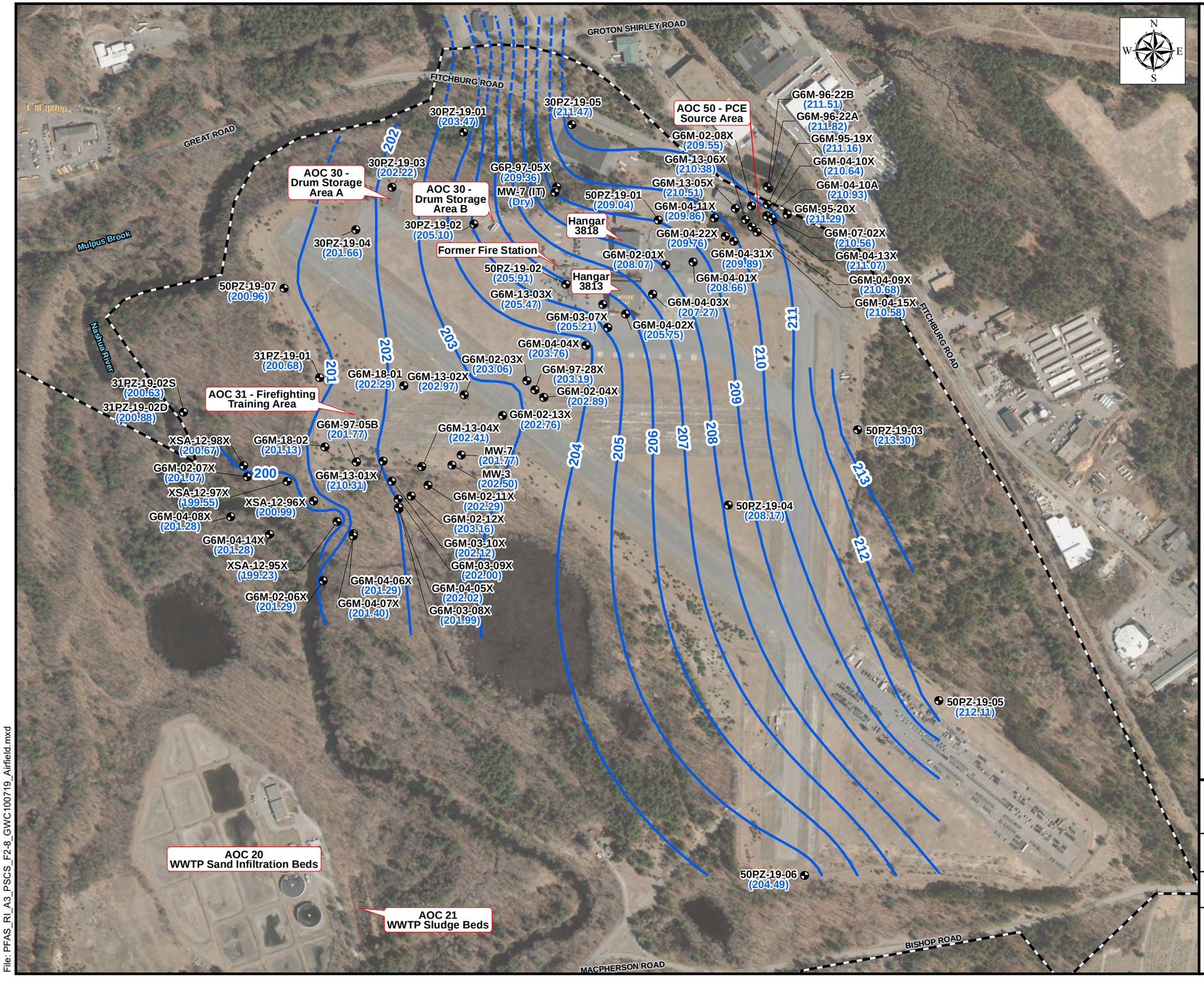
0 125 250
Feet

Date: 01/15/2021

Figure 2-7

File: PFAS_RI_A3_PSCS_F2-7_GWC081419_AOC30.mxd



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

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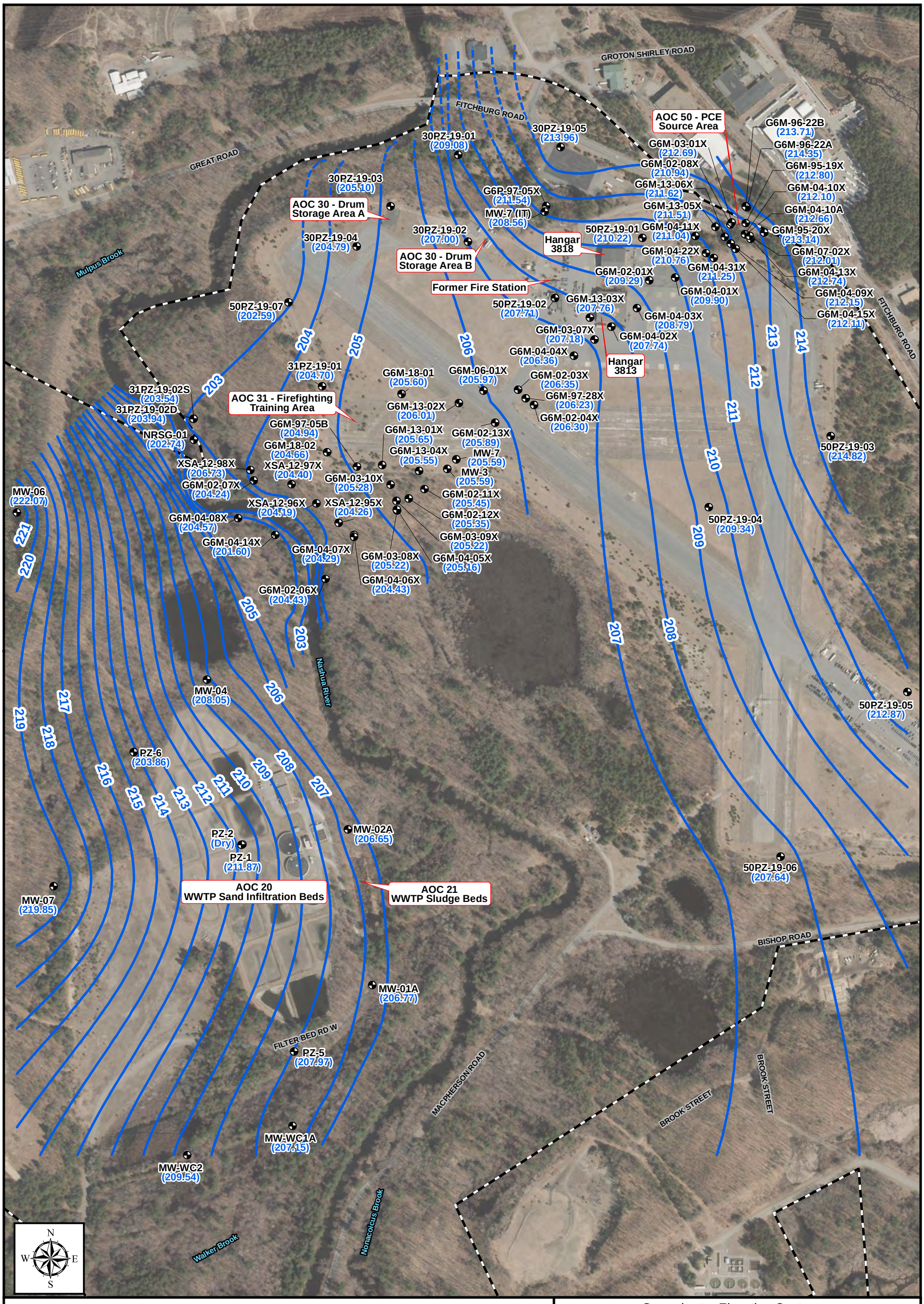
0 250 500
Feet

Date: 01/15/2021

Figure 2-8

KGS

File: PFAS_RI_A3_PSCS_F2-8_GWC100719_Airfield.mxd



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 wer 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

0 250 500 Feet

Date: 01/15/2021

Figure 2-9

File: PFAS_RI_A3_PSCS_F2-9_GWC042720_Area3.mxd



Legend

- Current Road
- Former Fort Devens Boundary

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
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400
Feet

Date: 01/11/2021

Figure 3-1

KGS

File: PFAS_RI_A3_PSCS_F3-1_AOC20_21_1992_Imagery.mxd



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
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400
Feet

Date: 01/11/2021

Figure 3-2

KGS

File: PFAS_RI_A3_PSCS_F3-2_AOC20_21_HistoricUtilities.mxd



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

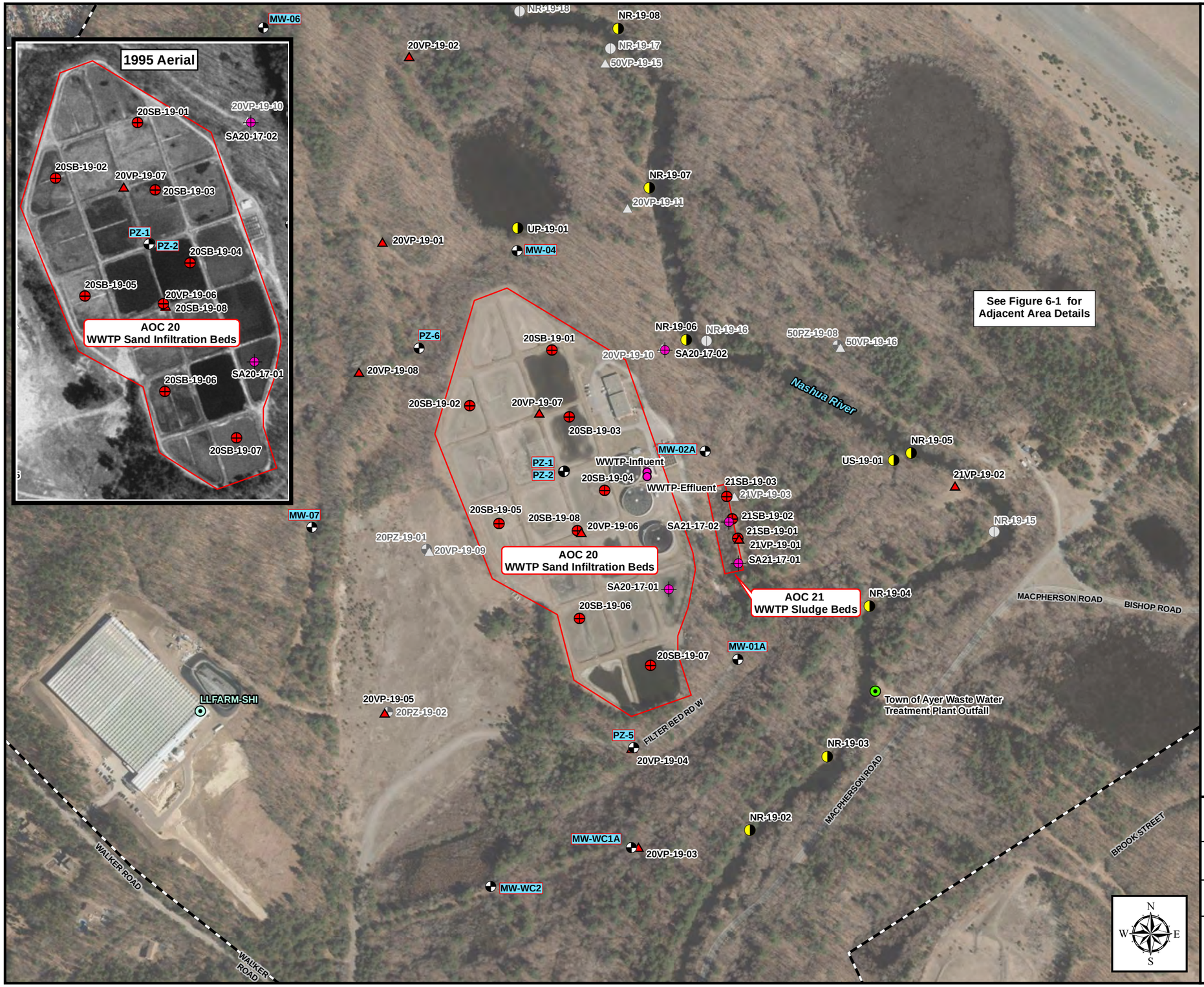
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400
Feet

Date: 01/11/2021

Figure 3-3

File: PFAS_RI_A3_PSCS_F3-3_AOC20_21_SubsurfaceUtilities.mxd



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

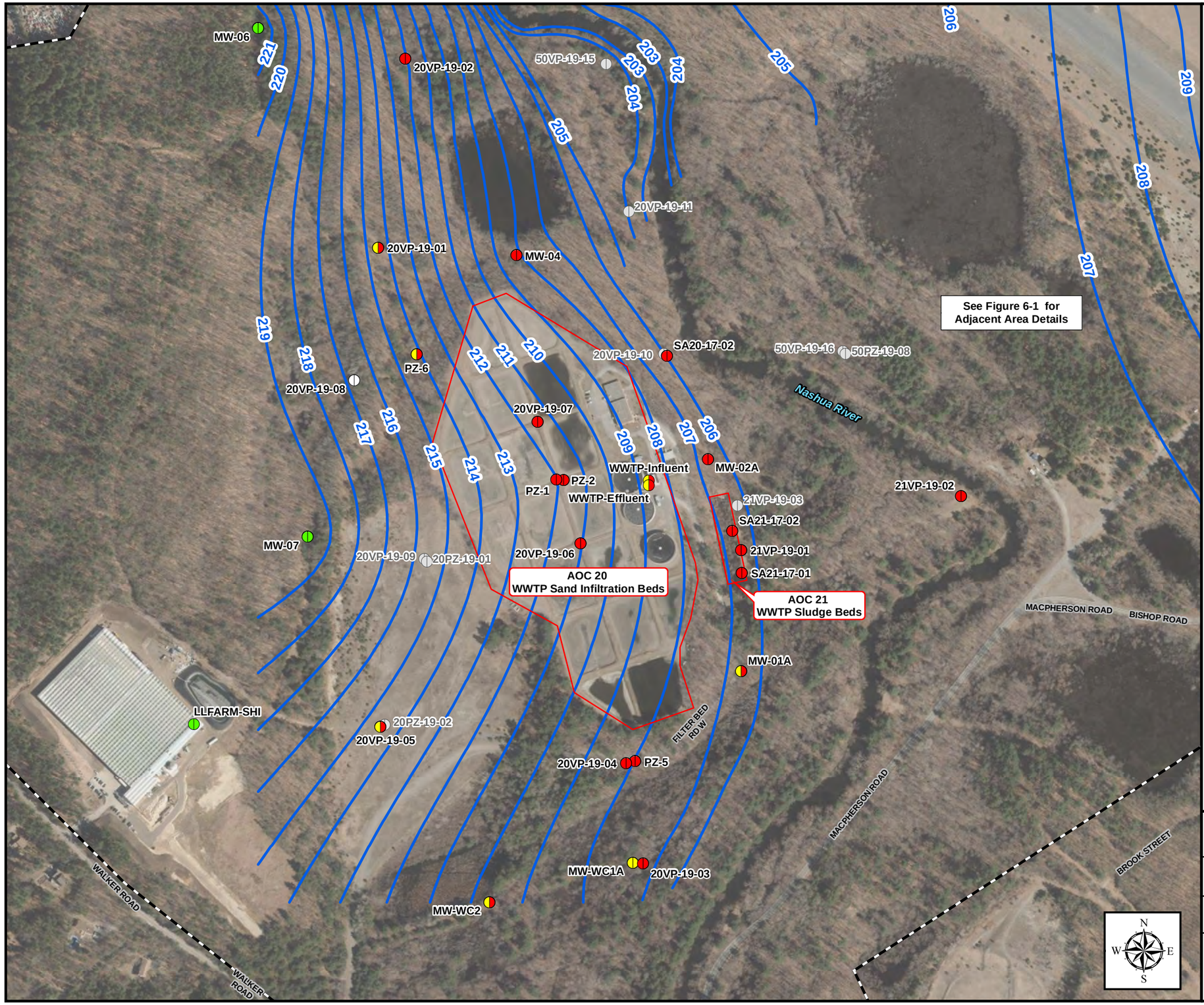
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400
Feet

Date: 02/03/2021

Figure 3-4

File: PFAS_RI_A3_PSCS_F3-4_AOC20_21_FieldActivities.mxd



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

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

0 200 400
Feet

Date: 01/14/2021

Figure 3-5

File: PFAS_RI_A3_PSCS_F3-5_AOC20_21_GWResults.mxd



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

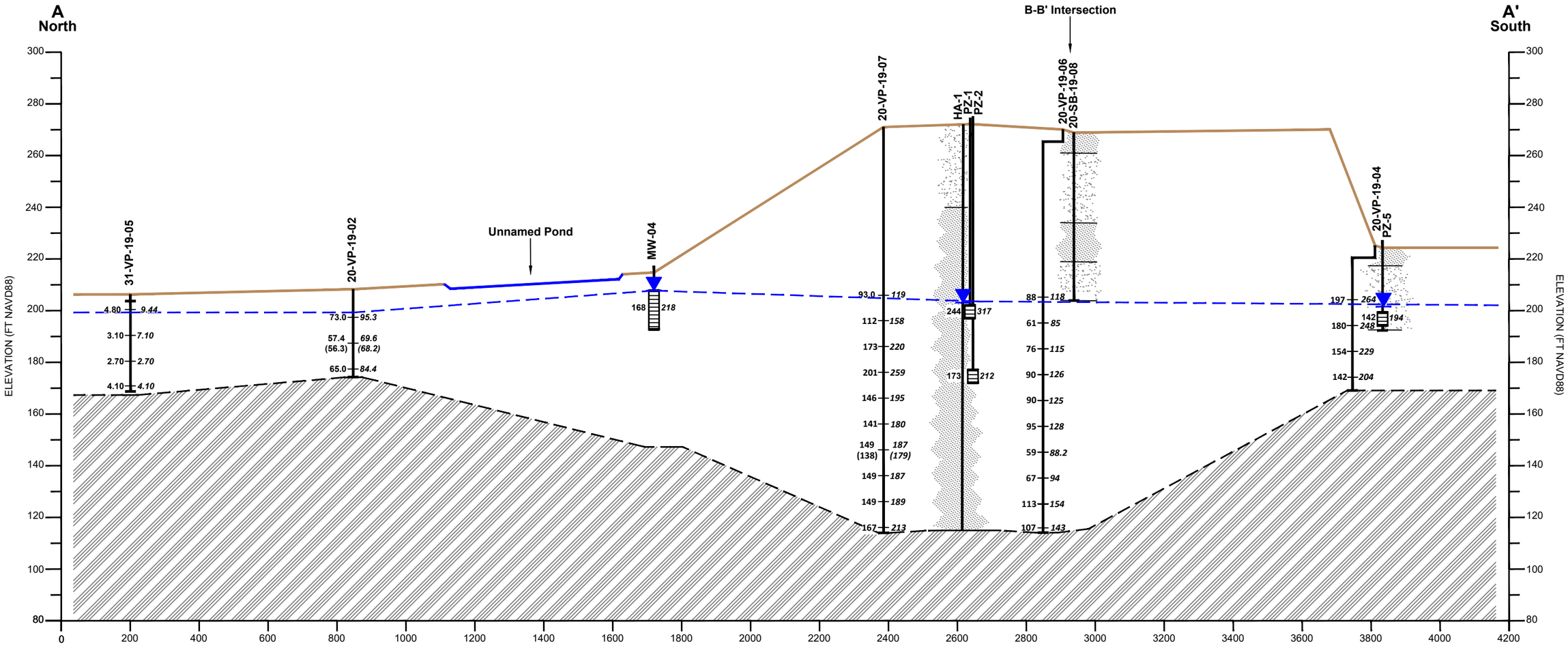
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 250 500
Feet

Date: 01/11/2021

Figure 3-6

File: PFAS_RI_A3_PSCS_F3-6_AOC20_21_XSLoc.mxd



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

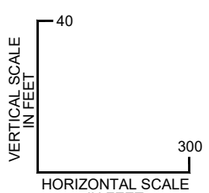
Water Table

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)

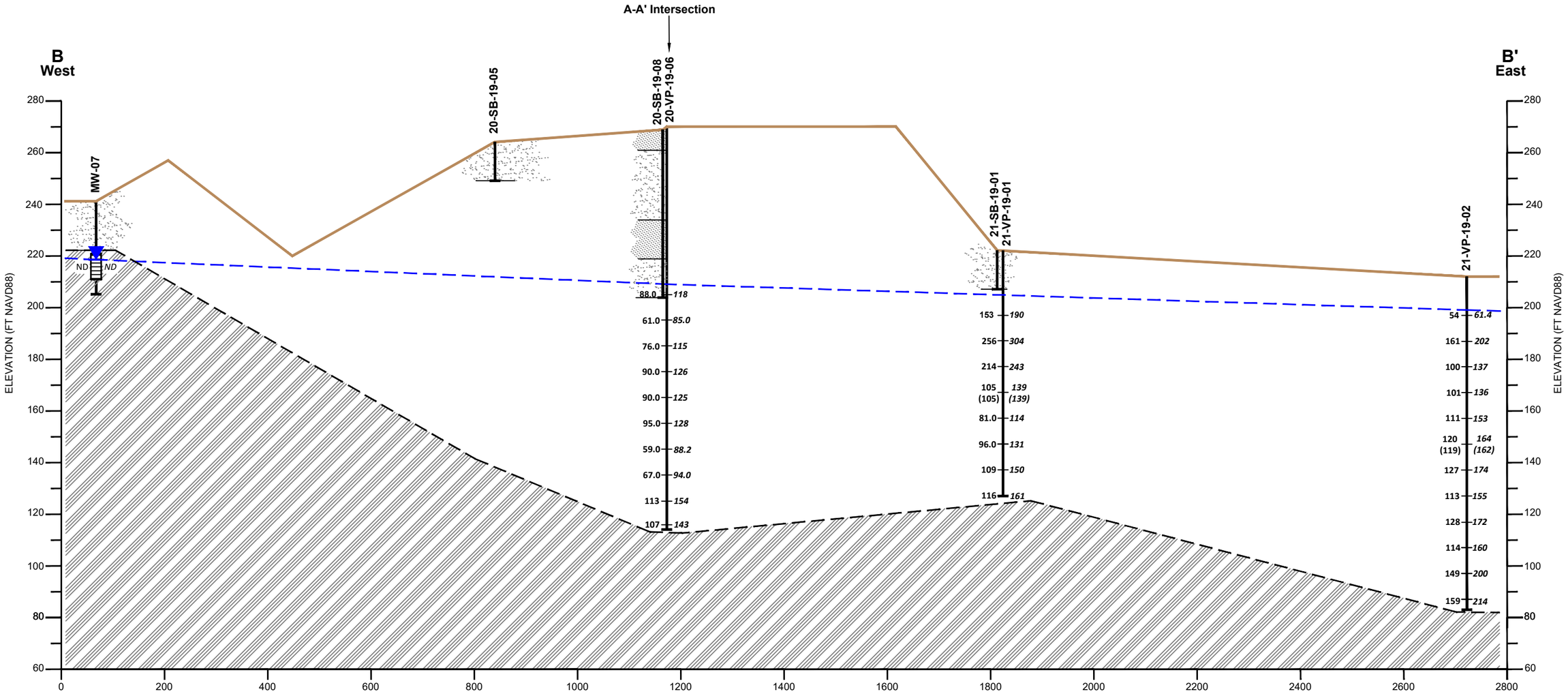


AOCs 20 and 21 Cross Section A-A'
Devens PFAS RI - Area 3 PSCS

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	KGS



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)

VERTICAL SCALE IN FEET: 40

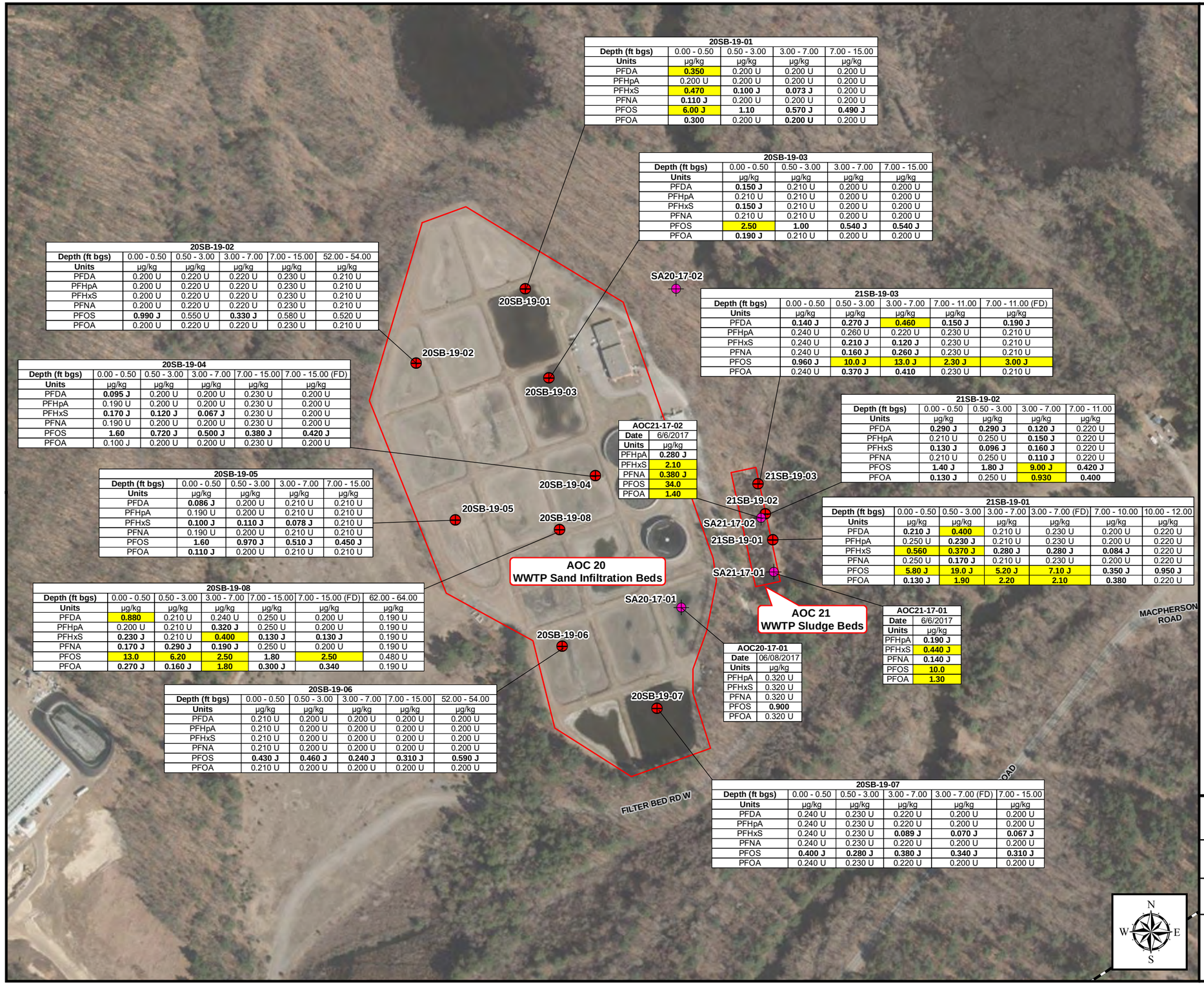
HORIZONTAL SCALE IN FEET: 200

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	KGS



20SB-19-01

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	**0.350**	0.200 U	0.200 U	0.200 U
PFHpA	0.200 U	0.200 U	0.200 U	0.200 U
PFHxS	**0.470**	**0.100 J**	**0.073 J**	0.200 U
PFNA	**0.110 J**	0.200 U	0.200 U	0.200 U
PFOS	**6.00 J**	**1.10**	**0.570 J**	**0.490 J**
PFOA	**0.300**	0.200 U	**0.200 U**	0.200 U

20SB-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	**0.150 J**	0.210 U	0.200 U	0.200 U
PFHpA	0.210 U	0.210 U	0.200 U	0.200 U
PFHxS	**0.150 J**	0.210 U	0.200 U	0.200 U
PFNA	0.210 U	0.210 U	0.200 U	0.200 U
PFOS	**2.50**	**1.00**	**0.540 J**	**0.540 J**
PFOA	**0.190 J**	0.210 U	0.200 U	0.200 U

20SB-19-02

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	52.00 - 54.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
PFHpA	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
PFHxS	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
PFNA	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U
PFOS	**0.990 J**	0.550 U	**0.330 J**	0.580 U	0.520 U
PFOA	0.200 U	0.220 U	0.220 U	0.230 U	0.210 U

21SB-19-03

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 11.00	7.00 - 11.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.140 J**	**0.270 J**	**0.460**	**0.150 J**	**0.190 J**
PFHpA	0.240 U	0.260 U	0.220 U	0.230 U	0.210 U
PFHxS	0.240 U	**0.210 J**	**0.120 J**	0.230 U	0.210 U
PFNA	0.240 U	**0.160 J**	**0.260 J**	0.230 U	0.210 U
PFOS	**0.960 J**	**10.0 J**	**13.0 J**	**2.30 J**	**3.00 J**
PFOA	0.240 U	**0.370 J**	**0.410**	0.230 U	0.210 U

20SB-19-04

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.095 J**	0.200 U	0.200 U	0.230 U	0.200 U
PFHpA	0.190 U	0.200 U	0.200 U	0.230 U	0.200 U
PFHxS	**0.170 J**	**0.120 J**	**0.067 J**	0.230 U	0.200 U
PFNA	0.190 U	0.200 U	0.200 U	0.230 U	0.200 U
PFOS	**1.60**	**0.720 J**	**0.500 J**	**0.380 J**	**0.420 J**
PFOA	0.100 J	0.200 U	0.200 U	0.230 U	0.200 U

AOC21-17-02

Date	6/6/2017
Units	µg/kg
PFHpA	**0.280 J**
PFHxS	**2.10**
PFNA	**0.380 J**
PFOS	**34.0**
PFOA	**1.40**

21SB-19-02

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 11.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.290 J**	**0.290 J**	**0.120 J**	0.220 U
PFHpA	0.210 U	0.250 U	**0.150 J**	0.220 U
PFHxS	**0.130 J**	**0.096 J**	**0.160 J**	0.220 U
PFNA	0.210 U	0.250 U	**0.110 J**	0.220 U
PFOS	**1.40 J**	**1.80 J**	**9.00 J**	**0.420 J**
PFOA	**0.130 J**	0.250 U	**0.930**	**0.400**

20SB-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	**0.086 J**	0.200 U	0.210 U	0.210 U
PFHpA	0.190 U	0.200 U	0.210 U	0.210 U
PFHxS	**0.100 J**	**0.110 J**	**0.078 J**	0.210 U
PFNA	0.190 U	0.200 U	0.210 U	0.210 U
PFOS	**1.60**	**0.970 J**	**0.510 J**	**0.450 J**
PFOA	**0.110 J**	0.200 U	0.210 U	0.210 U

21SB-19-01

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00 (FD)	7.00 - 10.00	10.00 - 12.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.210 J**	**0.400**	0.210 U	0.230 U	0.200 U	0.220 U
PFHpA	0.250 U	**0.230 J**	0.210 U	0.230 U	0.200 U	0.220 U
PFHxS	**0.560**	**0.370 J**	**0.280 J**	**0.280 J**	**0.084 J**	0.220 U
PFNA	0.250 U	**0.170 J**	0.210 U	0.230 U	0.200 U	0.220 U
PFOS	**5.80 J**	**19.0 J**	**5.20 J**	**7.10 J**	**0.350 J**	**0.950 J**
PFOA	**0.130 J**	**1.90**	**2.20**	**2.10**	**0.380**	0.220 U

20SB-19-08

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)	62.00 - 64.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.880**	0.210 U	0.240 U	0.250 U	0.200 U	0.190 U
PFHpA	0.200 U	0.210 U	**0.320 J**	0.250 U	0.200 U	0.190 U
PFHxS	**0.230 J**	0.210 U	**0.400**	**0.130 J**	**0.130 J**	0.190 U
PFNA	**0.170 J**	**0.290 J**	**0.190 J**	0.250 U	0.200 U	0.190 U
PFOS	**13.0**	**6.20**	**2.50**	**1.80**	**2.50**	0.480 U
PFOA	**0.270 J**	**0.160 J**	**1.80**	**0.300 J**	**0.340**	0.190 U

AOC21-17-01

Date	6/6/2017
Units	µg/kg
PFHpA	**0.190 J**
PFHxS	**0.440 J**
PFNA	**0.140 J**
PFOS	**10.0**
PFOA	**1.30**

AOC20-17-01

Date	06/08/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	0.320 U
PFNA	0.320 U
PFOS	**0.900**
PFOA	0.320 U

20SB-19-06

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	52.00 - 54.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
PFHpA	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
PFHxS	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
PFNA	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U
PFOS	**0.430 J**	**0.460 J**	**0.240 J**	**0.310 J**	**0.590 J**
PFOA	0.210 U	0.200 U	0.200 U	0.200 U	0.200 U

20SB-19-07

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	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
PFHpA	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
PFHxS	0.240 U	0.230 U	**0.089 J**	**0.070 J**	**0.067 J**
PFNA	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U
PFOS	**0.400 J**	**0.280 J**	**0.380 J**	**0.340 J**	**0.310 J**
PFOA	0.240 U	0.230 U	0.220 U	0.200 U	0.200 U

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

0 150 300
Feet

Date: 10/12/2020

Figure 3-9

File: PFAS_RI_A3_PSCS_F3-9_AOC20_21_SoilResults.mxd

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-19-11				
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-19-13		
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-19-10		
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-19-09		
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	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**

NR-19-14
NR-19-13
NR-19-22
NR-19-11
NR-19-12
NR-19-21
NR-19-20
NR-19-10
NR-19-19
NR-19-09
NR-19-18
NR-19-08
NR-19-17
NR-19-07
UP-19-01
AFW-19-02
AFW-19-01
NR-19-06
NR-19-16
US-19-01
NR-19-05
NR-19-15
NR-19-04
NR-19-03
NR-19-02
NR-19-01

GROTON
SHIRLEY
Brook
Walker Brook
Morse Brook
Nashua River
Nonacoicus Brook
SHIRLEY
AYER
Willow Brook
Former North Post
Former Main Post
Former Main Post
School House Pond
Plow Shop Pond
Grove Pond
AYER
HARVARD
Robbins Pond
Cold Spring Brook
Bowers Brook

N
W
E
S

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
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 750 1,500
Feet

Date: 02/03/2021

Figure 3-10

File: PFAS_RI_A3_PSCS_F3-10_SWSDResults-NR_AFW.mxd



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
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

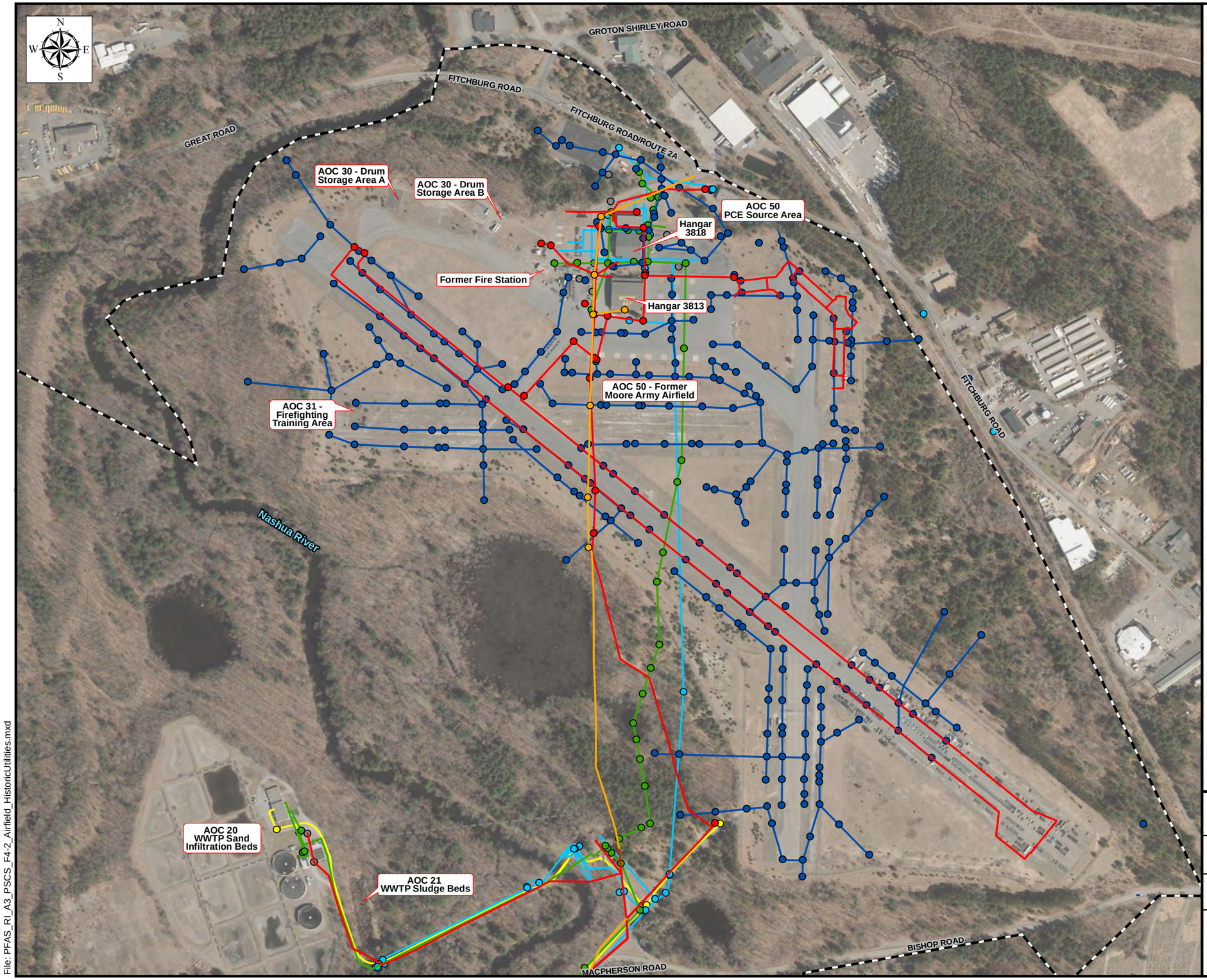
0 250 500
Feet

Date: 10/12/2020

Figure 4-1

KGS

File: PFAS_RI_A3_PSCS_F4-1_AIRFIELD_1992_Imagery.mxd



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

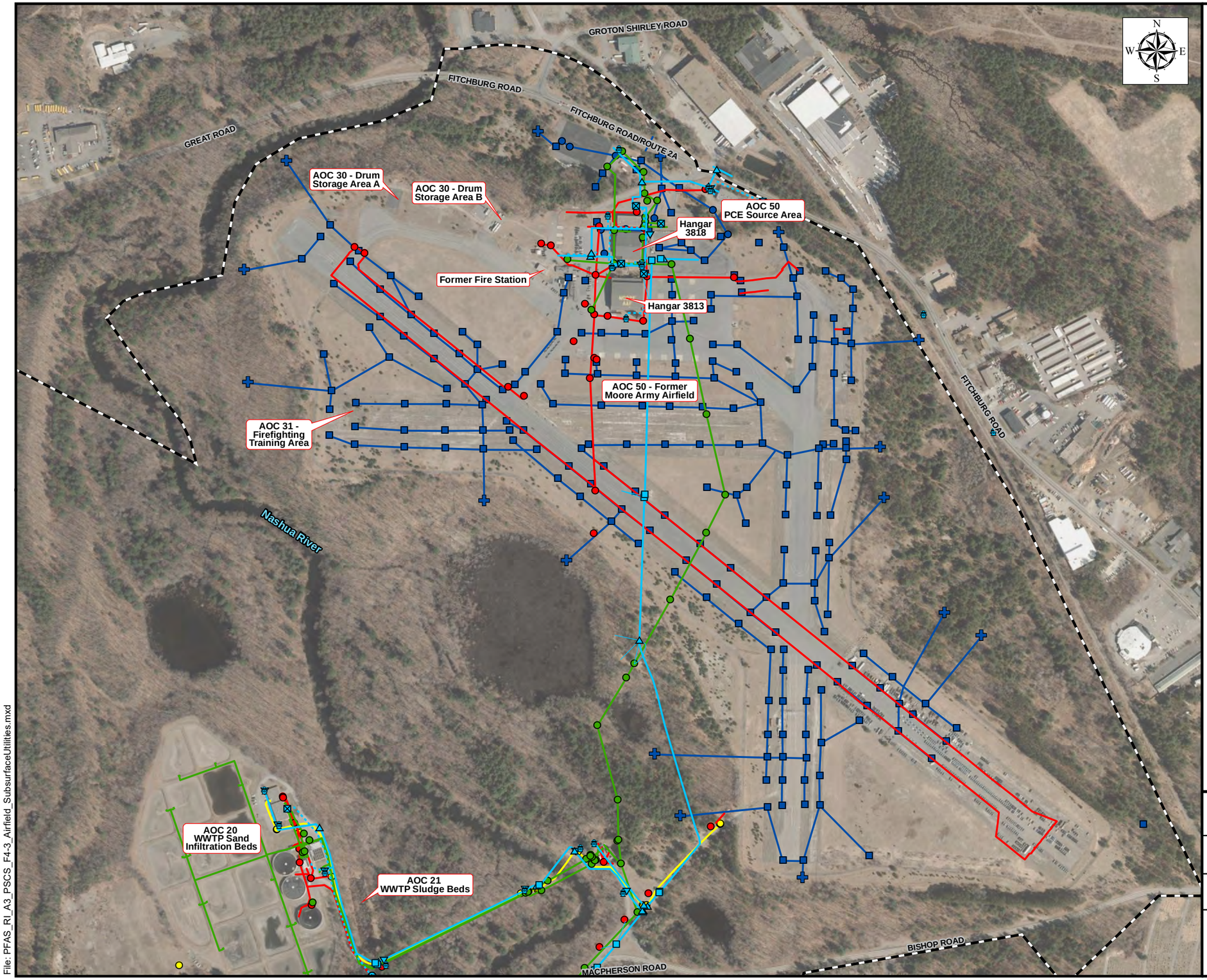
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 250 500
Feet

Date: 02/03/2021

Figure 4-2

File: PFAS_RI_A3_PSCS_F4-2_Airfield_HistoricUtilities.mxd



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

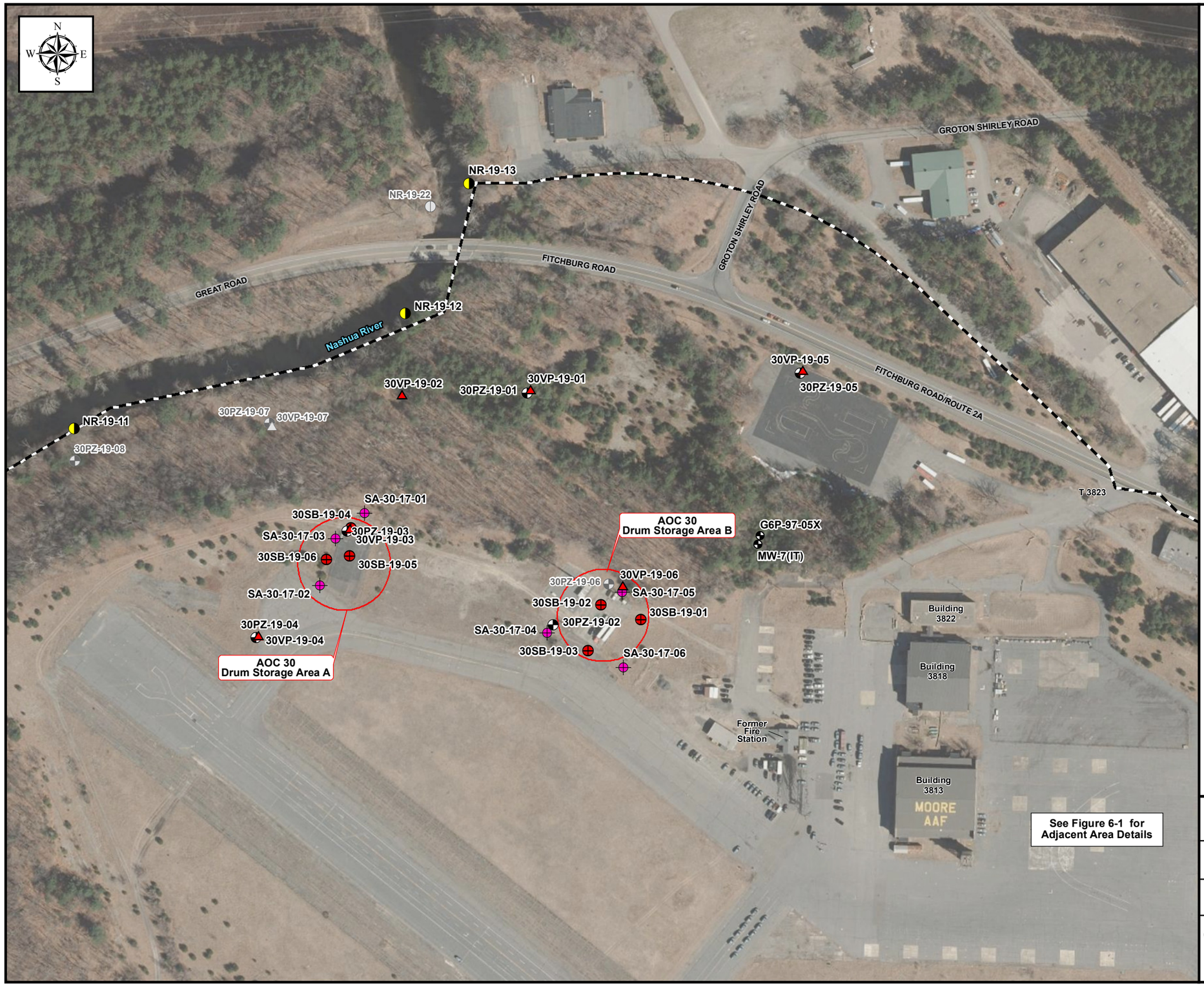
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 250 500
Feet

Date: 02/04/2021

Figure 4-3

File: PFAS_RI_A3_PSCS_F4-3_Airfield_SubsurfaceUtilities.mxd



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

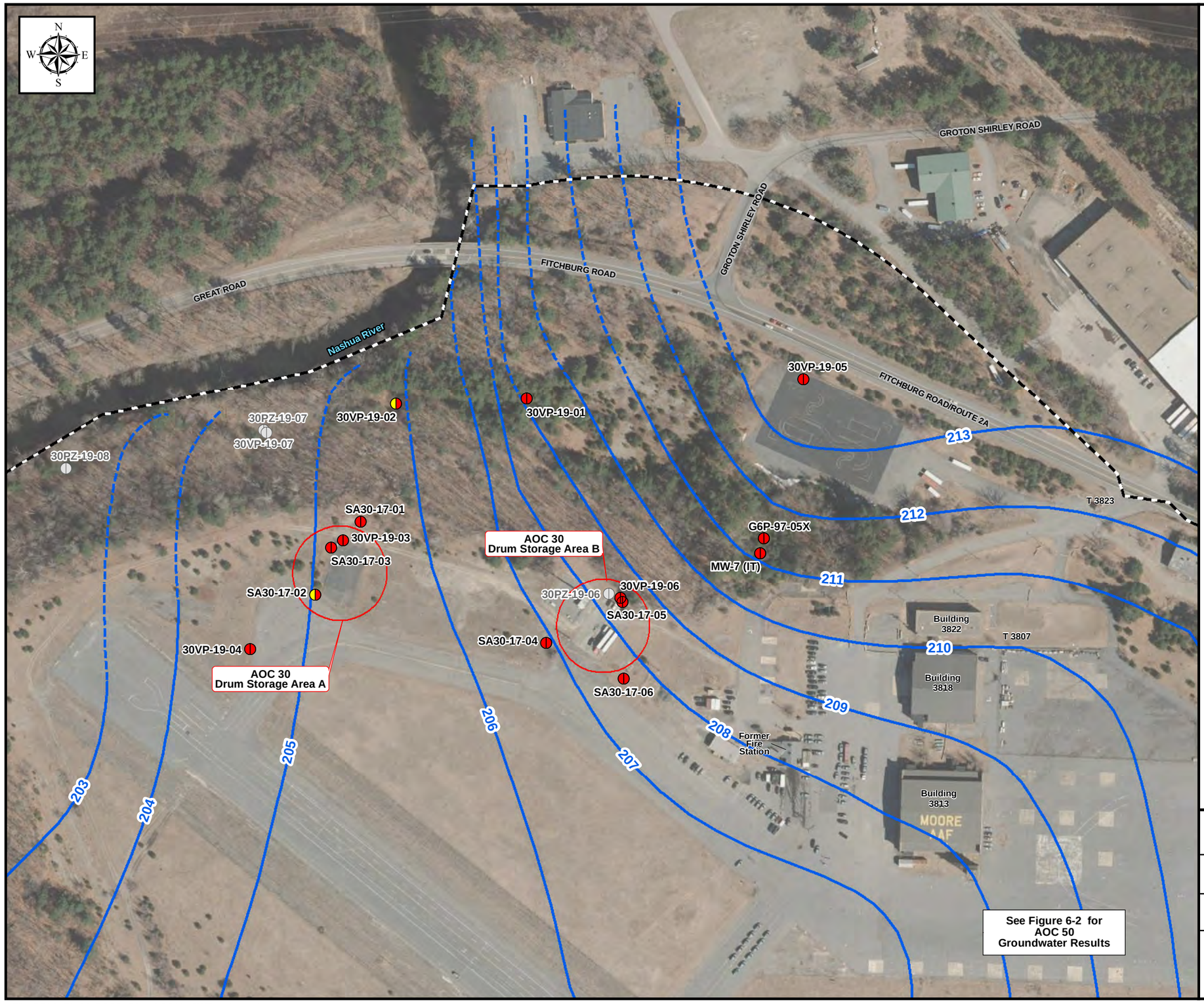
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 100 200
Feet

Date: 01/12/2021

Figure 4-4

File: PFAS_RI_A3_PSCS_F4-4_AOC30_FieldActivities.mxd



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

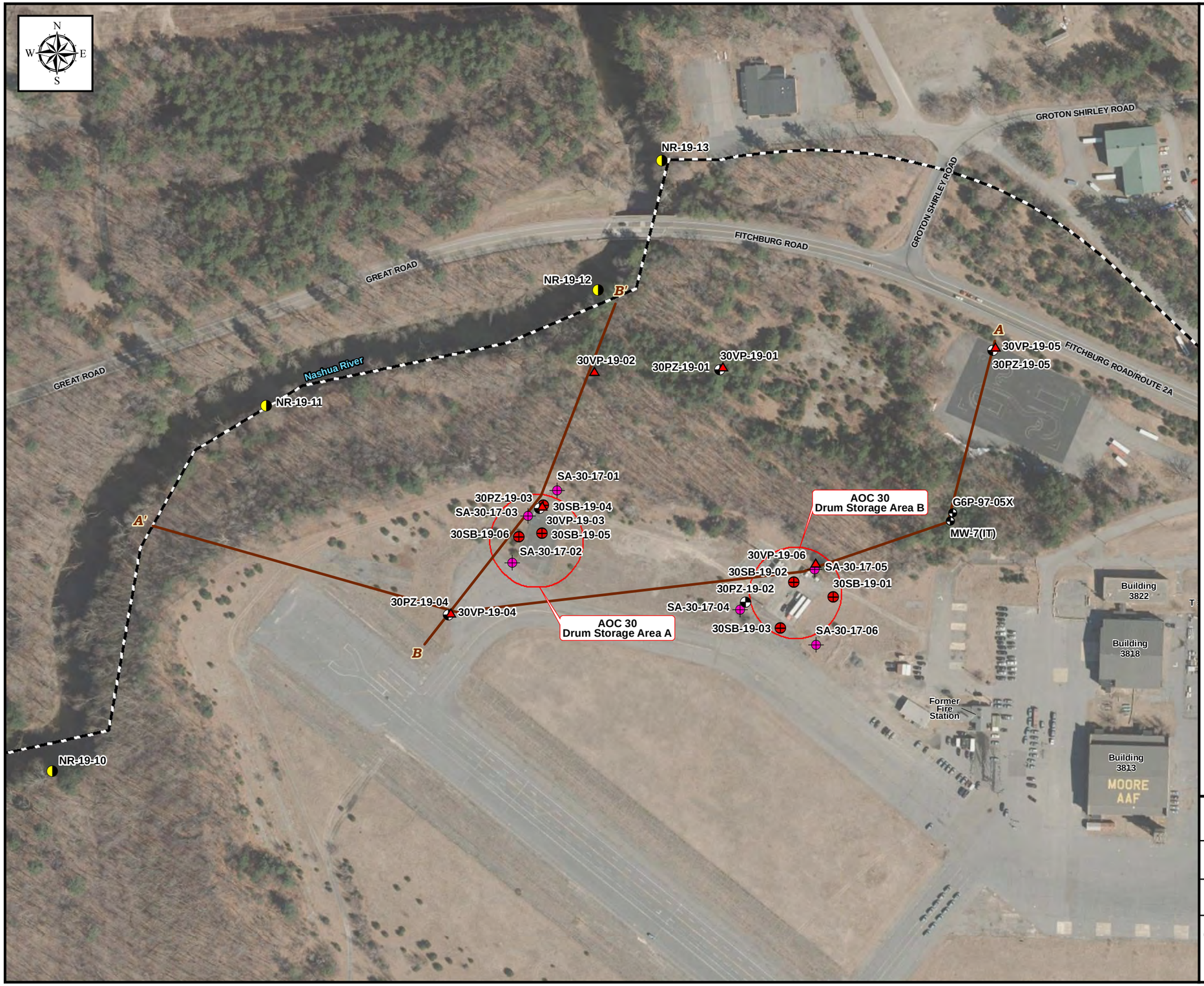
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 100 200
Feet

Date: 01/14/2021

Figure 4-5

File: PFAS_RI_A3_PSCS_F4-5_AOC30_GWResults.mxd



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

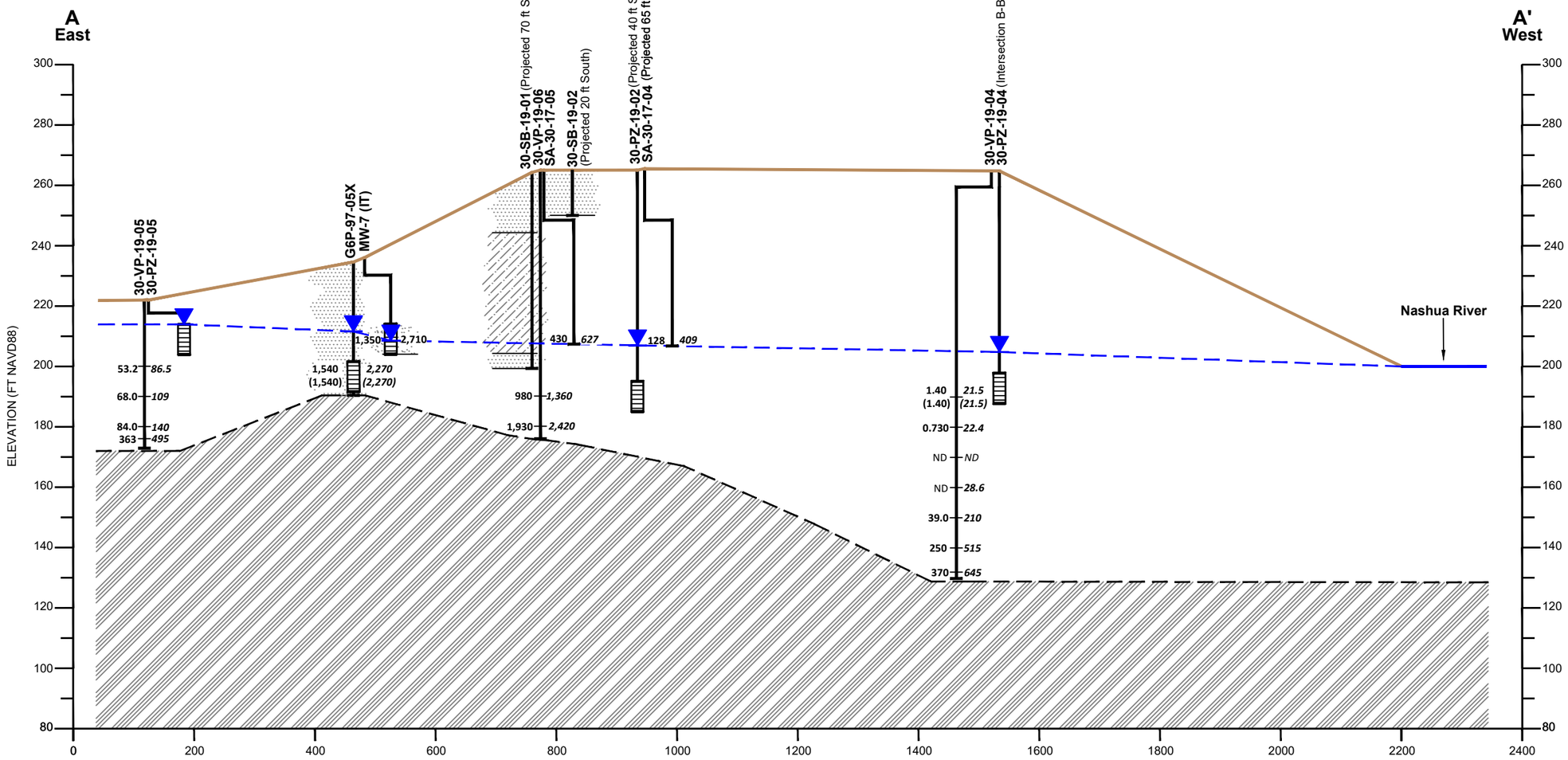
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 100 200
Feet

Date: 08/28/2020

Figure 4-6

File: PFAS_RI_A3_PSCS_F4-6_AOC30_XSLoc.mxd



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
- 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)

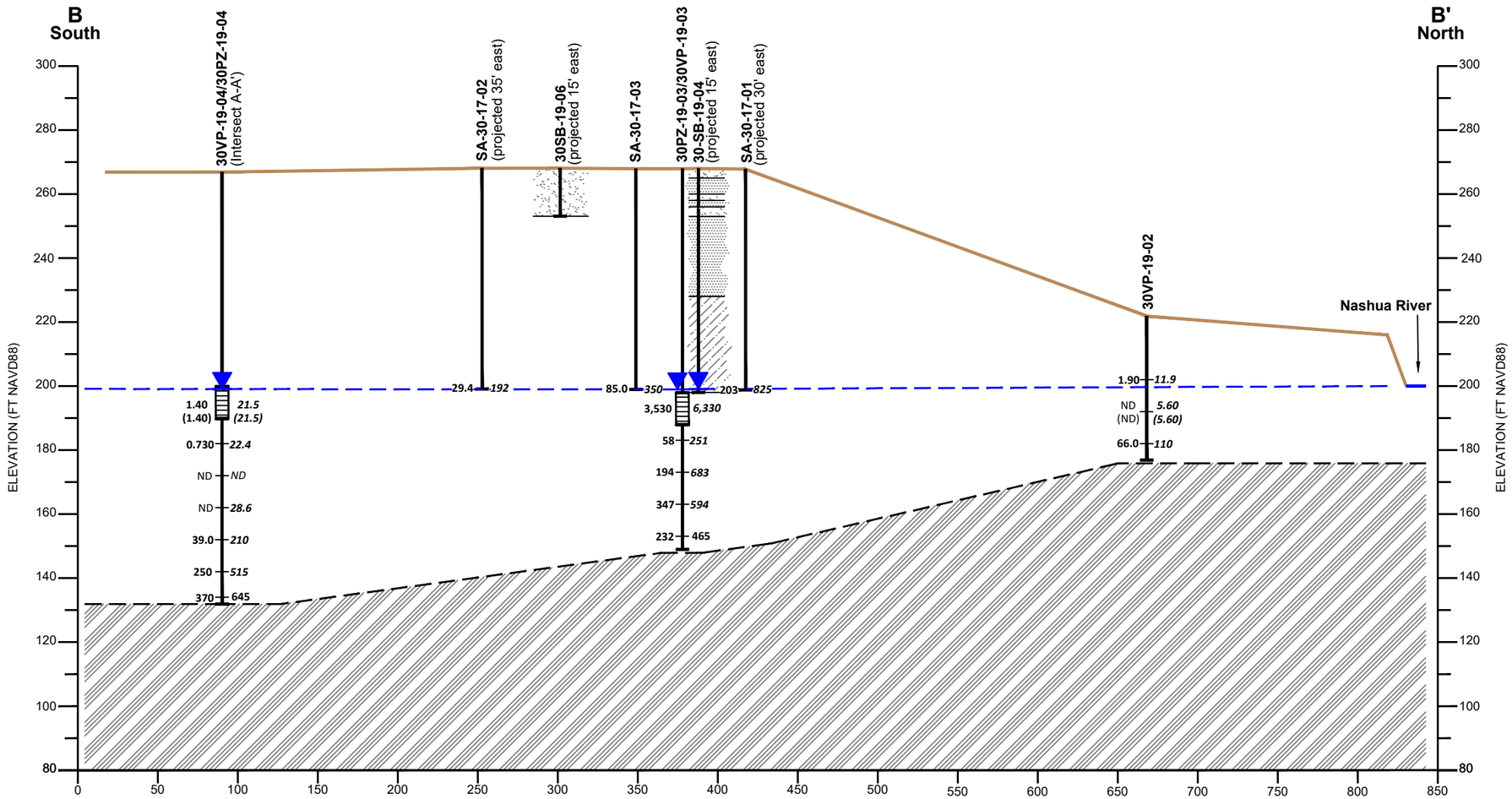
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 200

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	KGS



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

Fine Sand

Medium - Coarse Sand

Sand with Silt/Silty 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)

VERTICAL SCALE IN FEET: 40

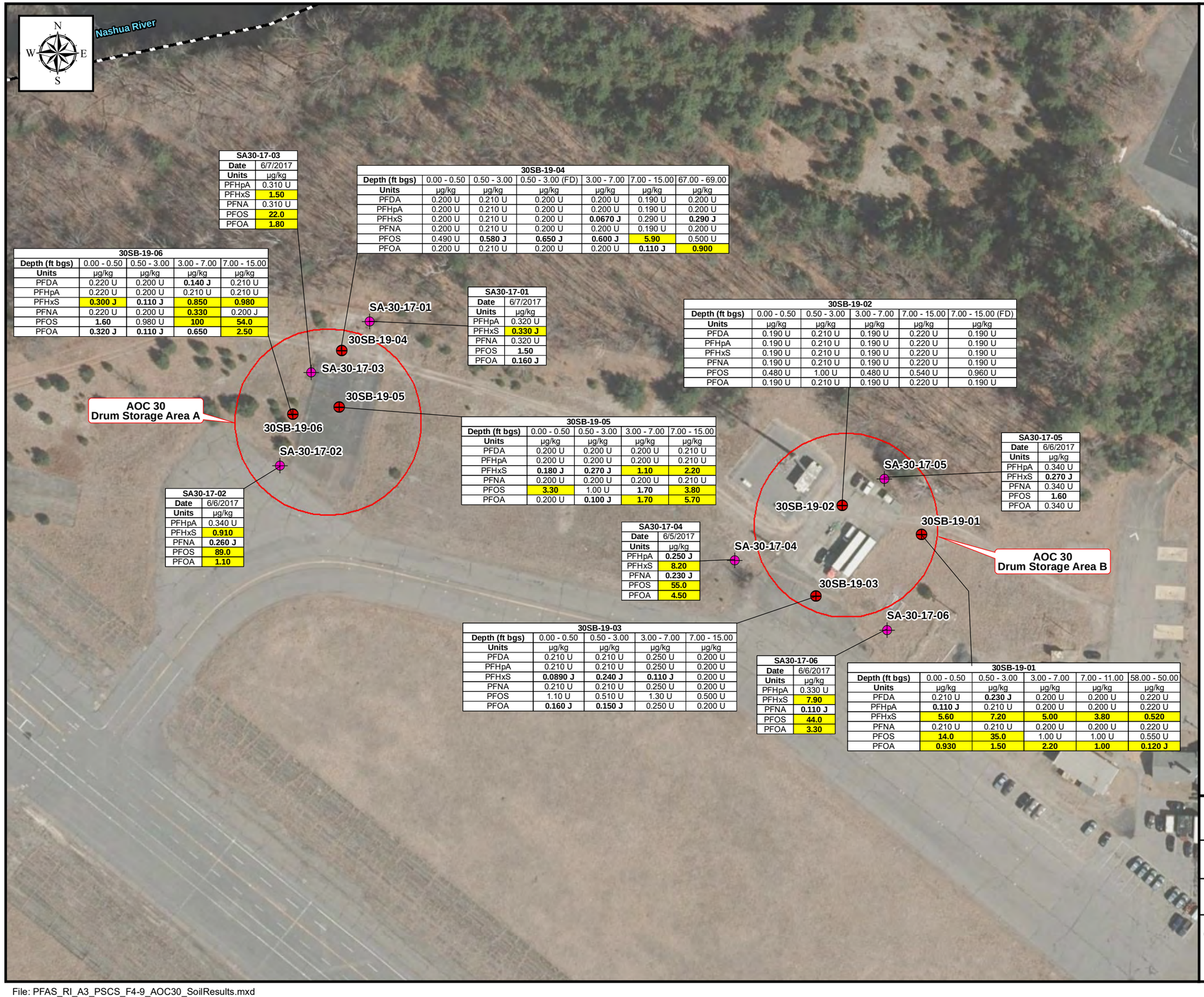
HORIZONTAL SCALE IN FEET: 80

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	KGS



SA30-17-03	
Date	6/7/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	**1.50**
PFNA	0.310 U
PFOS	**22.0**
PFOA	**1.80**

30SB-19-04						
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00 (FD)	3.00 - 7.00	7.00 - 15.00	67.00 - 69.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
PFHpA	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
PFHxS	0.200 U	0.210 U	0.200 U	**0.0670 J**	0.290 U	**0.290 J**
PFNA	0.200 U	0.210 U	0.200 U	0.200 U	0.190 U	0.200 U
PFOS	0.490 U	**0.580 J**	**0.650 J**	**0.600 J**	**5.90**	0.500 U
PFOA	0.200 U	0.210 U	0.200 U	0.200 U	**0.110 J**	**0.900**

30SB-19-06				
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	0.220 U	0.200 U	**0.140 J**	0.210 U
PFHpA	0.220 U	0.200 U	0.210 U	0.210 U
PFHxS	**0.300 J**	**0.110 J**	**0.850**	**0.980**
PFNA	0.220 U	0.200 U	**0.330**	0.200 J
PFOS	0.980 U	**100**	**100**	**54.0**
PFOA	**0.320 J**	**0.110 J**	**0.650**	**2.50**

SA30-17-01	
Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	**0.330 J**
PFNA	0.320 U
PFOS	**1.50**
PFOA	**0.160 J**

30SB-19-02					
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
PFHpA	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
PFHxS	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
PFNA	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U
PFOS	0.480 U	1.00 U	0.480 U	0.540 U	0.960 U
PFOA	0.190 U	0.210 U	0.190 U	0.220 U	0.190 U

30SB-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	0.200 U	0.200 U	0.200 U	0.210 U
PFHpA	0.200 U	0.200 U	0.200 U	0.210 U
PFHxS	**0.180 J**	**0.270 J**	**1.10**	**2.20**
PFNA	0.200 U	0.200 U	0.200 U	0.210 U
PFOS	**3.30**	1.00 U	**1.70**	**3.80**
PFOA	0.200 U	**0.100 J**	**1.70**	**5.70**

SA30-17-05	
Date	6/6/2017
Units	µg/kg
PFHpA	0.340 U
PFHxS	**0.270 J**
PFNA	0.340 U
PFOS	**1.60**
PFOA	0.340 U

SA30-17-02	
Date	6/6/2017
Units	µg/kg
PFHpA	0.340 U
PFHxS	**0.910**
PFNA	**0.260 J**
PFOS	**89.0**
PFOA	**1.10**

SA30-17-04	
Date	6/5/2017
Units	µg/kg
PFHpA	**0.250 J**
PFHxS	**8.20**
PFNA	**0.230 J**
PFOS	**55.0**
PFOA	**4.50**

30SB-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	0.210 U	0.250 U	0.200 U
PFHpA	0.210 U	0.210 U	0.250 U	0.200 U
PFHxS	**0.0890 J**	**0.240 J**	**0.110 J**	0.200 U
PFNA	0.210 U	0.210 U	0.250 U	0.200 U
PFOS	1.10 U	0.510 U	1.30 U	0.500 U
PFOA	**0.160 J**	**0.150 J**	0.250 U	0.200 U

SA30-17-06	
Date	6/6/2017
Units	µg/kg
PFHpA	0.330 U
PFHxS	**7.90**
PFNA	**0.110 J**
PFOS	**44.0**
PFOA	**3.30**

30SB-19-01					
Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 11.00	58.00 - 50.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.210 U	**0.230 J**	0.200 U	0.200 U	0.220 U
PFHpA	**0.110 J**	0.210 U	0.200 U	0.200 U	0.220 U
PFHxS	**5.60**	**7.20**	**5.00**	**3.80**	**0.520**
PFNA	0.210 U	0.210 U	0.200 U	0.200 U	0.220 U
PFOS	**14.0**	**35.0**	1.00 U	1.00 U	0.550 U
PFOA	**0.930**	**1.50**	**2.20**	**1.00**	**0.120 J**

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
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 50 100
Feet

Date: 09/02/2020

Figure 4-9

File: PFAS_RI_A3_PSCS_F4-9_AOC30_SoilResults.mxd



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

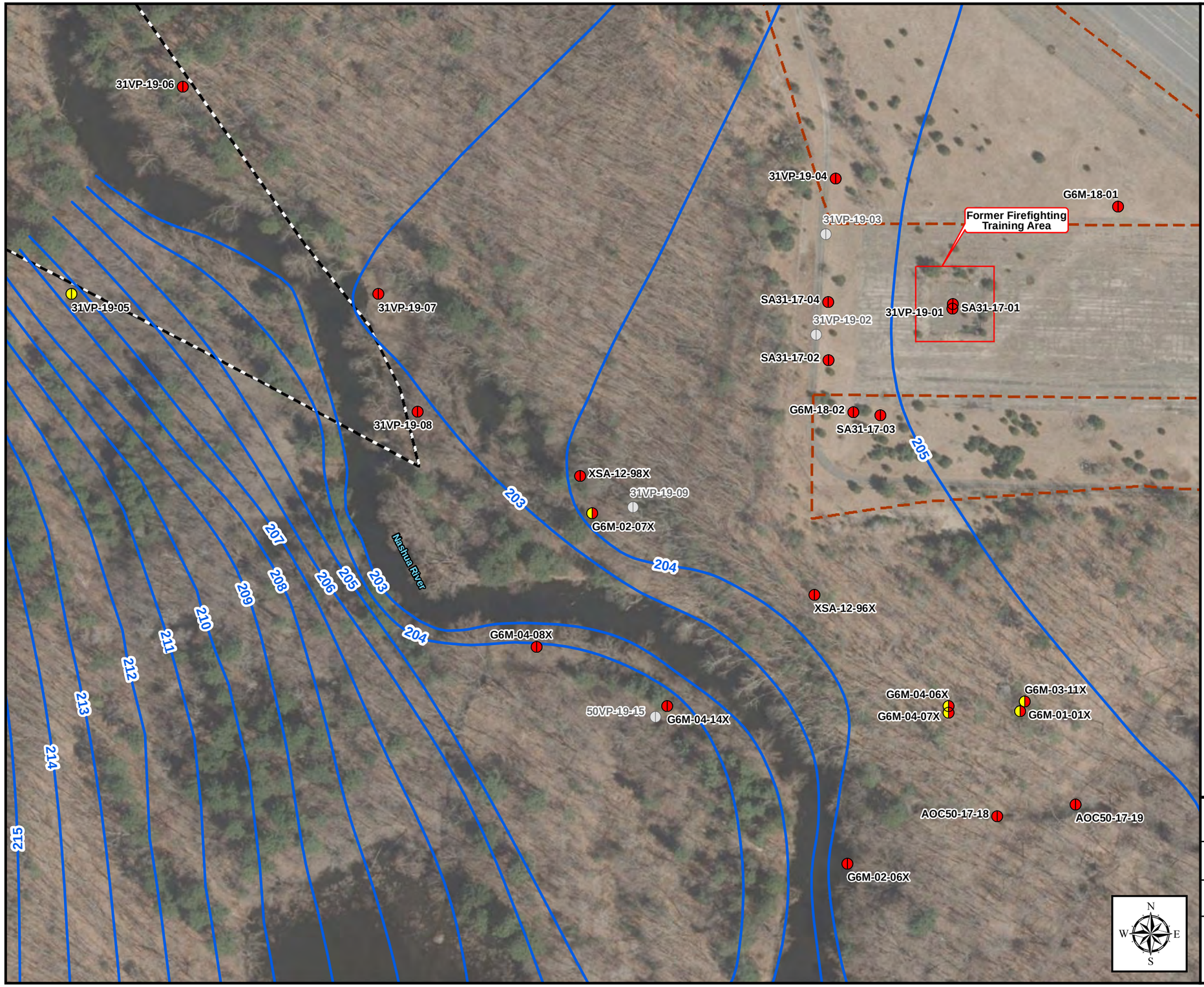
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 01/12/2021

Figure 5-1

File: PFAS_RI_A3_PSCS_F5-1_AOC31_FieldActivities.mxd



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

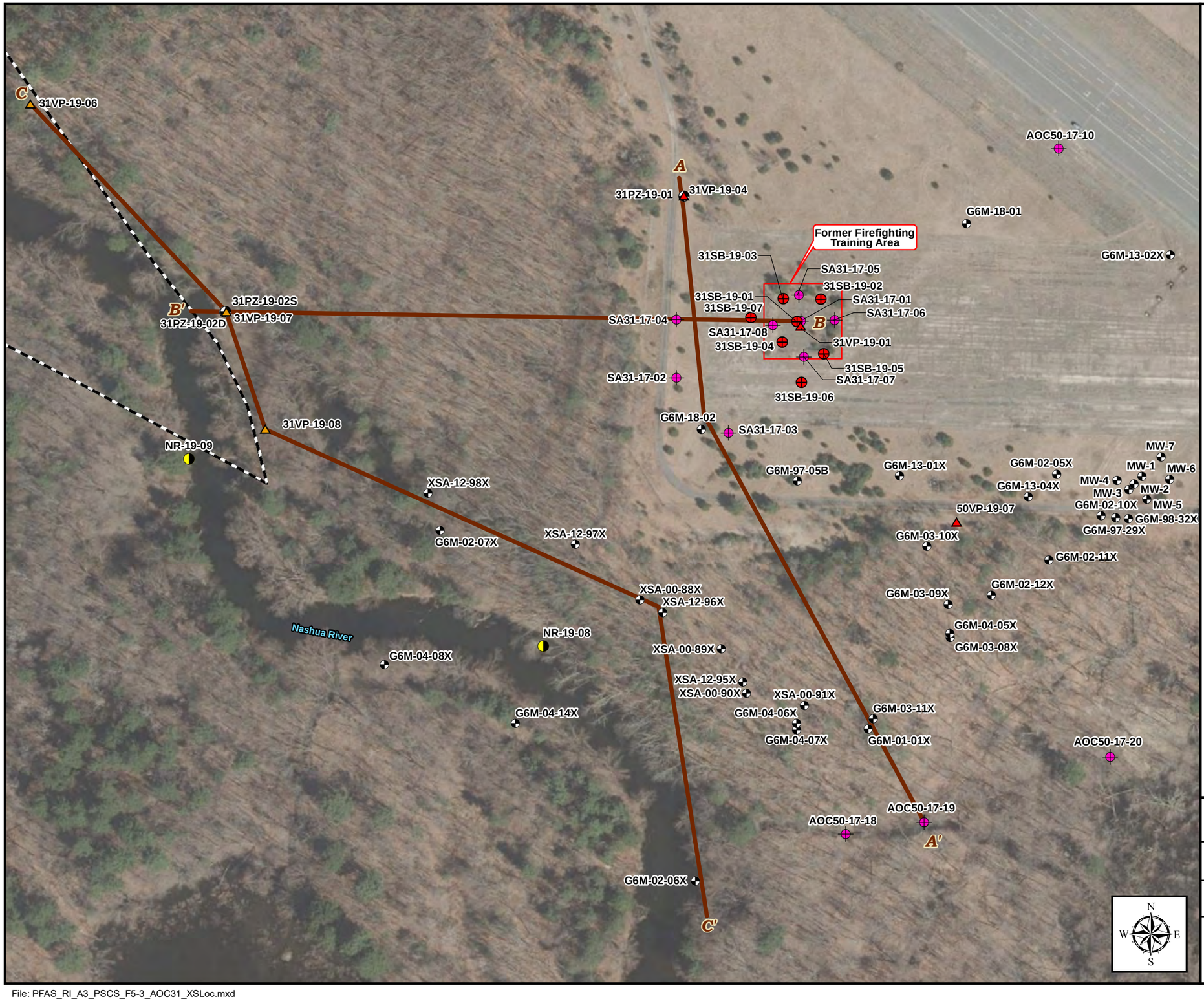
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 01/14/2021

Figure 5-2

File: PFAS_RI_A3_PSCS_F5-2_AOC31_GWResults.mxd



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

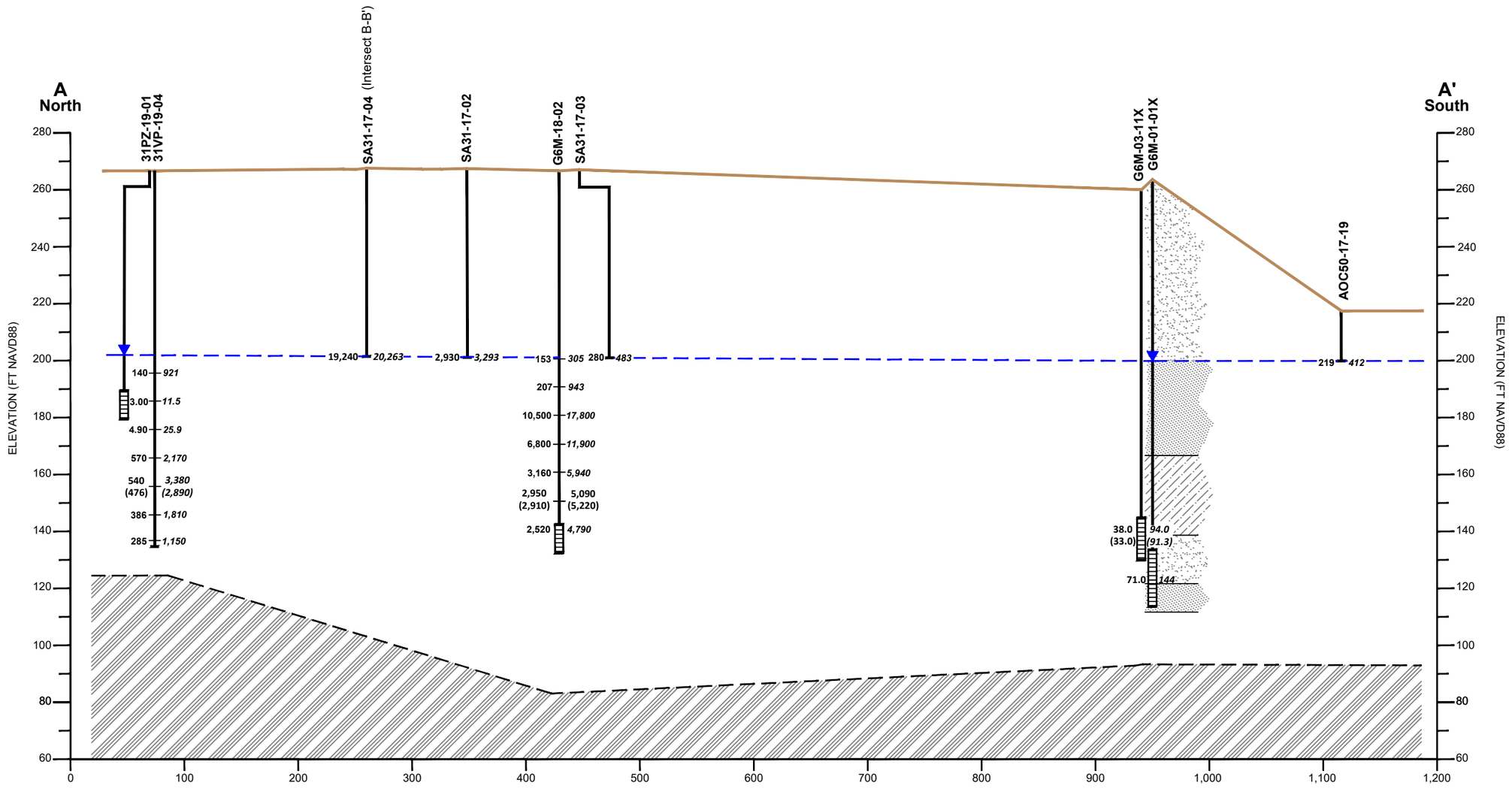
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 10/15/2020

Figure 5-3

File: PFAS_RI_A3_PSCS_F5-3_AOC31_XSLoc.mxd



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
NS = no sample
( ) = field duplicate

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

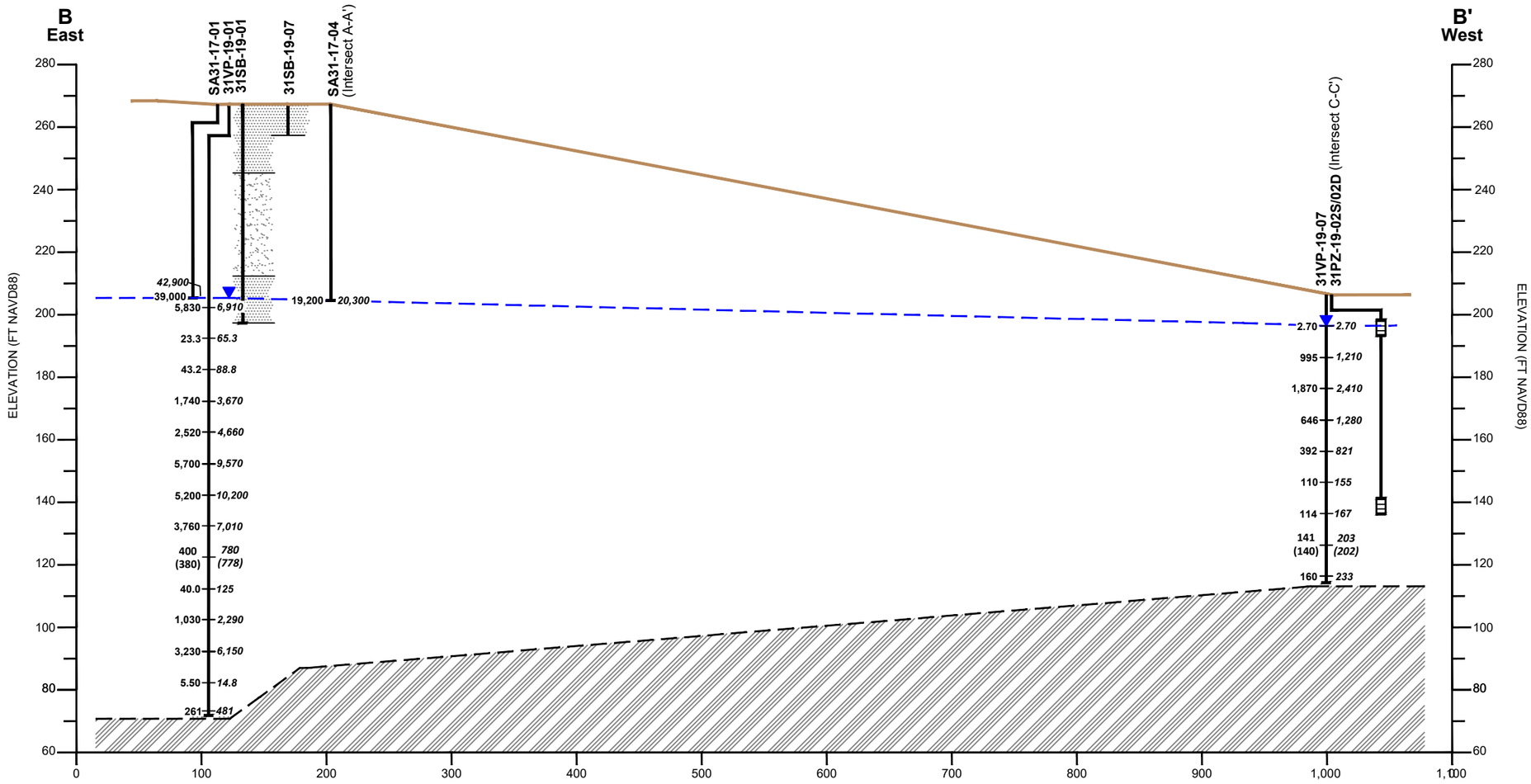
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 100

AOC 31 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: 10/14/2020	Figure 5-4	KGS



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

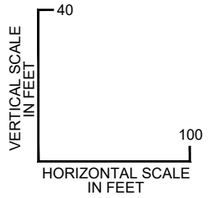
Screened Interval

- 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)

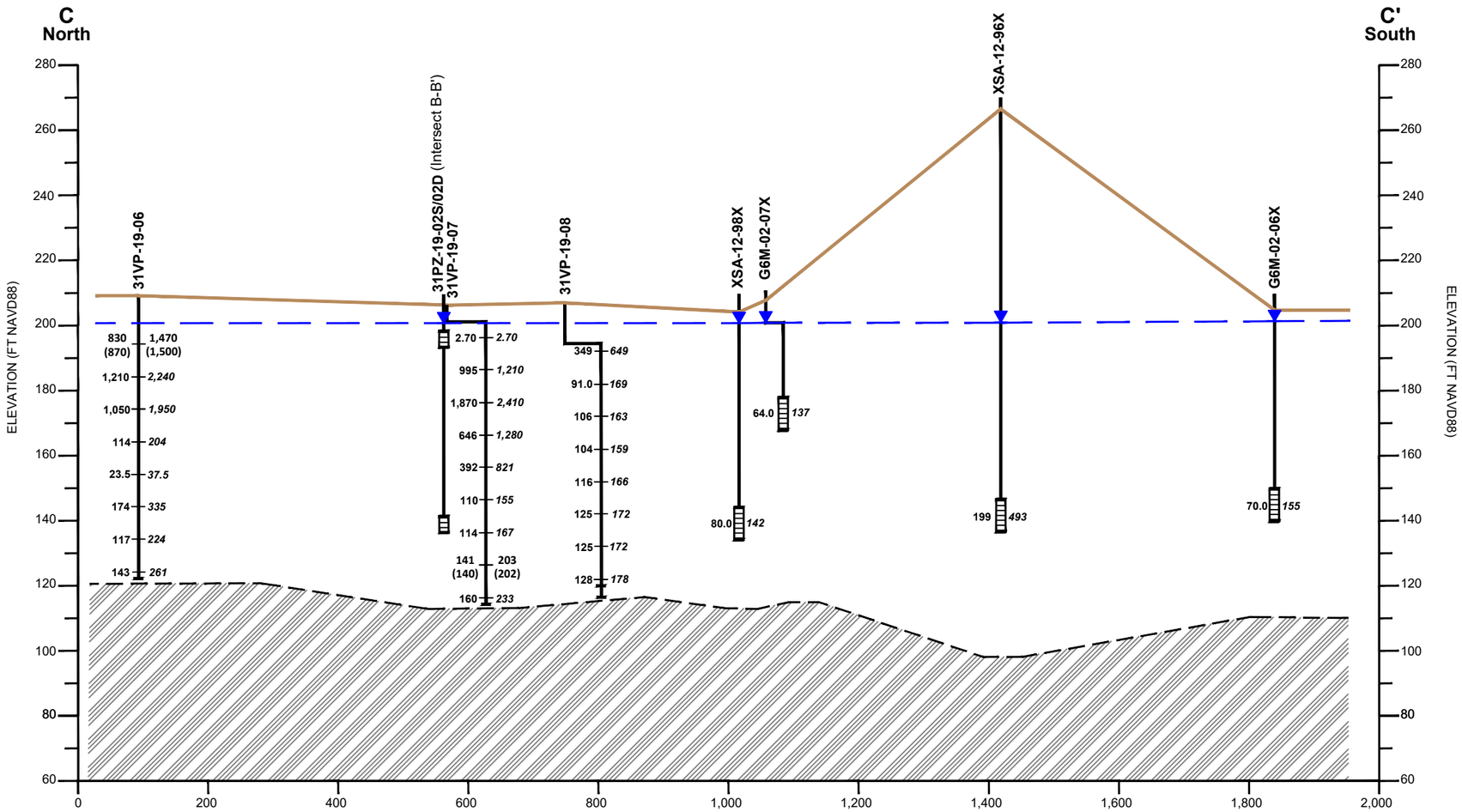


AOC 31 Cross Section B-B'
Devens PFAS RI - Area 3 PSCS

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	KGS



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)

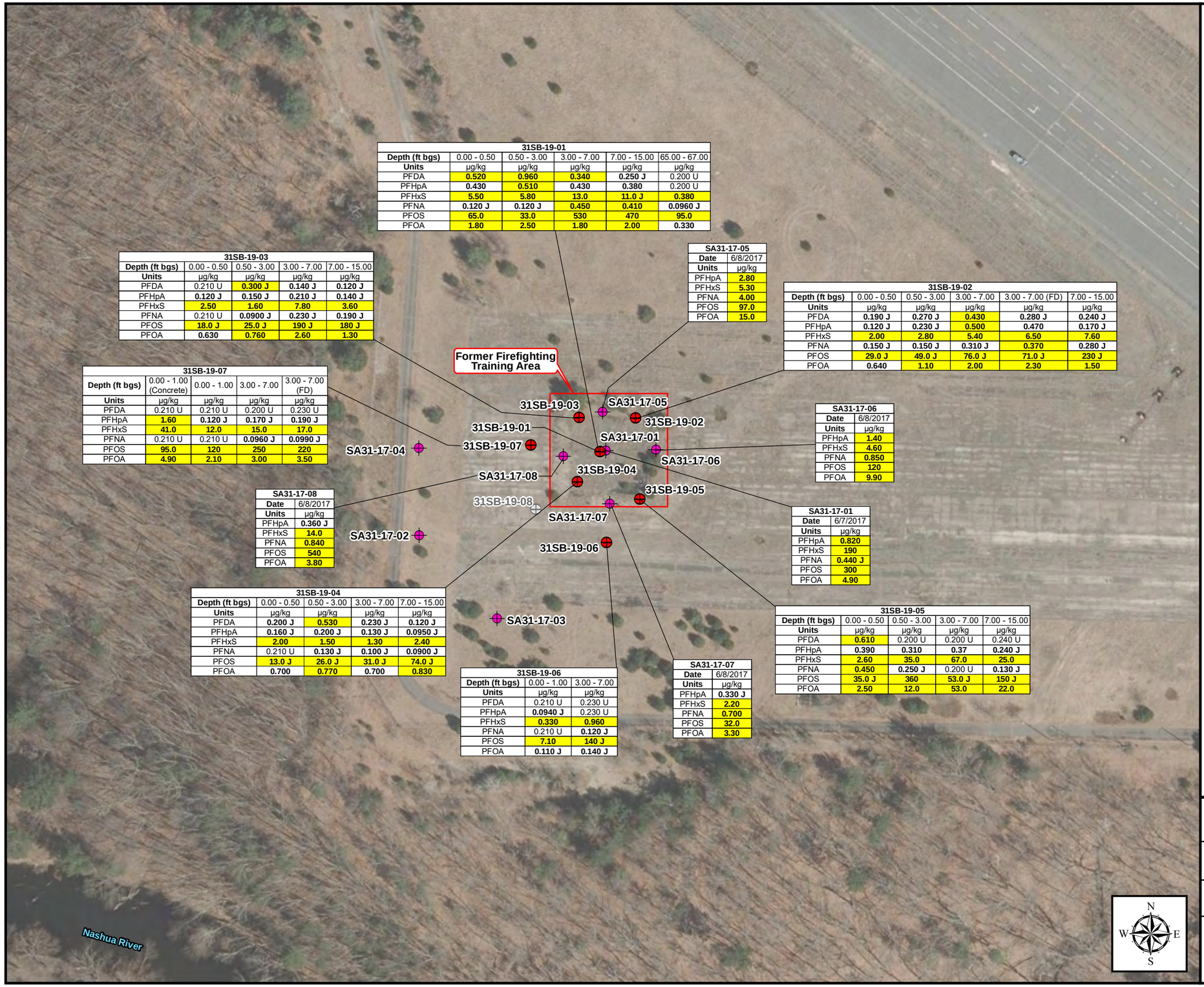
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 200

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	KGS



31SB-19-01

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	65.00 - 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-19-06

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**

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**

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

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 31 Soil Sampling Results
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

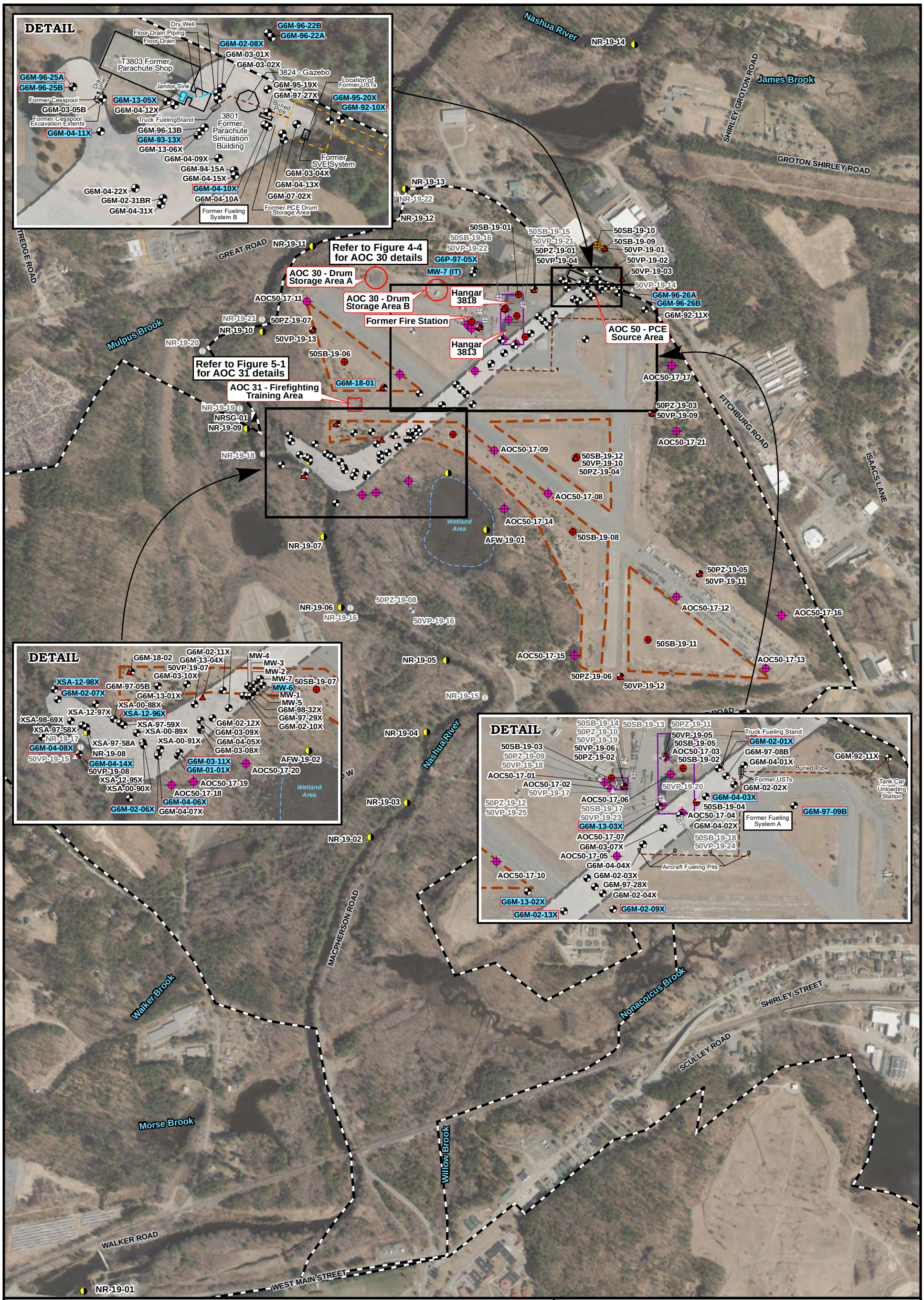
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 50 100
Feet

Date: 01/12/2021

Figure 5-7

File: PFAS_RI_A3_PSCS_F5-7_AOC31_SoilResults.mxd



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
- 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
- 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

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 50 Field Activities
Devens PFAS RI – Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

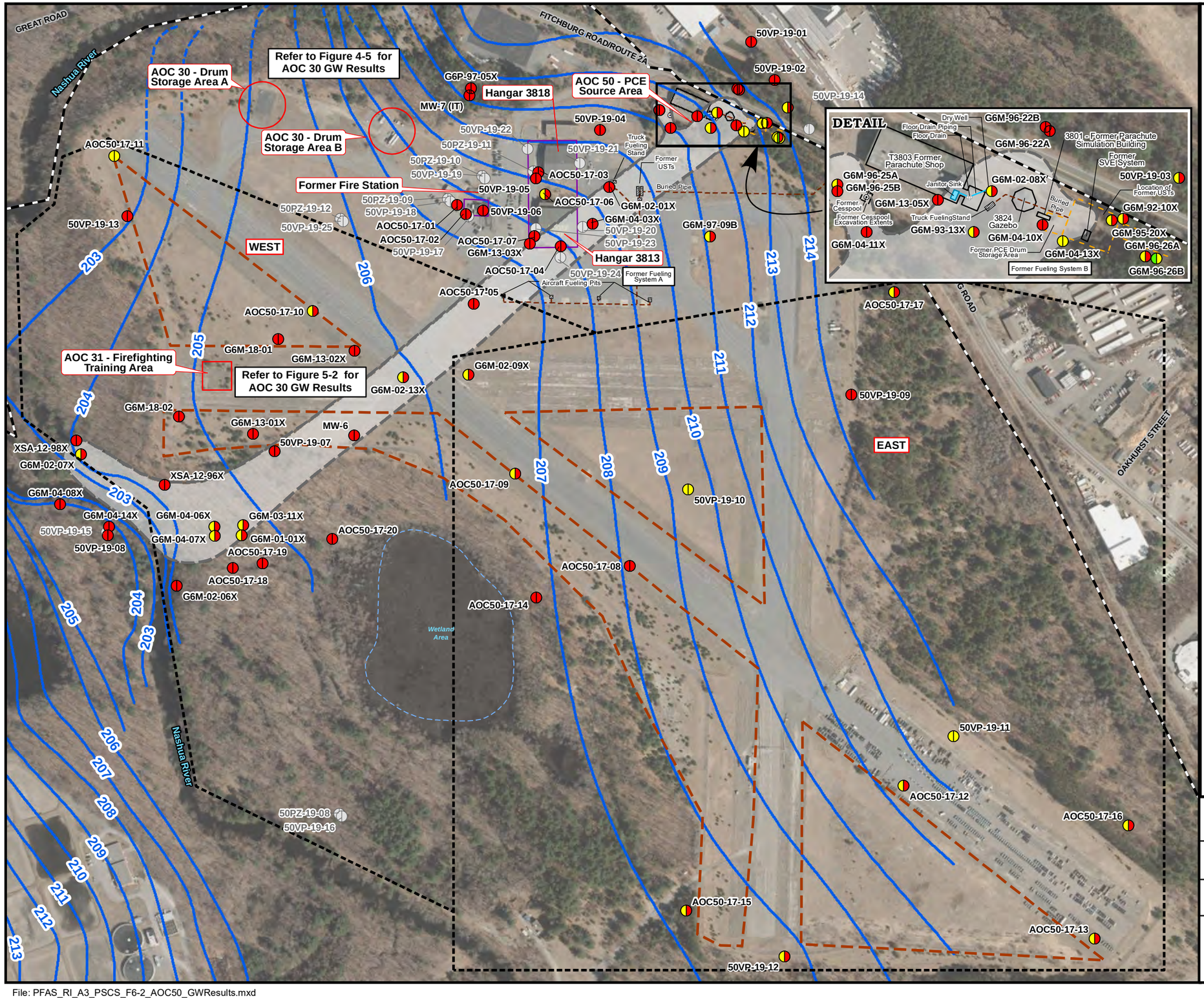
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 400 800
Feet

Date: 01/12/2021

Figure 6-1

File: PFAS_RI_A3_PSCS_F6-1_AOC50_FieldActivities.mxd



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

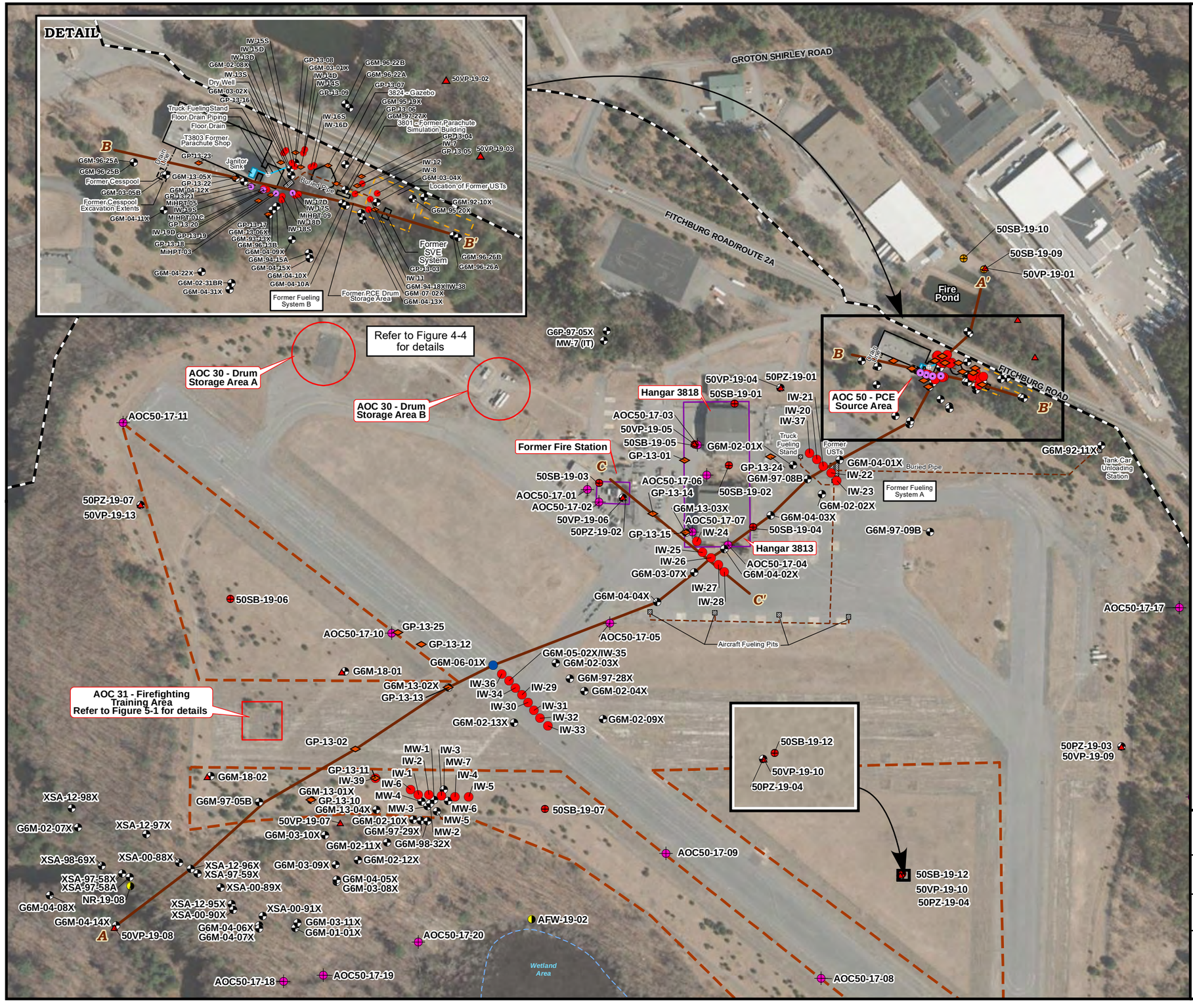
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400
Feet

Date: 02/05/2021

Figure 6-2

File: PFAS_RI_A3_PSCS_F6-2_AOC50_GWResults.mxd



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

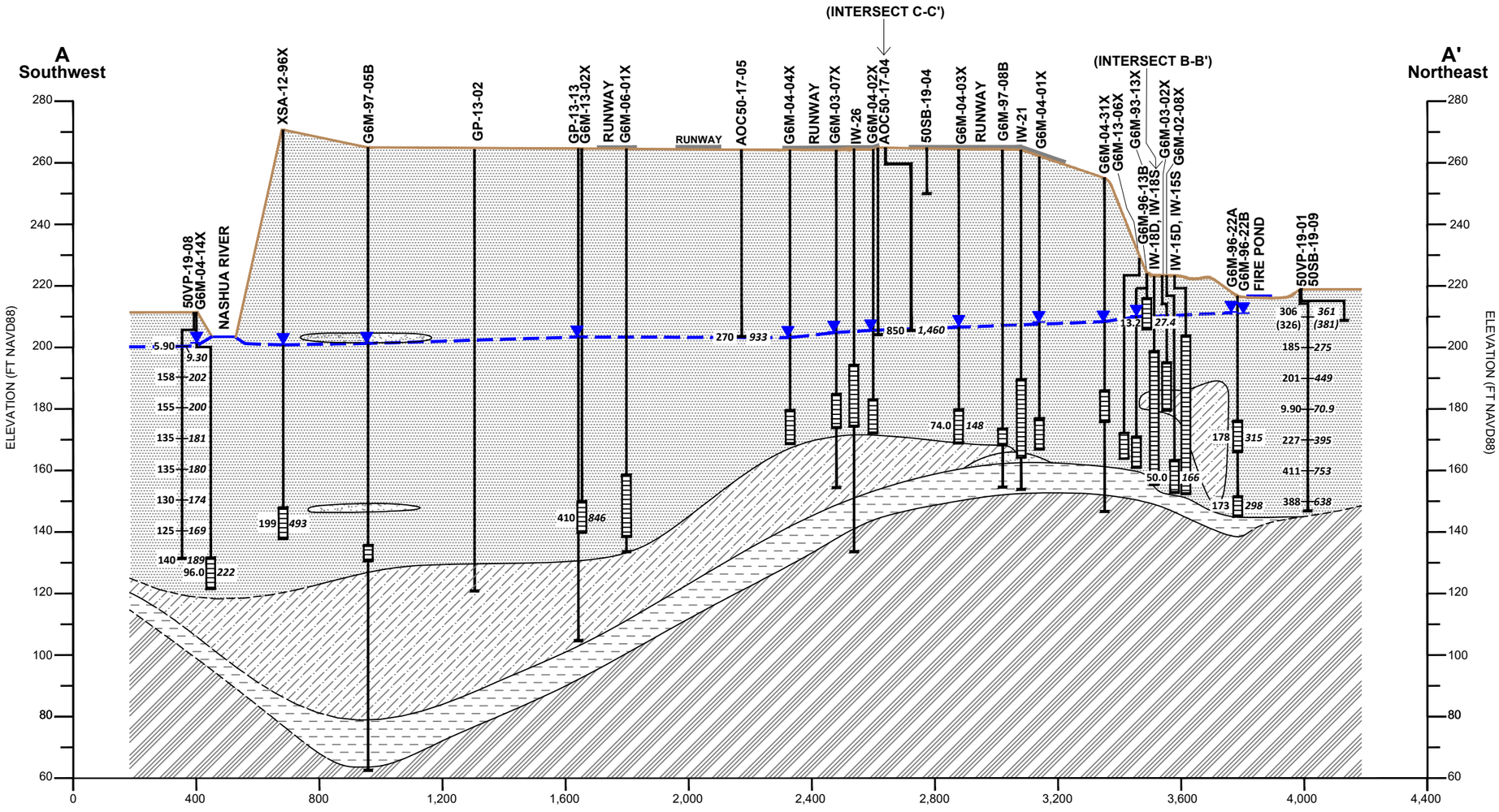
Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

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

0 150 300
Feet

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

- 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)

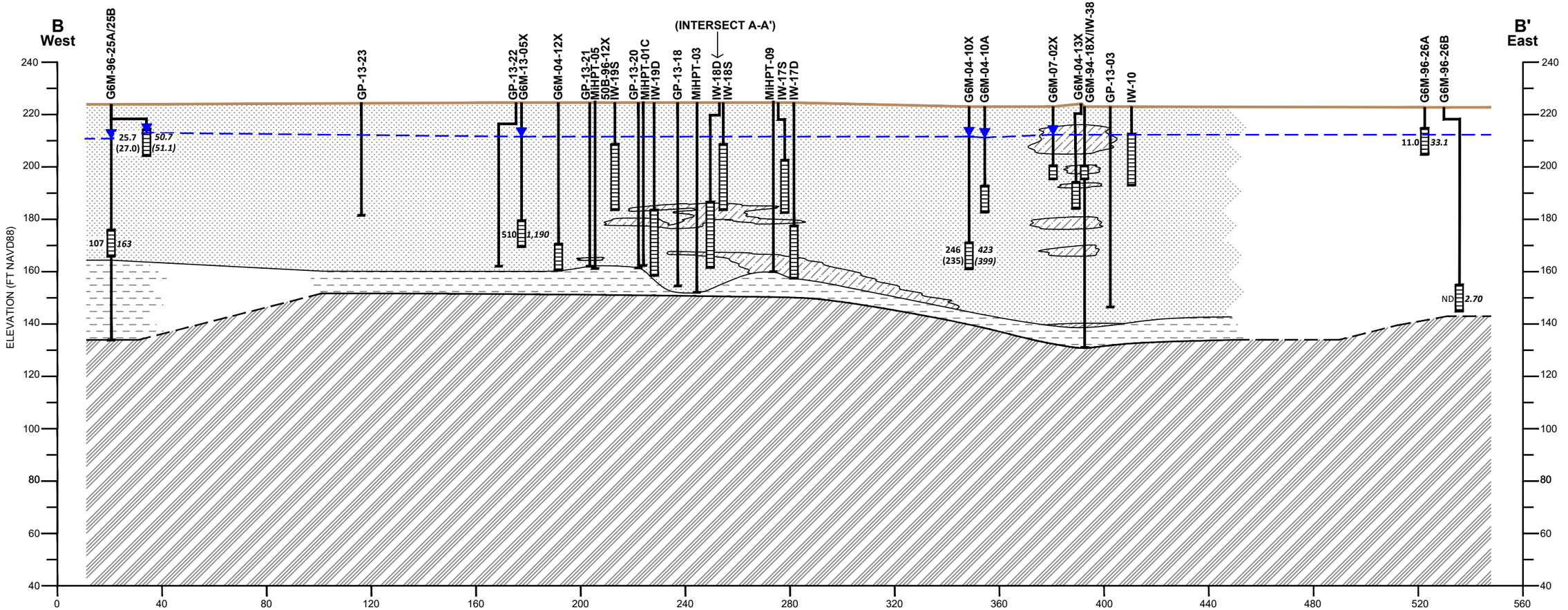
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 400

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	KGS



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)

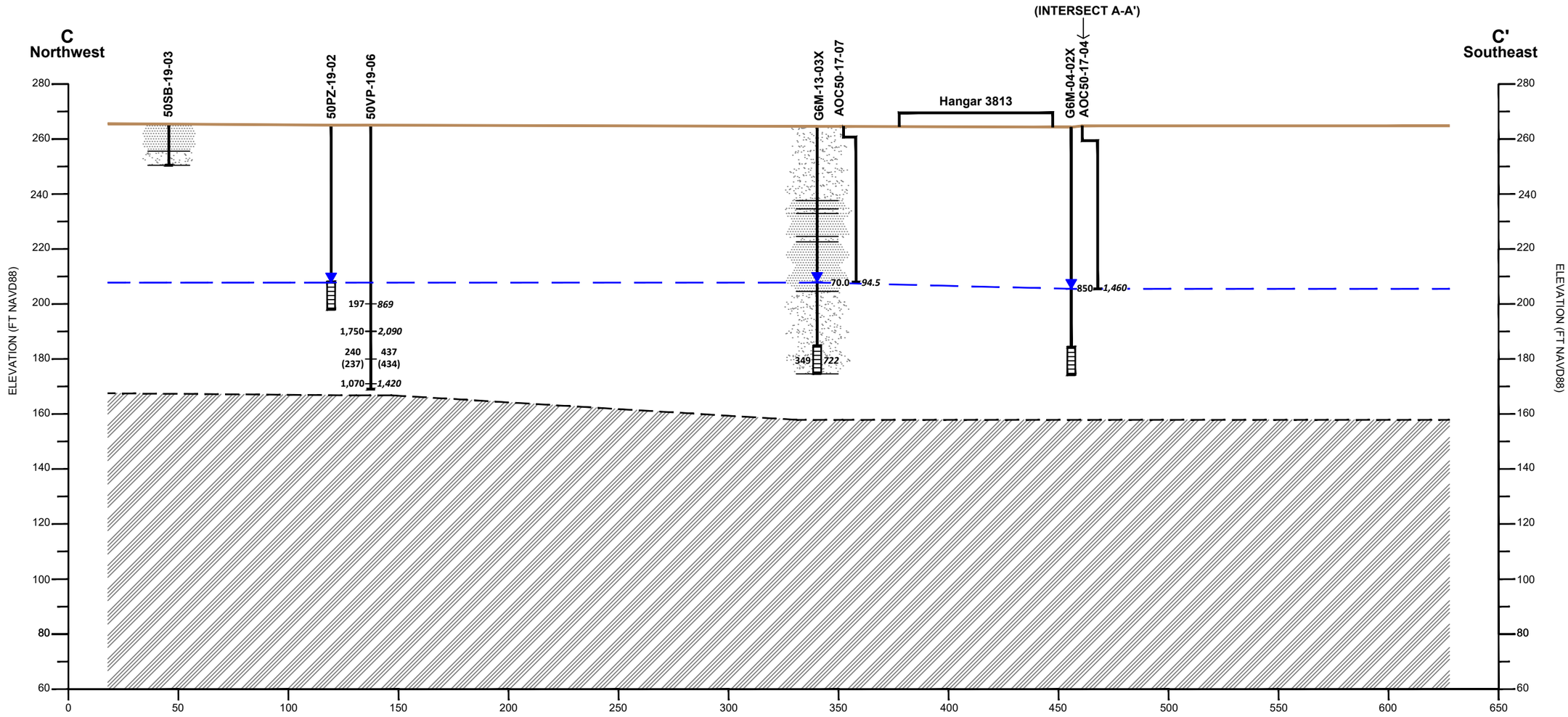
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 40

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	KGS



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)

VERTICAL SCALE IN FEET
40

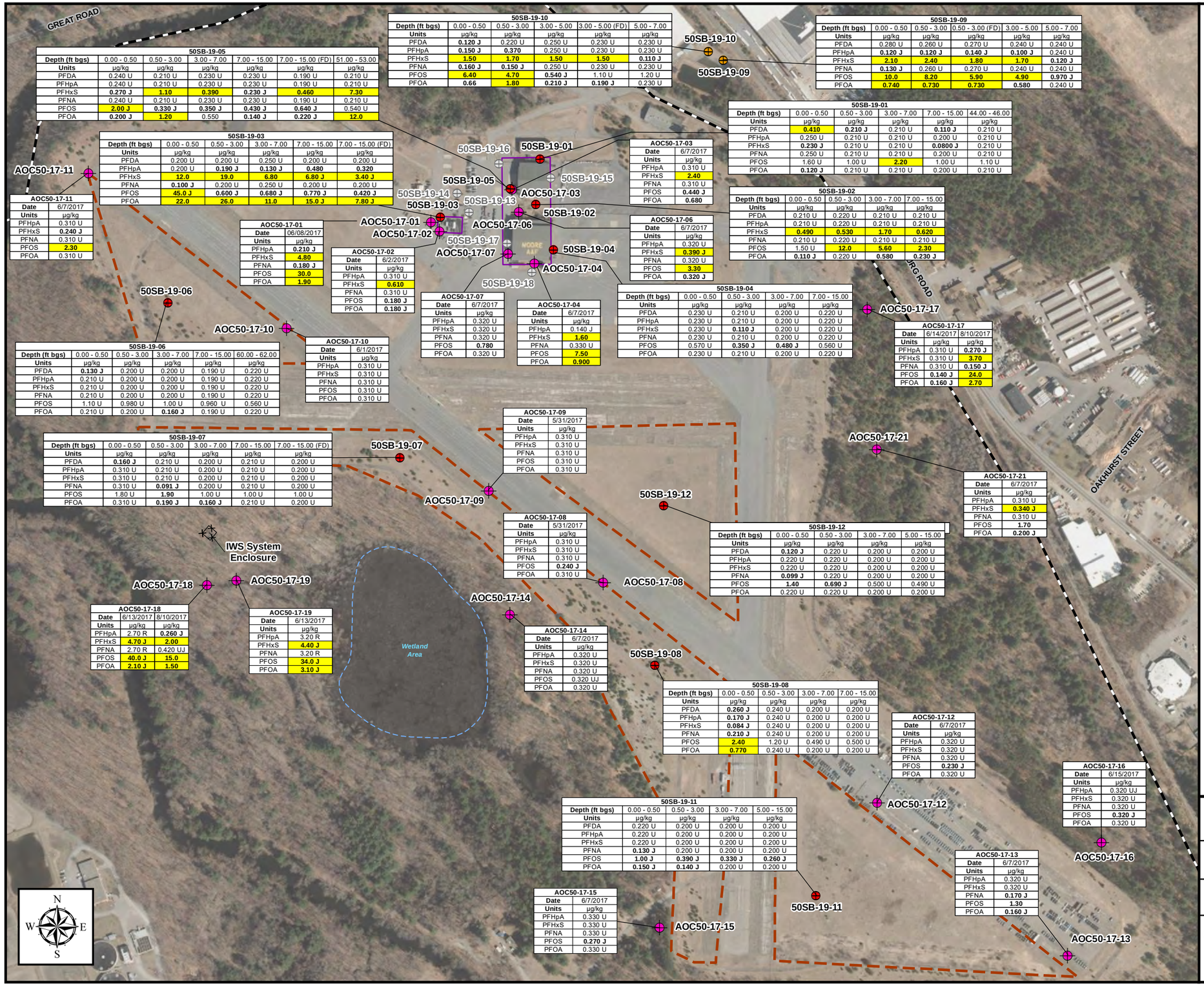
HORIZONTAL SCALE IN FEET
40

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	KGS



50SB-19-10

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 5.00	3.00 - 5.00 (FD)	5.00 - 7.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.120 J**	0.220 U	0.250 U	0.230 U	0.230 U
PFHpA	**0.150 J**	**0.370**	0.250 U	0.230 U	0.230 U
PFHxS	**1.50**	**1.70**	**1.50**	**1.50**	**0.110 J**
PFNA	**0.160 J**	**0.150 J**	0.250 U	0.230 U	0.230 U
PFOS	**6.40**	**4.70**	**0.540 J**	1.10 U	1.20 U
PFOA	**0.66**	**1.80**	**0.210 J**	**0.190 J**	0.230 U

50SB-19-09

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00 (FD)	3.00 - 5.00	5.00 - 7.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.280 U	0.260 U	0.270 U	0.240 U	0.240 U
PFHpA	**0.120 J**	**0.120 J**	**0.140 J**	**0.100 J**	0.240 U
PFHxS	**2.10**	**2.40**	**1.80**	**1.70**	**0.120 J**
PFNA	**0.130 J**	0.260 U	0.270 U	0.240 U	0.240 U
PFOS	**10.0**	**8.20**	**5.90**	**4.90**	**0.970 J**
PFOA	**0.740**	**0.730**	**0.730**	**0.580**	0.240 U

50SB-19-05

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)	51.00 - 53.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
PFHpA	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
PFHxS	**0.270 J**	**1.10**	**0.390**	**0.230 J**	**0.460**	**7.30**
PFNA	0.240 U	0.210 U	0.230 U	0.230 U	0.190 U	0.210 U
PFOS	**2.00 J**	**0.330 J**	**0.350 J**	**0.430 J**	**0.640 J**	0.540 U
PFOA	**0.200 J**	**1.20**	0.550	**0.140 J**	**0.220 J**	**12.0**

50SB-19-01

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	44.00 - 46.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.410**	**0.210 J**	0.210 U	**0.110 J**	0.210 U
PFHpA	0.250 U	0.210 U	0.210 U	0.200 U	0.210 U
PFHxS	**0.230 J**	0.210 U	0.210 U	**0.0800 J**	0.210 U
PFNA	0.250 U	0.210 U	0.210 U	0.200 U	0.210 U
PFOS	1.60 U	1.00 U	**2.20**	1.00 U	1.10 U
PFOA	**0.120 J**	0.210 U	0.210 U	0.200 U	0.210 U

50SB-19-03

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 U	0.200 U	0.250 U	0.200 U	0.200 U
PFHpA	0.200 U	**0.190 J**	**0.130 J**	**0.480**	**0.320**
PFHxS	**12.0**	**19.0**	**6.80**	**6.80 J**	**3.40 J**
PFNA	**0.100 J**	0.200 U	0.250 U	0.200 U	0.200 U
PFOS	**45.0 J**	**0.600 J**	**0.680 J**	**0.770 J**	**0.420 J**
PFOA	**22.0**	**26.0**	**11.0**	**15.0 J**	**7.80 J**

AOC50-17-03

Date	6/7/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	**2.40**
PFNA	0.310 U
PFOS	**0.440 J**
PFOA	**0.680**

AOC50-17-11

Date	6/7/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	**0.240 J**
PFNA	0.310 U
PFOS	**2.30**
PFOA	0.310 U

AOC50-17-01

Date	06/08/2017
Units	µg/kg
PFHpA	**0.210 J**
PFHxS	**4.80**
PFNA	**0.180 J**
PFOS	**30.0**
PFOA	**1.90**

AOC50-17-02

Date	6/2/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	**0.610**
PFNA	0.310 U
PFOS	**0.180 J**
PFOA	**0.180 J**

AOC50-17-06

Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	**0.390 J**
PFNA	0.320 U
PFOS	**3.30**
PFOA	**0.320 J**

50SB-19-02

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	0.220 U	0.210 U	0.210 U
PFHpA	0.210 U	0.220 U	0.210 U	0.210 U
PFHxS	**0.490**	**0.530**	**1.70**	**0.620**
PFNA	0.210 U	0.220 U	0.210 U	0.210 U
PFOS	1.50 U	**12.0**	**5.60**	**2.30**
PFOA	**0.110 J**	0.220 U	**0.580**	**0.230 J**

50SB-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	0.230 U	0.210 U	0.200 U	0.220 U
PFHpA	0.230 U	0.210 U	0.200 U	0.220 U
PFHxS	0.230 U	**0.110 J**	0.200 U	0.220 U
PFNA	0.230 U	0.210 U	0.200 U	0.220 U
PFOS	0.570 U	**0.350 J**	**0.480 J**	0.560 U
PFOA	0.230 U	0.210 U	0.200 U	0.220 U

AOC50-17-07

Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	0.320 U
PFNA	0.320 U
PFOS	**0.780**
PFOA	0.320 U

AOC50-17-04

Date	6/7/2017
Units	µg/kg
PFHpA	0.140 J
PFHxS	**1.60**
PFNA	0.330 U
PFOS	**7.50**
PFOA	**0.900**

AOC50-17-17

Date	6/14/2017	8/10/2017
Units	µg/kg	µg/kg
PFHpA	0.310 U	**0.270 J**
PFHxS	0.310 U	**3.70**
PFNA	0.310 U	**0.150 J**
PFOS	**0.140 J**	**24.0**
PFOA	**0.160 J**	**2.70**

50SB-19-06

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	60.00 - 62.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.130 J**	0.200 U	0.200 U	0.190 U	0.220 U
PFHpA	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
PFHxS	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
PFNA	0.210 U	0.200 U	0.200 U	0.190 U	0.220 U
PFOS	1.10 U	0.980 U	1.00 U	0.960 U	0.560 U
PFOA	0.210 U	0.200 U	**0.160 J**	0.190 U	0.220 U

AOC50-17-10

Date	6/1/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	0.310 U
PFNA	0.310 U
PFOS	0.310 U
PFOA	0.310 U

50SB-19-07

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	7.00 - 15.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.160 J**	0.210 U	0.200 U	0.210 U	0.200 U
PFHpA	0.310 U	0.210 U	0.200 U	0.210 U	0.200 U
PFHxS	0.310 U	0.210 U	0.200 U	0.210 U	0.200 U
PFNA	0.310 U	**0.091 J**	0.200 U	0.210 U	0.200 U
PFOS	1.80 U	**1.90**	1.00 U	1.00 U	1.00 U
PFOA	0.310 U	**0.190 J**	**0.160 J**	0.210 U	0.200 U

AOC50-17-09

Date	5/31/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	0.310 U
PFNA	0.310 U
PFOS	0.310 U
PFOA	0.310 U

AOC50-17-08

Date	5/31/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	0.310 U
PFNA	0.310 U
PFOS	**0.240 J**
PFOA	0.310 U

50SB-19-12

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	5.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.120 J**	0.220 U	0.200 U	0.200 U
PFHpA	0.220 U	0.220 U	0.200 U	0.200 U
PFHxS	0.220 U	0.220 U	0.200 U	0.200 U
PFNA	**0.099 J**	0.220 U	0.200 U	0.200 U
PFOS	**1.40**	**0.690 J**	0.500 U	0.490 U
PFOA	0.220 U	0.220 U	0.200 U	0.200 U

AOC50-17-21

Date	6/7/2017
Units	µg/kg
PFHpA	0.310 U
PFHxS	**0.340 J**
PFNA	0.310 U
PFOS	**1.70**
PFOA	**0.200 J**

AOC50-17-18

Date	6/13/2017	8/10/2017
Units	µg/kg	µg/kg
PFHpA	2.70 R	**0.260 J**
PFHxS	**4.70 J**	**2.00**
PFNA	2.70 R	0.420 UJ
PFOS	**40.0 J**	**15.0**
PFOA	**2.10 J**	**1.50**

AOC50-17-19

Date	6/13/2017
Units	µg/kg
PFHpA	3.20 R
PFHxS	**4.40 J**
PFNA	3.20 R
PFOS	**34.0 J**
PFOA	**3.10 J**

AOC50-17-14

Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	0.320 U
PFNA	0.320 U
PFOS	0.320 UJ
PFOA	0.320 U

50SB-19-08

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	**0.260 J**	0.240 U	0.200 U	0.200 U
PFHpA	**0.170 J**	0.240 U	0.200 U	0.200 U
PFHxS	**0.084 J**	0.240 U	0.200 U	0.200 U
PFNA	**0.210 J**	0.240 U	0.200 U	0.200 U
PFOS	**2.40**	1.20 U	0.490 U	0.500 U
PFOA	**0.770**	0.240 U	0.200 U	0.200 U

AOC50-17-12

Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	0.320 U
PFNA	0.320 U
PFOS	**0.230 J**
PFOA	0.320 U

AOC50-17-16

Date	6/15/2017
Units	µg/kg
PFHpA	0.320 UJ
PFHxS	0.320 U
PFNA	0.320 U
PFOS	**0.320 J**
PFOA	0.320 U

50SB-19-11

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	5.00 - 15.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.220 U	0.200 U	0.200 U	0.200 U
PFHpA	0.220 U	0.200 U	0.200 U	0.200 U
PFHxS	0.220 U	0.200 U	0.200 U	0.200 U
PFNA	**0.130 J**	0.200 U	0.200 U	0.200 U
PFOS	**1.00 J**	**0.390 J**	**0.330 J**	**0.260 J**
PFOA	**0.150 J**	**0.140 J**	0.200 U	0.200 U

AOC50-17-13

Date	6/7/2017
Units	µg/kg
PFHpA	0.320 U
PFHxS	0.320 U
PFNA	**0.170 J**
PFOS	**1.30**
PFOA	**0.160 J**

AOC50-17-15

Date	6/7/2017
Units	µg/kg
PFHpA	0.330 U
PFHxS	0.330 U
PFNA	0.330 U
PFOS	**0.270 J**
PFOA	0.330 U

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

0 200 400
Feet

Date: 01/12/2021

Figure 6-7

File: PFAS_RI_A3_PSCS_F6-7_AOC50_SoilResults.mxd

DETAIL

SR-19-01				
Sample	12/18/2019	12/18/2019 (FD)	12/18/2019	12/18/2019 (FD)
Units:	ng/L	ng/L	µg/kg	µg/kg
PFBS	**0.600 J**	**0.550 J**	0.290 U	0.300 U
PFOS	**2.80 J**	**2.60 J**	**7.90**	**7.50**
PFOA	**7.80**	**7.90**	**2.70**	**2.80**

DETAIL

FP-20-01		
Sample	5/20/2020	5/20/2020
Units:	ng/L	µg/kg
PFBS	**0.780 J**	0.330 U
PFOS	**3.20 J**	0.910 U
PFOA	**4.30**	0.360 U

FP-20-02				
Sample	5/20/2020	5/20/2020 (FD)	5/20/2020	5/20/2020 (FD)
Units:	ng/L	ng/L	µg/kg	µg/kg
PFBS	**0.830 J**	**0.950 J**	0.250 U	0.400 U
PFOS	**5.70**	**5.40**	0.700 U	1.10 U
PFOA	**11.0**	**10.0**	0.280 U	0.440 U

BP-18-01		
Sample	12/21/2018	12/21/2018
Units:	ng/L	µg/kg
PFBS	**1.00 J**	0.260 U
PFOS	**6.50**	0.710 U
PFOA	**16.0**	**0.160 J**

DETAIL

WAB-19-01		
Sample	12/18/2019	12/18/2019
Units:	ng/L	µg/kg
PFBS	**7.80**	0.220 U
PFOS	**1.50 J**	**0.720 J**
PFOA	**6.20**	0.240 U

DETAIL

NRBK-19-01		
Sample	12/20/2019	12/20/2019
Units:	ng/L	µg/kg
PFBS	**2.90**	0.270 U
PFOS	**4.00**	**0.420 J**
PFOA	**10.0**	0.300 U

DETAIL

BB-20-01		
Sample	5/20/2020	5/20/2020
Units:	ng/L	µg/kg
PFBS	**1.10 J**	9.60 U
PFOS	**2.40 J**	27.0 U
PFOA	**3.30**	11.0 U

DETAIL

NRBK-19-02		
Sample	12/20/2019	12/20/2019
Units:	ng/L	µg/kg
PFBS	**3.20**	0.260 U
PFOS	**4.20**	**0.750 J**
PFOA	**10.0**	**0.180 J**

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

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

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

Former Army Installation Devens
Devens, Massachusetts

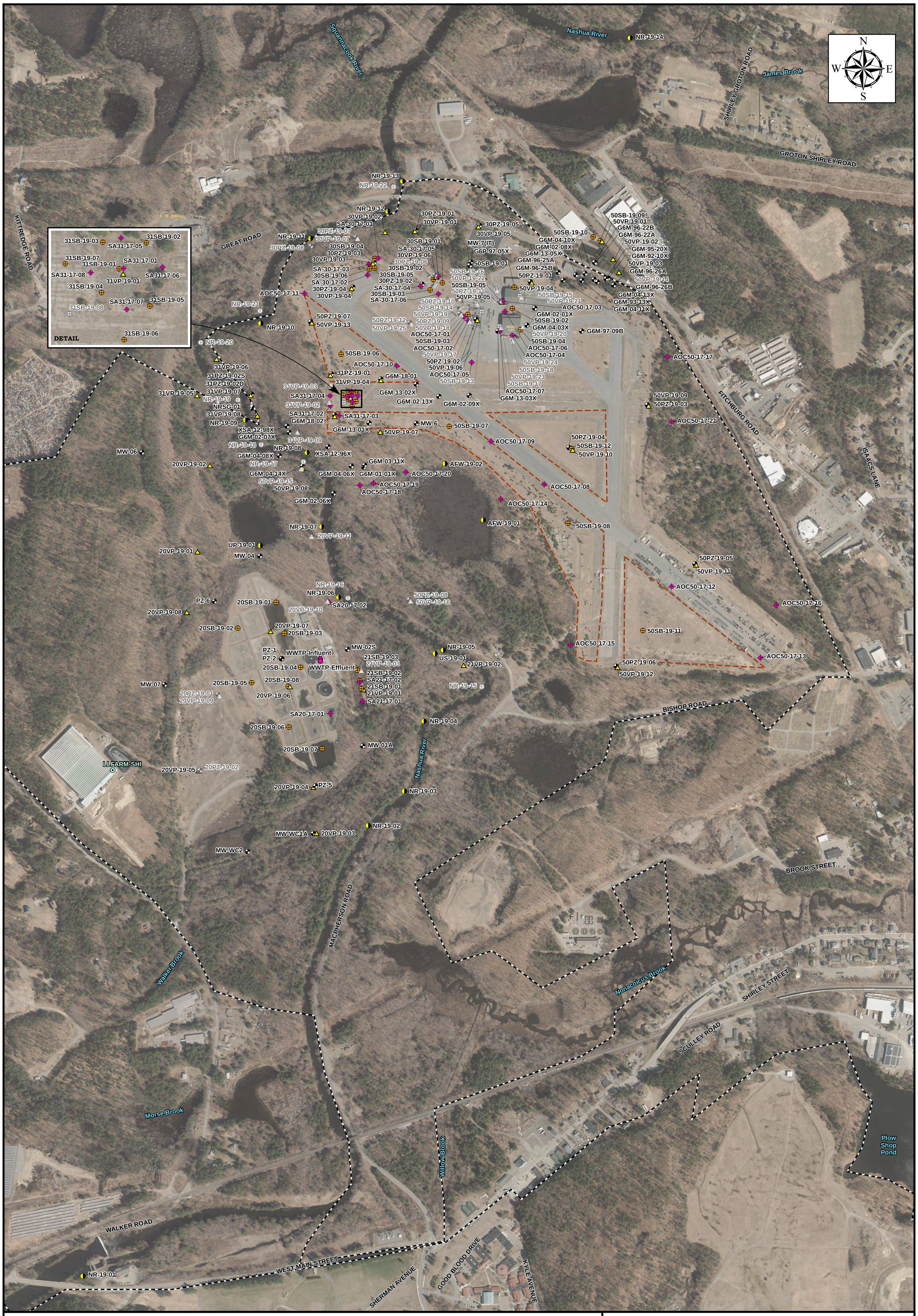
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 2,000 4,000
Feet

Date: 02/03/2021

Figure 7-1

File: PFAS_RI_A3_PSCS_F7-1_BkgrndPond_SampleResults.mxd



Legend

- Monitoring Well/Piezometer
- Soil Boring
- Vertical Profiling Location
- Surface Water and Sediment Sampling
- Staff Gauge
- Temporary Well Location from SI
- Irrigation Well
- Monitoring Well/Piezometer Not Completed
- Soil Boring Location Not Completed
- Vertical Profiling Location Not Completed
- Surface Water and Sediment Sampling Location Not Completed
- Approximate Areas of Sludge Disposal
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

Area 3 Sample Locations
Devens PFAS RI - Area 3 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

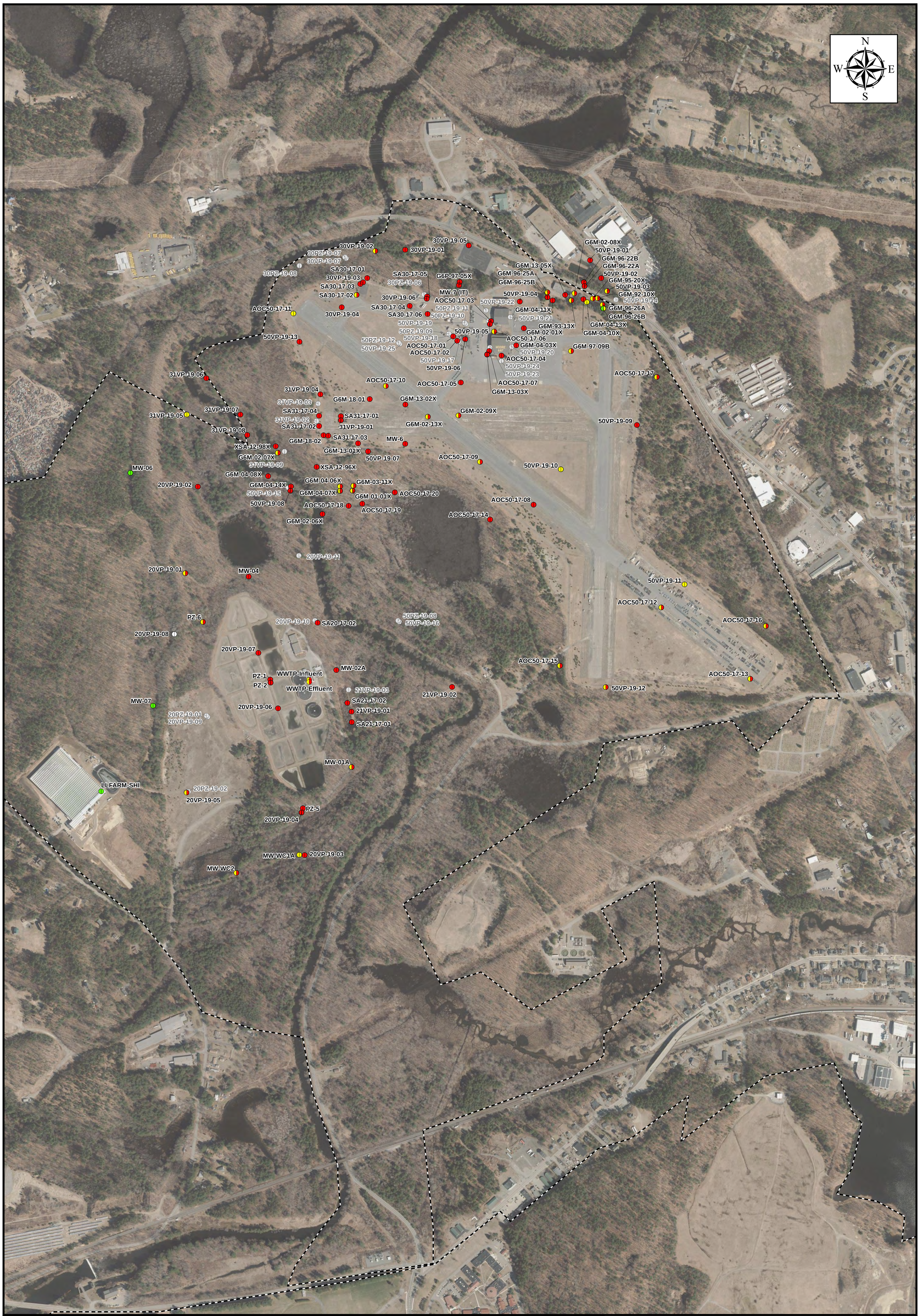
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 200 400 800
Feet

Date: 01/25/2021

Plate 1

File: PFAS_RI_A3_PSCS_Plate_Samples_Dsize.mxd



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 < 20ng/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

Aerial Source: USGS, MassGIS Orthoimagery 2019

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

0 200 400 800
Feet

Date: 01/12/2021

Plate 2

File: PFAS_RI_A3_PSCS_Plate_GWResults_Dsize.mxd

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: ~~MW01A~~ MW-01A

Project: Dennis PFAS RI EW
Location: AOC 21/20
Date: 4/30/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	13.06
Depth to bottom (ft BTOR)	30.66
Pump Set Depth (ft BTOR)	27
Screen Interval (ft ~~BTOR~~)	18-33 bgs
Total volume purged (gal)	3.25

Sampling Type

Purging Method: Peri
Purge start/stop time: 1025-1105
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –

Field Instrument (Model/S/N): YSI ~~556~~ 556 : 0602657 A1 LaMotte 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
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 Varience Observed (Y/N):			N	–			→	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

4/30/19
Date

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

Well Identification: MW-02A

Project: PFAS RI FW
Location: AOC 20/21
Date: 4/30/19
Sampler: BKA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	16.62
Depth to bottom (ft BTOR)	34.75
Pump Set Depth (ft BTOR)	30
Screen Interval (ft ~~BTOR~~)	18-33
Total volume purged (gal)	3.5

bgs

Sampling Type

Purging Method: Peri
Purge start/stop time: 1315-
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 650 XL 02E0534
Lemotte 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
1325	250	16.65	11.32	6.74	2162	1.92	204.3	4.19	clear
1330	250	16.65	11.29	6.69	2151	1.82	203.6	1.46	clear
1335	250	16.65	11.15	6.67	2149	1.64	203.4	1.28	clear
1340	250	16.65	11.14	6.66	2145	1.74	202.7	1.13	clear
1345	250	16.65	11.15	6.64	2135	1.55	201.9	1.10	clear
1350	250	16.65	11.15	6.64	2133	1.63	201.4	1.08	clear
1355	250	16.65	11.16	6.63	2132	1.60	200.9	1.03	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MW-02A-APR19
Sample Time: 1355
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments: DPW lock

Signature

4/30/19
Date

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

Well Identification: MW-04

Project: PFAS RI EW
Location:
Date: 4/30/19
Sampler: B.A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	8.00
Depth to bottom (ft BTOR)	24.96
Pump Set Depth (ft BTOR)	20
Screen Interval (ft BTOR)	7-22 bgs
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 1225-
Tubing type: HDPE
Tubing diameter: 1/4"OD
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 605DXL 02E0534
Lamotte 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
1235	250	8.00	10.54	6.53	1818	0.15	212.7	5.13	clear
1240	250	8.00	10.32	6.53	1826	0.40	211.9	2.26	clear
1245	250	8.00	10.31	6.53	1828	0.54	211.2	2.07	clear
1250	250	8.00	10.34	6.53	1831	0.71	210.1	1.96	clear
1255	250	8.00	10.36	6.52	~~18.37~~ 1837	0.75	209.4	2.03	clear
1300	250	8.00	10.39	6.50	~~16.40~~ 1840	0.73	208.9	1.99	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MW-04-APR19
Sample Time: 1300
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

Well Identification: MW-06

Project: PFAS RI EW A3 Date: 5/6/19
Location: AOC 20/21 Sampler: B&A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.30
Depth to bottom (ft BTOR)	31.75
Pump Set Depth (ft BTOR)	25
Screen Interval (ft ~~BTOR~~)	14-29 bgs
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): —
Purge start/stop time: 1020-1130 Tubing diameter: ¼"OD Air source: —

Field Instrument (Model/S/N): YSI 650 XL: 02E0534
Lamotte 2020e: 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
1030	250	12.35	6.20	7.31	159	3.05	262.4	5.73	clear
1035	250	12.35	6.00	6.83	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	5.77	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 Varience Observed (Y/N):				N	—	—	—	—	

Sampling Details

Sampling ID: MW-06-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

Signature

5/6/19
Date

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

Well Identification: MW-07

Project: PFAS RI EW
Location: AOC 20/21
Date: 4/30/19
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.85
Depth to bottom (ft BTOR)	38.0
Pump Set Depth (ft BTOR)	34.0
Screen Interval (ft ~~BTOR~~)	20-35.0 SS
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 1030-
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 650XL : 02E[illegible]534
Lamotte 2020e: 1116-0713

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
1045	200	22.98	6.01	7.71	124	0.15	160.0	6.30	clear
1050	200	22.98	6.02	7.09	91	0.04	171.2	5.45	"
1055	200	22.98	6.06	6.98	88	0.01	171.8	4.19	"
1100	200	22.98	6.06	6.89	86	0.02	172.6	3.43	"
1105	200	22.98	6.05	6.81	85	0.03	173.3	3.07	"
1110	200	22.98	6.06	6.79	84	0.03	173.9	2.96	"
1115	200	22.98	6.09	6.77	84	0.04	174.0	3.01	"
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 Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: MW-07-APR19
Sample Time: 1115
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: A3-MW-DUP-043019
Filter Size: —
Dup Time: 1120

Comments: DRO lock, DUP

Signature

4/30/19
Date

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

Well Identification: ~~MW-WC1A~~ WC1A

Project: PFAS RI EW A3 Date: 5/16/15
Location: AOC20/21 Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)	—		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	4.39
Depth to bottom (ft BTOR)	20.90
Pump Set Depth (ft BTOR)	15
Screen Interval (ft ~~BTOR~~)	6.45-17.55 bgs
Total volume purged (gal)	3.0

Sampling Type

Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) —
Purge start/stop time 1150 Tubing diameter 1/4"OD Air source —

Field Instrument (Model/S/N) YSI 650XL 02E0534
Lamotte 2020e 1116-0715

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
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	258.0	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 =
Post Cal. Check Varience Observed (Y/N):				N					0.163 gal/ft or 616 ml/ft

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 _____

Signature 5/16/15 Date

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

Well Identification: MW-WC2

Project: PFAS RI EWA3 Date: 5/6/19
Location: AOC 20/21 Sampler: BMA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		✓
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

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

by (?)

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
Lamotte 2020c 1116-0719

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
1255	300	7.60	8.14	5.11	176	1.81	157.5	7.13	clear
1300	300	7.60	8.25	5.19	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 Varience Observed (Y/N):				N					

Sampling Details

Sampling ID: MW-WC2-MAY19
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

5/6/19
Date

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

Well Identification: PZ-1

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

Well Integrity

	Yes	No	N/A
Casing Secure	~		
Concrete Pad intact			~
PVC casing intact	~		
Well gripper present		~	
Bolts present			~
Locked (stickup wells)		~	

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	61.33
Depth to bottom (ft BTOR)	78.10
Pump Set Depth (ft BTOR)	72
Screen Interval (ft BTOR)	70-75
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 0.85" mB
Purge start/stop time: 1215-1330
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): (N)
Air source: N_2

Field Instrument (Model/S/N): YSI 650XL 09E0534
Lamotte 2020e 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
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 Varience Observed (Y/N):				N					0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: PZ-1-MAY19
Sample Time: 1320
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N):
Dup ID:
Filter Size:
Dup Time:

Comments

Signature

5/7/19
Date

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

Well Identification: PZ-2

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

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	59.86
Depth to bottom (ft BTOR)	102.40
Pump Set Depth (ft BTOR)	~~92~~ 97
Screen Interval (ft BTOR)	95-100
Total volume purged (gal)	2.5

Sampling Type
Purging Method: 0.85" mB
Purge start/stop time: 1030/1150
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N_2

Field Instrument (Model/S/N): YSI 650XL 02E05341
Lamotte 2020t 1116-0719

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
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~~ 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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N)				N					

Sampling Details

Sampling ID: PZ-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

5/7/19
Date

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

Well Identification: PZ-5

Project: Devens PFAS RI EW
Location: AOC 20/21
Date: 04/30/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	18.27
Depth to bottom (ft BTOR)	31.76
Pump Set Depth (ft BTOR)	28
Screen Interval (ft ~~BTOR~~)	25-30 bgs
Total volume purged (gal)	3.25

Sampling Type

Purging Method: Peri
Purge start/stop time: 1120 - 1200
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –
Field Instrument (Model/S/N): YSI 556 : 06072657 A1 Lamotte: 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
1135	300	18.27	11.75	6.71	2,239	2.71	155.7	1.38	clear/clear
1140	↓	↓	11.73	6.71	2,243	2.32	155.0	1.29	↓
1145	↓	↓	11.71	6.72	2,244	1.86	154.4	0.78	↓
1150	↓	↓	11.70	6.72	2,244	1.75	153.6	0.88	↓
1155	✓	✓	11.65	6.72	2,248	1.70	153.1	0.85	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	→	→	→	→	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: PZ-5-APR19
Sample Time: 1155
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

Well Identification: ~~MW~~ PZ-6

Project: PFAS RI EW
Location: AOC 20/21

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

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		—
PVC casing intact	✓		
Well gripper present	~~✓~~	✓	
Bolts present			—
Locked (stickup wells)	—		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	8.45
Depth to bottom (ft BTOR)	22.92
Pump Set Depth (ft BTOR)	~~20~~ 17
Screen Interval (ft BTOR)	15-20 bgs
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 1135.
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 650XL 02E0534
Lamotte 2020we 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
1145	200	8.50	7.48	6.48	424	0.17	205.9	4.17	clear
1150	200	8.50	7.56	6.45	436	0.30	203.1	2.63	clear
1155	200	8.50	7.56	6.44	439	0.36	202.1	2.48	"
1200	200	8.50	7.59	6.43	443	0.40	201.8	2.33	"
1205	200	8.50	7.63	6.43	443	0.44	201.7	2.35	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: PZ-6-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

BAP
Signature

4/30/19
Date

AOC 50

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

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

Project: PFAS RI EW
Location: ADC50

Date: 5/1/19
Sampler: B.A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	59.10
Depth to bottom (ft BTOR)	148.52
Pump Set Depth (ft BTOR)	145
Screen Interval (ft BTOR)	140-150 bgs
Total volume purged (gal)	5.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 0800-0930
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N)
Air source: N_2

Field Instrument (Model/S/N): YSI 605OXL 02E0534
Lamotte 2020t 11116-0719

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
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	>4,000	cloudy
0840	200	59.30	7.73	6.23	958	0.51	26.4	>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 Varience Observed (Y/N):				N	Y	N	N	N	

Sampling Details

Sampling ID: GOM-01-01X-MAY19
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

5/1/19
Date

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

Well Identification: Glen-01+01X (cont) (2/2)

Project: _____ Date: _____
Location: _____ Sampler: _____

Well Integrity

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
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
0920	200	59.30	7.85	6.30	953	0.35	16.7	>4,000	cloud
0925	200	59.30	7.84	6.28	953	0.36	17.1	>4,000	cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: _____
Sample Time: 0925 Duplicate (Y/N): _____ MS/MSD (Y/N): _____
Field Filtered (Y/N): _____ Dup ID: _____
Filter Size: _____ Dup Time: _____

Comments Sample 1

Signature

5/1/15
Date

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

Well Identification: GWM-02-01X

Project: PFAS RI EW
Location: AOC 50

Date: 4/26/19
Sampler: BA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	52.10
Depth to bottom (ft BTOR)	89.5
Pump Set Depth (ft BTOR)	~~89~~ 85
Screen Interval (ft BTOR)	80-95 (85)
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 1100 -
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N_2

Field Instrument (Model/S/N): YSI 650 XL 02E05534
Lamotte 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
1120	250	52.20	9.74	6.99	2940	0.51	-80.5	50.8	clear / black flocting 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 =
Post Cal. Check Varience Observed (Y/N):			N	N	N	N	N		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GWM-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

4/26/19
Date

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

Well Identification: GGM-02-06X

Project: Deums PFAS RI GW
Location: AOC 50

Date: 5/6/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	4.36
Depth to bottom (ft BTOR)	66.41
Pump Set Depth (ft BTOR)	60
Screen Interval (ft ~~BTOR~~)	55 - ~~60~~ 65 BGS
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Peri
Purge start/stop time: 0830 - 0915
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 - 0602657 A1 LaMotte: 5708-5814

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
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: GGM-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

KGS

Well Identification: G6M-02-07X

Project: Dorma PFAS RI EW
Location: AOC 50
Date: 04/29/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	3.45
Depth to bottom (ft BTOR)	40.57
Pump Set Depth (ft BTOR)	35
Screen Interval (ft ~~BTOR~~)	30-40 bgs
Total volume purged (gal)	~2.75

Sampling Type
Purging Method: Peri
Purge start/stop time: 0900-0940
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556: 0602657 A1 LaMotte: 5083-5014

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
0915	250	3.45	10.41	7.18	773	4.91	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	Y	

Sampling Details

Sampling ID: G6M-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]
Signature

4/29/19
Date

G6M-01-07X

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

Well Identification: GGM-02-08X

Project: Drums PFAS RI EW
Location: AOC 50
Date: 5/2/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	2.5"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	11.25	~~BGS~~ BTOR
Depth to bottom (ft ~~BTOR~~)	21.27	BGS BTOR
Pump Set Depth (ft ~~BTOR~~)	65	BGS BTOR
Screen Interval (ft ~~BTOR~~)	60-70	BGS
Total volume purged (gal)	2.25	

Sampling Type
Purging Method: Peri
Purge start/stop time: 1115 - 1155
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –
Field Instrument (Model/S/N): YSI 556, 06D2657 A1 LaMotte, 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
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	Y	

Sampling Details

Sampling ID: GGM-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: GOM-02-09X

Project: PFAS RI EW
Location: AOC50

Date: 5/2/19
Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	56.78
Depth to bottom (ft BTOR)	~~100.52~~ 106.52
Pump Set Depth (ft BTOR)	100
Screen Interval (ft ~~BTOR~~ bgs)	95-105
Total volume purged (gal)	3.0

Sampling Type

Purging Method: 1.75" Bladder
Purge start/stop time: 0930
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): —
Air source: N_2

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

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
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	118.9	28.7	↓
1015	200	56.80	8.66	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N				→	

Sampling Details

Sampling ID: GOM-02-09X_MAY19
Sample Time: 1020
Duplicate (Y/N): —
MS/MSD (Y/N): —
Field Filtered (Y/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: GGM-02-13X

Project: Denny PFAS RI EW
Location: AOC 58

Date: 5/2/19
Sampler: CN

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	2"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	56.45	BGS
Depth to bottom (ft ~~BTOR~~)	120.67	BGS
Pump Set Depth (ft ~~BTOR~~)	115	BGS
Screen Interval (ft ~~BTOR~~)	110-120	BGS
Total volume purged (gal)	1.5	

Sampling Type
Purging Method: Bladder Pump
Purge start/stop time: 0825-0920
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Y
Air source: Nitrogen
Field Instrument (Model/S/N): YSI 556 : 0B02657 A1 LaMotte : 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
0845	~~200~~ 100	56.45	11.45	6.94	1,106	5.61	-2.2	7.54	clear/clear
0850	↓	↓	11.66	6.81	1,117	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	↓	↓	11.78	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 Varience Observed (Y/N):			N	N	N	N	Y		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-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

5/2/19
Date

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

Well Identification: G6M-03-11X (1/2)

Project: PFAS RI EW
Location: ~~BRA~~ AOC50
Date: 5/1/19
Sampler: BJA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	58.99
Depth to bottom (ft BTOR)	131.52
Pump Set Depth (ft BTOR)	125
Screen Interval (ft ~~BTOR~~)	120-130 bgs
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 1000-1140
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N)
Air source: N_2

Field Instrument (Model/S/N): YSI 650 XL 02E05534
Lamotte 2020e 1116-0715

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	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	640	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	0.87	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 Varience Observed (Y/N):				N	Y	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-03-11X-MAY19
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

Signature

5/1/19
Date

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

Well Identification: G6M-03-11X (cont) (2/2)

Project: _____ Date: _____
Location: _____ Sampler: _____

Well Integrity

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
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
1115	200	59.00	7.53	6.12	386	1.08	40.6	10.9	clear
1120	200	59.00	7.58	6.12	371	1.10	43.3	9.97	clear
1125	200	59.00	7.59	6.12	365	1.13	44.8	9.81	clear
1130	200	59.00	7.60	6.12	363	1.09	45.9	9.93	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 Varience Observed (Y/N):				N	Y	N	N	N	

Sampling Details

Sampling ID: G6M-03-11X-MAY19
Sample Time: 1130 Duplicate (Y/N): Y MS/MSD (Y/N): _____
Field Filtered (Y/N): _____ Dup ID: A3-MW-DUP-050119
Filter Size: _____ Dup Time: 1135

Comments steps 1

Signature

5/1/19
Date

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

Well Identification: G6M-04-03X

Project: PFAS RI EW
Location: AOC5D
Date: 4/26/15
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	54.70
Depth to bottom (ft BTOR)	93.10
Pump Set Depth (ft BTOR)	90
Screen Interval (ft ~~BTOR~~)	85-95 bgs
Total volume purged (gal)	3.0

Sampling Type

Purging Method: 1.75" Bladder
Purge start/stop time: 0840
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/(N))
Air source: N_2

Field Instrument (Model/S/N): YSI 650XL 02E0534
Lamotte 2020e 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
~~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
0905	250	54.79	9.57	6.36	2883	0.59	-56.0	3.64	clear
0910	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	23.70	0.55	-48.7	2.90	
0935	250	54.79	9.49	6.32	23.30	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 Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-04-03X-APR15
Sample Time: 0940
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature

4/26/15
Date

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

Well Identification: G6M-04-06X

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

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	57.53
Depth to bottom (ft BTOR)	106.8
Pump Set Depth (ft BTOR)	~~95~~ 100
Screen Interval (ft ~~BTOR~~)	95-105 bgs
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 1210-1300
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): Removed for PFAS
Air source: N_2

Field Instrument (Model/S/N): YSI 650XL 02E0534
Lamotte 2020E 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
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	122.9	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 =
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	N	0.163 gal/ft or 616 ml/ft

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

5/1/19
Date

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

KGS

Well Identification: 66M-04-08X

Project: Devens PFAS RI EW
Location: AOC 50
Date: 04/30/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	2.61
Depth to bottom (ft BTOR)	90.5
Pump Set Depth (ft BTOR)	85
Screen Interval (ft ~~BTOR~~)	80-90 bgs
Total volume purged (gal)	3 gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 0850-0935
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

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

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
0900	250	2.61	11.66	6.74	1,803	3.90	142.4	26.9	clear/clear
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N					

Sampling Details

Sampling ID: 66M-04-08X_APR19
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

KGS

Identification: G6M-04-10X

Project: Dmms PFAS RI FW
Location: AOC 50

Date: 04/29/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.08
Depth to bottom (ft BTOR)	64.07
Pump Set Depth (ft BTOR)	[redacted] 57
Screen Interval (ft ~~BTOR~~)	[redacted] 52-62 bgs
Total volume purged (gal)	~1.75

Sampling Type

Purging Method: Peri
Purge start/stop time: 1230 - 1310
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556 : 0602657 A1 LaMotte, 5083-5014

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
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 =
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	Y	0.163 gal/ft or 616 ml/ft

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

04/29/19
Date

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

Well Identification: GCM - 04 - 11X

Project: Devens PFAS RI Existing well
Location: AOC 50
Date: 4/25/2019
Sampler: ES

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.46
Depth to bottom (ft BTOR)	46.97
Pump Set Depth (ft BTOR)	40
Screen Interval (ft BTOR)	35-45
Total volume purged (gal)	8.0 L (2.1 gal)

Sampling Type

Purging Method: Peri
Purge start/stop time: 1233 / 1308
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): no
Air source: -

Field Instrument (Model/S/N): YSI 556 MPS 06C2657AI
LaMotte 2020t 1116-0719

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
1235	260	18.62	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	~~18.93~~ 18.68	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 Varience Observed (Y/N):				no	no	yes	no	yes	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GCM-04-11X-[redacted] APR19
Sample Time: 1305
Duplicate (Y/N): no
MS/MSD (Y/N): no
Field Filtered (Y/N): no
Dup ID: -
Filter Size: -
Dup Time: -

Comments

Signature

4/25/2019
Date

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

Well Identification: GGM-04-13X

Project: Devens PFAS RI EW
Location: AOC 50

Date: 5/8/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.10
Depth to bottom (ft BTOR)	41.31
Pump Set Depth (ft BTOR)	35
Screen Interval (ft ~~BTOR~~)	30-40 BGS
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 0755-0845
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556: 0602657 A1 LaMotte: 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
0810	~~200~~ 150	12.10	9.48	5.80	185	4.35	92.4	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 Varience Observed (Y/N):			N	N	N	N	N		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-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

KGS

Well Identification: G6M-04-14X

Project: PFAS RI EW
Location: AOC 50
Date: 4/30/19
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	3.57
Depth to bottom (ft BTOR)	92.92
Pump Set Depth (ft BTOR)	85
Screen Interval (ft ~~BTOR~~)	80-90 bgs
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Peri
Purge start/stop time: 0825-0935
Tubing type: HDPE
Tubing diameter: ____
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 1050XL 02E0534
Lamotte 2020t 1116-0715

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
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	238.0	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 Varience 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: Pulled teflon tubing @ 0810

[signature]
Signature

4/30/19
Date

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

Well Identification: G6M-13-02X

Project: PFAS RI EW
Location: AOC 50
Date: 5/2/19
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	56.75
Depth to bottom (ft BTOR)	125.12
Pump Set Depth (ft BTOR)	120
Screen Interval (ft ~~BTOR~~)	115-125 bgs
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 0730
Tubing type: HDPE
Tubing diameter: Y4"OD
Dedicated pump (Y/(N)):
Air source: N/A

Field Instrument (Model/S/N): YSI 650XL 02E0534
Lamotte 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
0750	200	56.80	8.90	6.00	1327	0.84	-2.3	5.96	clear
0755	200	56.80	8.96	6.01	FR 1325	0.86	-3.1	5.03	clear
0800	200	56.80	8.98	6.01	1320	0.86	-4.8	4.71	clear
0805	200	56.80	8.97	5.99	1319	0.89	-5.6	3.54	clear
0810	200	56.80	9.25	5.99	1328	0.84	-4.0	3.03	clear
0815	200	56.80	9.30	5.98	1340	0.90	-2.8	2.98	clear
0820	200	56.80	9.31	5.98	1339	0.88	-2.9	2.97	clear
0825	200	56.80	9.32	5.99	1341	0.91	-3.0	2.97	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			N						0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-13-02X-MAY19
Sample Time: 0825
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

DO < 1
Turb < 5

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

Well Identification: G6M-13-03X

Project: PFAS RI EW
Location: AOC50
Date: 5/3/19
Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	55.60
Depth to bottom (ft BTOR)	90.40
Pump Set Depth (ft BTOR)	~~80~~ 85 bgs
Screen Interval (ft BTOR)	80-90 bgs
Total volume purged (gal)	2.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 0800-
Tubing type: HDPE
Tubing diameter: 1/4"OD
Dedicated pump (Y/N): (Y)
Air source: N_2

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

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
0815	200	55.65	9.15	5.87	2575	2.50	234.1	7.83	clear
0820	200	55.65	9.16	5.50	2623	2.21	225.8	4.92	clear
0825	200	55.65	9.09	5.41	2654	2.39	226.6	3.05	clear
0830	200	55.65	9.04	5.36	2673	2.50	227.5	2.68	clear
0835	200	55.65	9.04	5.33	2681	2.51	230.4	2.75	clear
0840	200	55.65	9.07	5.32	2682	2.55	232.1	2.78	clear
0845	200	55.65	9.08	5.32	2683	2.56	233.0	2.80	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 Varience Observed (Y/N):									

Sampling Details

Sampling ID: G6M-13-03X_MAY19
Sample Time: 0845
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/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-13-05X

Project: PFAS I21 & EW
Location: —
Date: 4/26/19
Sampler: BA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	·	✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.18
Depth to bottom (ft BTOR)	56.72
Pump Set Depth (ft BTOR)	54
Screen Interval (ft BTOR)	
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1240 -
Tubing type: HDPE
Tubing diameter: ¼" OD
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 650XL 02E05534
Lamotte 2020we 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
1255	150	12.40	8.26	6.08	1082	0.87	12.3	8.40	clear
1300	150	12.40	8.07	6.03	1070	0.71	13.1	6.73	"
1305	150	12.40	7.95	5.99	1069	0.67	13.3	4.41	"
1310	150	12.40	7.86	5.98	1066	0.63	12.5	3.27	"
1315	150	12.40	7.81	5.97	1053	0.58	11.5	3.01	"
1320	150	12.40	7.81	5.96	1050	0.54	9.8	2.96	"
1325	150	12.40	7.80	5.95	1049	0.57	9.6	2.94	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: G6M-13-05X-APR19
Sample Time: 1325
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments: Substituted for G6M-04

Signature

4/26/19
Date

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

Well Identification: 66M-92-10X

Project: Dorms PFAS RI EW
Location: AOC 50

Date: 4/26/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		✓
Concrete Pad intact	✓		✓
PVC casing intact	✓	✓	
Well gripper present		✓	
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	10.41
Depth to bottom (ft BTOR)	21.35
Pump Set Depth (ft BTOR)	17.0
Screen Interval (ft ~~BTOR~~)	~~30-40~~ 9-19 bgs
Total volume purged (gal)	1.5

Sampling Type

Purging Method: Peri
Purge start/stop time: 0925 - 1020
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556: 10H100928 LaMotte: 5083-5014

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
0940	100	10.52	7.83	5.53	6059	7.57	74.4	7.43	clear/clear
0945	↓	↓	7.81	6.72	6081	7.55	77.0	5.09	↓
0950			7.77	5.80	6095	7.95	81.5	4.77	
0955			7.75	5.70	6,190	8.50	86.4	4.61	
1000			7.45	5.68	6,105	8.58	89.5	4.56	
1005			7.30	5.70	6,090	8.01	92.4	4.73	
1010			7.29	5.69	6,085	8.49	93.2	4.33	
1015	↓	↓	7.28	5.70	6,084	8.61	90.2	4.71	↓
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 Varience Observed (Y/N):				N	N	N	N	N	

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: 66M-93-13X

Project: Navy PFAS RI EW
Location: AOC 50

Date: 4/29/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	10.55
Depth to bottom (ft BTOR)	19.66
Pump Set Depth (ft BTOR)	16.0
Screen Interval (ft ~~BTOR~~)	9-19 bgs
Total volume purged (gal)	~2.25

Sampling Type
Purging Method: Pmi
Purge start/stop time: 1155 - 1215
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -
Field Instrument (Model/S/N): YSI 556 : 0602657 A1 LaMotte: 5083-5014

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
1150	200	10.55	8.05	7.39	108	8.80	97.4	20.80	clear/clear
1155	↓	↓	8.15	7.10	102	7.41	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 Varience Observed (Y/N):				N	Y	N	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 66M-93-13X_APR19
Sample Time: 1210
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: -
Filter Size: -
Dup Time: -

Comments

Signature

4/29/19
Date

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

Well Identification: GGM-95-20X

Project: Dmms PFAS RI EW
Location: AOC 50

Date: 4/26/19
Sampler: CN

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	10.45
Depth to bottom (ft BTOR)	24.9
Pump Set Depth (ft BTOR)	21.0
Screen Interval (ft ~~BTOR~~)	18-23 bgs
Total volume purged (gal)	1.0

Sampling Type
Purging Method: Peri
Purge start/stop time: 0820-0853
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —
Field Instrument (Model/S/N): YSI 556 : 10H100928 LMHe: 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
0830	100	11.71	8.62	6.61	707	0.82	-15.7	5.96	clear/clear
0835	↓	11.75	8.69	6.28	704	0.49	-57.8	4.74	↓
0840		11.81	8.71	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: GGM-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

4/26/19
Date

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

Well Identification: GGM-96-22A

Project: Downs PFAS RI EW
Location: AOC 50

Date: 5/6/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	3.27
Depth to bottom (ft BTOR)	57.30
Pump Set Depth (ft BTOR)	45
Screen Interval (ft ~~BTOR~~)	40-50
Total volume purged (gal)	2.25

1365

Sampling Type

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

Field Instrument (Model/S/N): YSI 556: 0602657 A1 LaMotte: 5108-5014

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
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: GGM-96-22A_MAY19
Sample Time: 1135
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Field Filtered (Y/N): N
Dup ID: –
Filter Size: –
Dup Time: –

Comments: MS/MSD taken

Signature

5/6/19
Date

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

Well Identification: GGM-96-22B

Project: Davis PFAS RI FW
Location: AOC 50
Date: 5/6/19
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	3.16
Depth to bottom (ft BTOR)	71.6
Pump Set Depth (ft BTOR)	68.0
Screen Interval (ft BTOR)	65.5-70.5
Total volume purged (gal)	2.75

Sampling Type
Purging Method: Peri
Purge start/stop time: 1005-1053
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -
Field Instrument (Model/S/N): YSI 556: 06072657 A1 LaMotte, 5708-5814

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
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	2.57	
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 =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-96-22B 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

Signature

5/6/19
Date

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

Well Identification: ~~GGM-95-26A~~ GGM-96-25A

Project: Devens PFAS RI Existing well
Location: AOC 508
Date: 4/25/2019
Sampler: ES

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	10.71
Depth to bottom (ft BTOR)	21.30
Pump Set Depth (ft BTOR)	13.5
Screen Interval (ft BTOR)	9 - 18.7
Total volume purged (gal)	6.75 L (1.7gal)

Sampling Type

Purging Method: Peri
Purge start/stop time: 1323 / 1403
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): no
Air source: —

Field Instrument (Model/S/N): YSI 556 MPS 06C2657 AI
Lamotte 2020t 1116-0719

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
1325	250	10.73	9.06	6.92	44	11.63	115.4	13.5	Clear
1330	250	10.73	9.15	6.71	42	10.93	120.3	12.1	Clear
1335	250	10.73	8.84	6.53	40	10.92	123.8	11.7	Clear
1340	250	10.73	8.87	6.50	39	10.58	126.7	13.9	Clear
1345	250	10.73	8.84	6.48	38	10.61	130.6	14.7	Clear
1350	250	10.73	8.83	6.44	38	10.60	133.0	14.2	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				no	no	yes	no	yes	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-96-25A-~~0419~~ APR19
Sample Time: 1350
Duplicate (Y/N): yes
MS/MSD (Y/N): yes
Field Filtered (Y/N): no
Dup ID: AS-GGM-96-25A-DUP-042519
Filter Size: —
Dup Time: 1355

Comments

Signature

4/25/2019
Date

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

KGS

Well Identification: G6M-96-~~[illegible]~~25B

Project: Dunns PFAS RI EW
Location: AOC 50
Date: 5/2/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2.5	
Material	PVC	
Depth to water (ft ~~BTOR~~)	13.35	~~BGS~~ BTOR
Depth to bottom (ft ~~BTOR~~)	59.31	~~BGS~~ BTOR
Pump Set Depth (ft ~~BTOR~~)	53	~~BGS~~ BTOR
Screen Interval (ft ~~BTOR~~)	48-58	BGS
Total volume purged (gal)	1.75	

Sampling Type

Purging Method: Peri
Purge start/stop time: 1225-1305
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 - 0602657 A1 LaMotte - 5108-5014

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
1240	150	13.35	9.58	7.84	94	4.85	-54.6	7.18	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	Y	

Sampling Details

Sampling ID: G6M-96-~~[illegible]~~25B_MAY19
Sample Time: 1300
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: GGM-96-26A

Project: Orms PFAS RI EW
Location: AOC 50
Date: 5/3/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"	
Material	PV	
Depth to water (ft ~~BTOR~~)	9.41	~~BGS~~ BTOR
Depth to bottom (ft ~~BTOR~~)	19.1	~~BGS~~ BTOR
Pump Set Depth (ft ~~BTOR~~)	15.0	~~BGS~~ BTOR
Screen Interval (ft ~~BTOR~~)	8-18	BGS
Total volume purged (gal)	~2.0	

Sampling Type
Purging Method: Pmi
Purge start/stop time: 0830-0915
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -
Field Instrument (Model/S/N): YSI 556 : 0602657 A1 WM MH : 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
0840	150	9.41	6.68	6.13	134	5.50	120.4	36.8	clear/clear
0845	↓	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 Varience Observed (Y/N):			N					→	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-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

KGS

Well Identification: GGM-96-26B

Project: Downs PFAS RI EW
Location: AOC 50
Date: 5/3/19
Sampler: W

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2.5"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	11.54	~~BGS~~ BTOR
Depth to bottom (ft ~~BTOR~~)	79.51	~~BGS~~ BTOR
Pump Set Depth (ft ~~BTOR~~)	73.0	~~BGS~~ BTOR
Screen Interval (ft ~~BTOR~~)	68-78	BGS
Total volume purged (gal)	~2.0	

Sampling Type
Purging Method: Peri
Purge start/stop time: 0740-0825
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –

Field Instrument (Model/S/N): YSI 556 : ~~0206~~ 0602657A1 LaMotte: 5708-5014

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
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	→	→	→	→	

Sampling Details

Sampling ID: GGM-96-26B_MAY19
Sample Time: 0820
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: GeM-97-09B (1/2)

Project: PFAS RI EW
Location: AOC 50

Date: 5/3/19
Sampler: BCA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	48.10
Depth to bottom (ft BTOR)	84.90
Pump Set Depth (ft BTOR)	80
Screen Interval (ft ~~BTOR~~)	71.5-81.5
Total volume purged (gal)	

Sampling Type

Purging Method: 1.75" Bladder
Purge start/stop time: 0955-
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/(N)): -
Air source: N_2

Field Instrument (Model/S/N): YSI 650 XL 02E0534
Lamotte 2020e 1116-078

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	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	6.03	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: GeM-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: Pulled 3/8" TUBE @ 0940, purge extra

Signature

5/3/19
Date

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

Well Identification: GGM-97-09B (2/2)

Project: _____ Date: _____
Location: _____ Sampler: _____ See pg 1

Well Integrity

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	

See pg 1

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____ See pg 1

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
1115	200	48.12	9.09	5.84	249	4.71	194.4	6.08	clear
1120	200	48.12	9.09	5.84	248	4.70	194.6	6.03	clear
1125	200	48.12	9.05	5.84	248	4.72	194.5	6.01	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: _____
Sample Time: 1125 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: GGP-97-05X

Project: Devens PFAS RI EW
Location: AOC 50
Date: 5/8/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		✓
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	23.95
Depth to bottom (ft BTOR)	44.14
Pump Set Depth (ft BTOR)	40 (as 5/10/19)
★ Screen Interval (ft ~~BTOR~~)	~~35-45~~ 33-43 BGS
Total volume purged (gal)	1.25

Sampling Type

Purging Method: Peri
Purge start/stop time: 0930-1015
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556: 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
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	4.51	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: GGP-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 OTB (Grab measurement). Update spoke w/ RM. Screen is 33-43 bgs 5/8/19
- low recharge rate; must pump w/ a slow flow rate

Signature
5/8/19
Date

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

Well Identification: MW-06

Project: PFAS RI EW
Location: AOC 50

Date: 5/8/19
Sampler: BMA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	58.65
Depth to bottom (ft BTOR)	134.85
Pump Set Depth (ft BTOR)	130
Screen Interval (ft ~~BTOR~~)	120-130 bgs
Total volume purged (gal)	3.0

Sampling Type
Purging Method: 1.75" BP
Purge start/stop time: 0730-
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N)
Air source: N2

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

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
0750	250	58.70	9.99	6.26	1555	3.74	-43.4	28.6	clear
0755	250	58.70	10.03	6.22	1576	3.89	-61.1	12.1	clear
0800	250	58.70	9.99	6.26	1566	4.02	-62.1	11.7	clear
0805	250	58.70	10.05	6.30	1565	3.86	-72.6	11.9	clear
0810	250	58.70	10.06	6.31	1563	3.74	-67.7	12.50	clear
0815	250	58.70	10.17	6.34	1562	4.12	-70.8	12.23	clear
0820	250	58.70	10.20	6.35	1562	4.09	-72.0	12.16	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	-	-	-	-	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MW-06-MA419
Sample Time: 0820
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: XSA-12-96X

Project: PFAS RI EW
Location: ADC50
Date: 5/7/19
Sampler: B, A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	65.10
Depth to bottom (ft BTOR)	132.25
Pump Set Depth (ft BTOR)	125
Screen Interval (ft ~~BTOR~~)	120-130 bgs
Total volume purged (gal)	~~8~~ 1.0 gal

Sampling Type

Purging Method: 0.5" mB
Purge start/stop time: 0750 - 0850
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): (N)
Air source: N_2

Field Instrument (Model/S/N): YSI 650 XL 02EDS34
Lamotte 2020t 1116-0715

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
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.~~ 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 Varience Observed (Y/N):				N					0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XSA-12-96X-MAY19
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

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

KGS

Well Identification: XSA-12-98X

Project:	Devens PFAS RI EW	Date:	4/29/19
Location:	AOC 50	Sampler:	CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"	
Material	Steel	
Depth to water (ft BTOR)	1.51	
Depth to bottom (ft BTOR)	70.45	
Pump Set Depth (ft BTOR)	65	
Screen Interval (ft ~~BTOR~~)	60-70	bgs
Total volume purged (gal)	~2.75	

Sampling Type

Purging Method: Pori
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 0950 - 1030
Tubing diameter: 1/4"
Air source: –

Field Instrument (Model/S/N): YSI 556: 0602657 A1 LaMotte - 5083-5014

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
1005	250	1.51	9.82	7.80	663	3.05	-28.0	3.57	clear / clear
1010	↓	↓	9.86	7.78	665	2.64	-24.4	2.59	↓
1015	↓	↓	9.83	7.77	671	1.75	-18.1	2.10	↓
1020	↓	↓	9.81	7.75	672	1.70	-14.9	2.01	↓
1025	↓	↓	9.80	7.74	672	~~1.4~~ 1.64	-13.2	2.03	↓
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 Varience Observed (Y/N):				N	Y	N	N	Y	

Sampling Details

Sampling ID: XSA-12-98X_APR19
Sample Time: 1025
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: –
Filter Size: –
Dup Time: –

Comments

[signature]
Signature

4/29/19
Date

Supplemental Sampling

Fall 2019

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

Well Identification: GGM-13-05X

Project: LTM - Fall 2019 AOC50
Location: Fort Devens, Massachusetts
Date: 10/10/19
Sampler: Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure		X	
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC (Locked cap)
Depth to water (ft BTOR)	14.68
Depth to bottom (ft BTOR)	56.83
Pump Set Depth (ft BTOR)	50.00
Screen Interval (ft bgs)	45-55
Total volume purged (gal)	3.75

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1230/
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: NA

Field Instrument (Model/S/N): YSI 556 MPS (14A100102)
Lamotte 2020we (926-1811)

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
1250	200	15.35	12.30	7.34	931	4.43	-35.5	15.20	Clear
1255	200	15.51	12.13	7.50	932	3.25	-43.8	10.13	Clear
1300	200	15.60	11.98	7.80	944	0.21	-56.7	7.91	Clear
1305	175	15.50	12.07	7.82	947	0.17	-63.1	6.37	Clear
1310	175	15.51	12.06	7.83	949	0.15	-64.2	6.49	Clear
1315	175	15.50	12.05	7.81	950	0.14	-64.7	6.57	Clear
1320	175	15.50	12.04	7.80	953	0.14	-65.6	6.98	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: GGM-13-05X_FAL19
Sample Time: 1320
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): Y
Dup ID:
Filter Size: 0.45µ
Dup Time:

Comments

Signature

10/10/19
Date

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

Well Identification: GOM-18-01

Project: LTM - Fall 2019 AOC 50
Location: Fort Devens, Massachusetts
Date: 10/14/19
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	61.64
Depth to bottom (ft BTOR)	125.88
Pump Set Depth (ft BTOR)	120
Screen Interval (ft bgs)	116-126
Total volume purged (gal)	4.0

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 1000-1120
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N2

Field Instrument (Model/S/N): YSI 556 MPS (15F101567)
Hach 2100Q (11601C047207)

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	250	61.70	13.20	6.13	140	7.65	180.3	250	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N	N	N	N	N	N	

Sampling Details

Sampling ID: GOM-18-01-FALL9
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

10/14/19
Date

27.75

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

Well Identification: GGP-97-05X

Project: LTM - Fall 2019 AOC 50
Location: Fort Devens, Massachusetts
Date: 10/15/2019
Sampler: E. Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	27.47
Depth to bottom (ft BTOR)	44.44
Pump Set Depth (ft BTOR)	38
Screen Interval (ft ~~BTOR~~)	33 - 43 BGS
Total volume purged (gal)	1.05

Sampling Type

Purging Method: Peri.
Purge start/stop time: 1346 / 1446
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): no
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°)	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 Varience Observed (Y/N):				no	yes	no	no	no	

Sampling Details

Sampling ID: GGP-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

Signature

10/15/2019
Date

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

Well Identification: MW-7 (IT)

Project: LTM - Fall 2019 AOC 5D
Location: Fort Devens, Massachusetts
Date: 10/18/19
Sampler: Michael Spaulding

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	good		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	28.31
Depth to bottom (ft BTOR)	34.27
Pump Set Depth (ft BTOR)	~30
Screen Interval (ft ~~BTOR~~)	22-32 bgs
Total volume purged (gal)	~2.5

Sampling Type

Purging Method: Peristaltic
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1015
Tubing diameter: 1/4"
Air source: N/A

Field Instrument (Model/S/N): YSI 650 MDS (11G100386)
HACH 2100Q (17060C09342)

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
1025	120	28.36	10.24	5.24	385	5.98	205.2	14.7	clear
1030	110	28.35	10.16	5.14	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	4.12	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 Varience Observed (Y/N):			N	N	N	N	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MW-7 (IT)_FAL19
Sample Time: 1115
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

Signature

10/18/19
Date

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

Well Identification: G6M-02-01X (Pg 1/2)

Project: LTM - Fall 2019 AOC 50 Date: 10/16/19
Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	54.62
Depth to bottom (ft BTOR)	89.36
Pump Set Depth (ft BTOR)	85
Screen Interval (~~ft bgs~~)	79.44 - 94.44 ft BTOR
Total volume purged (gal)	4.0

Sampling Type
Purging Method 1.75" Bladder Tubing type HDPE Dedicated pump (Y/N) Y - pulled for HDPE (PFAS)
Purge start/stop time 0820- Tubing diameter 1/4"OD Air source N_2

Field Instrument (Model/S/N) YSI 556MPS 15F101567
Horiba U-52 G 16010C047202

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	275	cloudy
0840	200	54.71	12.70	6.76	2927	0.67	-100.7	153	cloudy
~~0845~~ 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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N						

Sampling Details

Sampling ID: G6M-02-01X-FAL19
Sample Time: ~~0930~~ 0940 Duplicate (Y/N): Y MS/MSD (Y/N): PFAS MS/MSD only
Field Filtered (Y/N): Y Dup ID: AOC50-DUP03-FAL19
Filter Size: 0.45µm Dup Time: 0945

Comments VOCs, FF metals, PFAS (MS/MSD)

Signature

10/16/19
Date

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

Well Identification: GWM-02-01R (Pg 2/2)

Project: LTM - Fall 2019 AOC 50 Date: 10/16/19
Location: Fort Devens, Massachusetts Sampler: B+A

Well Integrity See Page 1 of 2

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information See Pg 1/2

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)	

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	12.44	6.55	2690	0.13	-115.5	16.4	clear
0940	200	54.71	12.45	6.56	2651	0.13	-116.9	16.0	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 Varience Observed (Y/N):									

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: LTM - Fall 2019 AOC50 Date: 11/6/19

Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		✓
Well gripper present	—		
Bolts present		ND	✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	68.70
Depth to bottom (ft BTOR)	136.75
Pump Set Depth (ft BTOR)	130
Screen Interval (ft BTOR)	122.97-132.97
Total volume purged (gal)	2.5

Sampling Type

Purging Method 0.675" microbladder Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 0855 - 1005 Tubing diameter ¼"OD Air source N2

Field Instrument (Model/S/N) YSI 556 MPS 15F101567

Hach 2100Q 16010C047202

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
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 =
Post Cal. Check Varience Observed (Y/N):			N						0.163 gal/ft or 616 ml/ft

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 + FF metals + PFAS (M537)

Signature

11/6/19

Date

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

Well Identification: XSA-12-98X

Project: LTM - Fall 2019 AOC 86 | Date: 10/9/19
Location: Fort Devens, Massachusetts | Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present			✓
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	0.5"
Material	steel
Depth to water (ft BTOR)	8.90
Depth to bottom (ft BTOR)	71.60
Pump Set Depth (ft BTOR)	69.0
Screen Interval (ft BTOR)	62.97 - 72.97
Total volume purged (gal)	~2.75

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: 16100386 HACH 2100Q: 17060C059342

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	8.90	11.18	7.68	376	1.41	17.0	6.86	c/per /c/ear
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 Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XSA-12-98X_FAL19
Sample Time: 1050 | Duplicate (Y/N): N | MS/MSD (Y/N): Y
Field Filtered (Y/N): Y* | Dup ID: -
Filter Size: 0.45 µm | 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

Signature | Date: 10/9/19

*Y c) Field filtered for metals only

Supplemental Sampling

Spring 2020

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

Well Identification: GWM-02-01X **AOC Name:** AOC 50

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/7/2020
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	52.83
Depth to bottom (ft BTOR)	89.32
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	3.0

Sampling Type
Purging Method 1.75" Bladder
Purge start/stop time 0925 - 1015
Tubing type HDPE
Tubing diameter 1/4" OD
Dedicated pump (Y/N) N (used d.ft. pump)
Air source N2

Field Instrument (Model/S/N) YSI 556 MPS 05G101941AD
Lamotte 2020we 951-2111

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 Varience Observed (Y/N):									

Sampling Details

Sampling ID: GWM-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.

Signature

5/7/20
Date

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

Well Identification: GGM-18-01 **AOC Name:** AOC 50

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/7/2020
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	58.35
Depth to bottom (ft BTOR)	—
Pump Set Depth (ft BTOR)	120
Screen Interval (ft BTOR)	116-126
Total volume purged (gal)	3.0

- Too deep for LLSM

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 1105-1200
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N_2

Field Instrument (Model/S/N): YSI 5556 MPS 05G1941AD
Lamotte 2020we 081-2111

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
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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N					

Sampling Details

Sampling ID: GGM-18-01-SP220
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)

Signature

5/7/2020
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 66P-97-05X **AOC Name:** 50

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/7/20
Sampler: VGA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	25.01
Depth to bottom (ft BTOR)	44.54
Pump Set Depth (ft BTOR)	38'
Screen Interval (ft BTOR)	33-43
Total volume purged (gal)	1.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 910/955
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS ~~06C~~ 06C2657A1
Lamotte 2020WF 3711-3913

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
910	75	25.57	10.09	6.11	258	3.74	92.7	12.70	clear
915	75	25.52	10.13	6.03	257	3.30	99.6	13.90	clear
920	75	25.52	10.12	6.01	256	3.30	103.2	18.63	clear
925	75	25.52	10.18	6.00	256	3.27	123.1	16.99	clear
930	75	25.52	10.22	5.99	257	3.13	131.4	17.21	clear
935	75	25.52	10.27	5.99	253	3.18	130.7	16.87	clear
940	75	25.52	10.22	5.98	252	3.17	131.6	16.87	clear
945	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 = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: 66P-97-05X-SPR20
Sample Time: 950
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: AOC50-DUP-5720
Filter Size: N/A
Dup Time: 955

Comments PFAS

Signature: [signature]
Date: 5/7/20

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: MSA-12-96X **AOC Name:** 50

Project: Spring 2020 Supplemental Event Date: 5/8/20

Location: Fort Devens, Massachusetts Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present			✓
Bolts present			✓
Locked (stickup wells)		X	

Well Information

Diameter	4"
Material	Steel
Depth to water (ft BTOR)	49.27
Depth to bottom (ft BTOR)	132.84
Pump Set Depth (ft BTOR)	125
Screen Interval (ft BTOR)	120-130
Total volume purged (gal)	1.0

Sampling Type

Purging Method: Microblader Tubing type: HDPE (x2) Dedicated pump (Y/N): Tubing

Purge start/stop time: 855/935 Tubing diameter: ¼" Air source: N

Field Instrument (Model/S/N): YSI 556MPS 06C265 7A1

LaMotte 2020we 3711-3913

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
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	-147.1	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	8.61	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 Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: MSA-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

5/8/20
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: VSA-12-98X **AOC Name:** 50

Project: Spring 2020 Supplemental Event Date: 5/7/20

Location: Fort Devens, Massachusetts Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present			✓
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	0.5"
Material	SS (SP)
Depth to water (ft BTOR)	3.05
Depth to bottom (ft BTOR)	12.74
Pump Set Depth (ft BTOR)	65
Screen Interval (ft BTOR)	60-70
Total volume purged (gal)	3.0

Sampling Type

Purging Method Geotech Tubing type HDPE Dedicated pump (Y/N) ~~Dskg~~ ~~Removed~~

Purge start/stop time 1110/1150 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS 06E2657A1

Lamotte 2020wf 3711~3713

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	✱	11.20	7.88	974	0.44	11.5	5.75	clear
1115	200	✱	11.09	7.89	970	0.30	9.9	5.30	clear
1120	200	✱	11.05	7.90	968	0.29	8.9	5.20	clear
1125	200	✱	11.08	7.87	967	0.28	8.8	5.17	clear
1130	200	✱	11.07	7.86	964	0.26	8.6	5.09	clear
1135	200	✱	11.04	7.84	963	0.25	8.5	5.08	clear
1140	200	✱	11.10	7.84	961	0.24	8.4	5.07	clear
1145	200	✱	11.09	7.84	960	0.23	8.3	5.08	clear

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

Sampling Details

Sampling ID: VSA-12-98X-SPR20

Sample Time: 1150 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] 5/7/20

Signature **Date**

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 66M-13-05X **AOC Name:** 50

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/7/20
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.94
Depth to bottom (ft BTOR)	56.60
Pump Set Depth (ft BTOR)	50
Screen Interval (ft BTOR)	15-55
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 740/820
Tubing type: ~~[illegible]~~ HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS 06C2657A1
Lamotte 2020 WE 3711-3913

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
740	200	12.94	10.69	7.90	998	0.69	-141.7	31.6	clear
745	200	12.94	10.66	7.86	994	0.57	-130.3	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%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: 66M-13-05X-SPR20
Sample Time: 820
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 ~~[illegible]~~ PFAS

[signature] **Signature**

5/7/20 **Date**

Calibration Sheets

KGS

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 0605		Cal. Temp. (°C)	PM Post Cal. Check Time 1425	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1381	1413	16.58	1416 → 1413	16.90	±10 µS/cm	no
pH (7)	10/2020	6.89	7.00	16.81	6.89 → 7.00	16.72	± 0.3 Ph *	no
pH (4)	3/2020	3.98	4.00	16.60	4.02 → 4.00	16.61	± 0.3 Ph *	no
pH (10)	12/31/2019	10.22	10.04	16.57	10.26 → 10.04	16.89	± 0.3 Ph *	no
ORP (240 mv)	10/2019	238.0	240.0	16.63	241.1 → 240.0	16.94	±10 mv	no
Dissolved Oxygen (%)	—	108.9	100.0	15.78	82.9 → 100.1	17.88	-	—
Dissolved Oxygen (mg/L)	—	10.82	9.92	15.78	7.88 → 9.51	17.88	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	yes
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Rosalie Seiler **Date:** ~~4/25/2019~~ 4/25/2019

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Deven PFAS RI Existing Well **Instrument:** LaMotte 2020t

Calibrated By: Seiler **Serial Number:** 1116-0719

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 1 Ø NTU**	**Post-Cal 1 Ø NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**1 Ø NTU**	**10 NTU**	**Variance Noted**
4/25/2019	1.21	0.94 → 1.00	7.91	9.80 → 10.02	1.46 → 1.21	10.74 → 9.80	yes

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Erich Seiler **Date:** 4/25/2019

KGS

Field Instrument Calibration Log

Date: 4/26/19 **Weather:** Rainy 50's

Project/Site Name: Orms PFAS RI EW **Instrument:** YSI 556

Calibrated By: CV **Serial Number:** ~~[illegible]~~ 10H100928

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1205	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,472	1,413	17.72	1,419	17.71	±10 µS/cm	N
pH (7)	3/2020	7.17	7.00	17.16	7.15	17.25	± 0.3 Ph *	N
pH (4)	3/2020	4.09	4.00	17.54	4.16	17.49	± 0.3 Ph *	N
pH (10)	3/2020	9.76	10.00	17.62	9.80	17.55	± 0.3 Ph *	N
ORP (240 mv)	10/2019	233.0	240.0	17.66	237.4	17.56	±10 mv	N
Dissolved Oxygen (%)	-	99.8	100.0	17.50	99.6	17.01	-	-
Dissolved Oxygen (mg/L)	-	9.60	9.73	17.50	10.11	17.01	± 0.5 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 Variences on Field Forms)

4/26/19

Turbidity Instrument Calibration Log

Project/Site Name: Davis PFAS RI EW **Instrument:** LaMotte

Calibrated By: CV **Serial Number:** 5083-5014

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
4/26/19	0.01	0.00	6.56	9.85	0.01	9.47	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 4/26/19

KGS

Field Instrument Calibration Log

Date: 4/26/19 **Weather:** Rain, 48°F

Project/Site Name: PFAS RI EW AOC50 **Instrument:** YSI 650XL

Calibrated By: BMA **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])		1417	1413	14.57	1411	13.20	±10 µS/cm	N
pH (7)		7.00	7.00	14.95	7.01	13.38	± 0.3 Ph *	
pH (4)		3.66	4.00	14.94	3.99	14.04	± 0.3 Ph *	
pH (10)		9.68	10.00	14.86	9.98	13.60	± 0.3 Ph *	
ORP (240 mv)		240.0	240.0	14.63	239.7	14.03	±10 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	± 0.5 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 Variences on Field Forms)

Signature: BMA **Date:** 4/26/19

KGS

Field Instrument Calibration Log

Date: 4/29/19 **Weather:** Sun, 50°F

Project/Site Name: PEASE WP A1 **Instrument:** 451 650XL

Calibrated By: BrA **Serial Number:** 12E0534

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)		1347	1413	14.19	1405	15.83	±10 µS/cm	N
pH (7)		7.13	7.00	14.60	7.01	15.55	± 0.3 Ph *	N
pH (4)		3.57	4.00	14.41	4.01	15.82	± 0.3 Ph *	N
pH (10)		9.84	10.00	14.39	10.14	15.79	± 0.3 Ph *	N
ORP (240 mv)		237.3	240.1	14.20	243.7	15.80	±10 mv	N
Dissolved Oxygen (%)		~~7.6~~ ~~7.53~~	100	13.90	98.1	15.63	-	N
Dissolved Oxygen (mg/L)		7.83	10.12	13.90	10.03	15.63	± 0.5 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: BrA **Date:** 4/29/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI WP A1 **Instrument:** Lamotte 2020t

Calibrated By: BnA **Serial Number:** 1116-0715

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	
4/25/19	0.04	0.01	10.90	10.0	0.02	10.1	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: BnA **Date:** 4/25/19

Field Instrument Calibration Log

Date: 4/29/19 **Weather:** Sunny 40's - 50's

Project/Site Name: Devens PFAS RI EW **Instrument:** YSI 556 MPS

Calibrated By: CW **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,423	1,413	15.63	1,391	16.87	±10 µS/cm	Y
pH (7)	10/2020	7.04	7.00	15.84	7.13	16.69	± 0.3 Ph *	N
pH (4)	3/2020	4.03	4.06	15.64	4.10	17.00	± 0.3 Ph *	N
pH (10)	12/31/2019	10.00	10.00	15.84	9.94	16.78	± 0.3 Ph *	N
ORP (240 mv)	10/2019	238.7	240.0	15.76	238.4	16.90	±10 mv	N
Dissolved Oxygen (%)	—	108.4	100.0	16.42	101.7	16.35	-	—
Dissolved Oxygen (mg/L)	—	10.60	9.79	16.42	9.96	16.35	± 0.5 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 Variences 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: Dorms PFAS RI EW **Instrument:** YSI 556 MPS

Calibrated By: CW **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1255	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,394	1,413	17.42	1,405	17.29	±10 µS/cm	N
pH (7)	10/2020	6.84	7.00	17.54	6.94	17.15	± 0.3 Ph *	N
pH (4)	3/2020	3.93	4.00	17.39	4.18	17.27	± 0.3 Ph *	N
pH (10)	12/31/2019	10.05	10.00	17.40	10.00	17.34	± 0.3 Ph *	N
ORP (240 mv)	10/2019	239.2	240.0	17.43	240.6	17.33	±10 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	15.16	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 4/30/19

KGS

Field Instrument Calibration Log

Date: 5/2/19 **Weather:** Overcast, 40's-50's

Project/Site Name: Dorms PFAS RI EW **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0545		Cal. Temp. (°C)	PM Post Cal. Check Time 1355	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,418	1,413	16.89	1,418	17.58	±10 µS/cm	N
pH (7)	10/2026	7.09	7.00	16.90	6.94	17.22	± 0.3 Ph *	N
pH (4)	3/2020	3.90	4.00	16.94	4.08	17.58	± 0.3 Ph *	N
pH (10)	12/31/2019	10.00	10.00	17.05	10.15	17.68	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.4	240.0	16.99	240.1	17.62	±10 mv	N
Dissolved Oxygen (%)	—	99.8	100.0	16.96	98.6	15.91	-	—
Dissolved Oxygen (mg/L)	—	9.70	9.65	16.96	9.65	15.91	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 5/2/19

KGS

Field Instrument Calibration Log

Date: 5/3/19 **Weather:** Partly Sunny, 40's

Project/Site Name: Downs PFAS RI EW **Instrument:** YSI 556

Calibrated By: CW **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 0955	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,413	1,413	17.22	1,409	16.54	±10 µS/cm	N
pH (7)	10/2020	6.95	7.00	17.12	6.98	16.77	± 0.3 Ph *	N
pH (4)	3/2020	4.05	4.00	17.22	4.12	16.78	± 0.3 Ph *	N
pH (10)	12/31/2019	10.02	10.00	17.15	9.97	17.00	± 0.3 Ph *	N
ORP (240 mv)	00/2019	239.5	240.0	17.31	241.3	16.94	±10 mv	N
Dissolved Oxygen (%)	—	99.9	100.0	17.10	99.8	16.57	-	
Dissolved Oxygen (mg/L)	—	9.69	9.70	17.10	10.01	16.57	± 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: [signature] **Date:** 5/3/19

Turbidity Instrument Calibration Log

Project/Site Name: Dorms PFAS RI EW

Instrument: LaMotte

Calibrated By: CV

Serial Number: 5083-5014 / 5708-5014

	AM Calibration				PM Post Calibration Check		
Date	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	Variance Noted
5083-5014 4/29/19	0.02 ~~Pass~~	0.00	6.79	10.00	0.02	8.33	Y
5708-5014 4/30/19	0.10	0.01	6.81	9.96	0.00	10.37	N
5708-5014 5/2/19	0.01	0.01	6.96	10.00	0.04	6.98	Y
5708-5014 5/3/19	0.00	0.00	6.95	10.00	0.04	10.11	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/3/19

KGS

Field Instrument Calibration Log

Date: 4/30/19 **Weather:** Rain, 45°F

Project/Site Name: PFAS R1 EW **Instrument:** YSI 650XL

Calibrated By: BrA **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)	11/19	1450	1413	16.09	1420	14.92	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	15.30	7.15	14.78	± 0.3 Ph *	N
pH (4)	07/20	3.77	4.00	15.12	4.00	14.90	± 0.3 Ph *	N
pH (10)	02/20	9.63	10.00	15.10	10.13	14.89	± 0.3 Ph *	N
ORP (240 mv)	10/19	237.8	240.0	14.98	243.6	15.07	±10 mv	N
Dissolved Oxygen (%)	—	155	100	15.18	103.8	15.01	-	N
Dissolved Oxygen (mg/L)	—	15.60	10.02	15.18	10.13	15.01	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	757.7	757.7	15.18	759.3	—	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/30/19

KGS

Field Instrument Calibration Log

Date: 5/1/19 **Weather:** Sun, 50°F

Project/Site Name: PFAS RI EW **Instrument:** YSI 650XL

Calibrated By: BCA **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0555		Cal. Temp. (°C)	PM Post Cal. Check Time 1480	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1418	1413	15.01	1409	14.38	±10 µS/cm	Y
pH (7)	10/20	7.07	7.00	14.92	7.03	14.47	± 0.3 Ph *	N
pH (4)	07/20	3.67	4.00	14.94	4.02	14.50	± 0.3 Ph *	N
pH (10)	02/20	9.60	9.92	14.82	9.96	14.41	± 0.3 Ph *	N
ORP (240 mv)	10/19	~~25~~ 239.3	240.0	14.71	240.8	14.39	±10 mv	N
Dissolved Oxygen (%)	-	55.5	100.0	14.62	91.7	14.20	-	N
Dissolved Oxygen (mg/L)	-	5.64	10.20	14.62	10.08	14.20	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	763.1	763.1	-	759.3	-	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BCA **Date:** 5/1/19

KGS

Field Instrument Calibration Log

Date: 5/2/19 **Weather:** Rain, 45°F

Project/Site Name: PFAS R1 EW **Instrument:** YSI 650XL

Calibrated By: BA **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0545		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)	11/19	1442	1413	14.46	1411	15.13	±10 µS/cm	N
pH (7)	10/20	6.92	7.00	14.43	7.01	15.10	± 0.3 Ph *	
pH (4)	07/20	3.94	4.00	14.43	3.98	15.01	± 0.3 Ph *	
pH (10)	02/20	10.01	10.00	14.35	10.05	15.20	± 0.3 Ph *	
ORP (240 mv)	10/19	242.3	~~[illegible]~~ 240.0	14.21	241.3	15.38	±10 mv	
Dissolved Oxygen (%)	—	137.8	99.2	14.29	108.0	15.03	-	
Dissolved Oxygen (mg/L)	—	14.12	10.16	14.29	10.31	15.03	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 5/2/19

Field Instrument Calibration Log

Date: 5/3/19 **Weather:** Clouds, 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 0545		Cal. Temp. (°C)	PM Post Cal. Check Time 1315	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)	11/19	1428	1413	14.61	1411	14.46	±10 µS/cm	N
pH (7)	10/20	7.12	7.00	14.62	6.99	14.42	± 0.3 Ph *	N
pH (4)	07/20	3.96	4.00	14.67	4.04	14.49	± 0.3 Ph *	N
pH (10)	02/20	9.86	10.00	14.54	9.85	14.48	± 0.3 Ph *	N
ORP (240 mv)	10/19	239.0	240.0	14.42	238.7	240	±10 mv	N
Dissolved Oxygen (%)	-	57.8	99.3	14.46	96.4	100	-	N
Dissolved Oxygen (mg/L)	-	5.89	10.19	14.46	10.02	10.20	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	756.6	-	14.46	761.3	-	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: B.A **Date:** 5/3/19

Field Instrument Calibration Log

Date: ~~PFAS RI EW~~ 5/6/19 **Weather:** Sun, 45°F

Project/Site Name: PFAS RI EW A3 **Instrument:** 451 650 XL

Calibrated By: BrA **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0625		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1447	1413	1481	1411	15.42	±10 µS/cm	N
pH (7)	10/20	7.18	7.00	14.83	7.06	15.40	± 0.3 Ph *	
pH (4)	07/20	3.78	4.00	14.88	4.02	15.28	± 0.3 Ph *	
pH (10)	02/20	960	9.92	14.86	10.13	15.31	± 0.3 Ph *	
ORP (240 mv)	10/19	240.9	240.0	14.30	240.1	15.12	±10 mv	
Dissolved Oxygen (%)	—	170	98.8	14.92	98.6	14.99	-	
Dissolved Oxygen (mg/L)	—	17.17	9.98	14.92	9.97	14.99	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	750.9	750.9	—	758.9	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA **Date:** 5/6/19

Field Instrument Calibration Log

Date: 5/7/19 **Weather:** Sun, 45°F

Project/Site Name: PFAS RI EW **Instrument:** YSI 650 XL

Calibrated By: B.A **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0900		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/19	1355	1413	15.01	1404	17.58	±10 µS/cm	N
pH (7)	10/20	6.98	7.00	15.18	7.13	17.20	± 0.3 Ph *	
pH (4)	07/20	3.90	4.00	15.24	4.01	17.30	± 0.3 Ph *	
pH (10)	02/20	9.84	9.97	15.81	10.16	17.58	± 0.3 Ph *	
ORP (240 mv)	10/19	238.6	240.0	15.72	235.6	17.20	±10 mv	
Dissolved Oxygen (%)	-	92.1	100.1	15.30	90.3	16.88	-	
Dissolved Oxygen (mg/L)	-	9.52	9.90	15.30	9.50	16.88	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	755.3	-	-	758.6	-	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: B.A **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 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1325	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/15	1414	1413	15.54	1404	16.20	±10 µS/cm	N
pH (7)	10/20	7.00	7.00	15.56	7.00	15.92	± 0.3 Ph *	
pH (4)	07/20	4.01	4.00	15.73	3.99	16.15	± 0.3 Ph *	
pH (10)	02/20	9.80	10.00	15.72	10.04	16.07	± 0.3 Ph *	
ORP (240 mv)	10/15	237.2	240.0	15.34	235.8	16.20	±10 mv	
Dissolved Oxygen (%)	—	43.2	99.8	15.10	96.4	15.92	-	
Dissolved Oxygen (mg/L)	—	4.35	10.04	15.10	9.81	15.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	757.4	757.4	15.10	760.1	15.92	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/8/15

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI EW - AOC50 **Instrument:** Lamotte 2020e

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	0.09	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	W
5/8/19	0.02	0.01	10.07	10.00	0.04	10.07	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 5/8/19

KGS

Field Instrument Calibration Log

Date: 5/6/19 **Weather:** Cloudy 40's - 50's

Project/Site Name: Dunns PFAS RIEW **Instrument:** YSI 556

Calibrated By: AOC 57 **Serial Number:** 06O2657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0705		Cal. Temp. (°C)	PM Post Cal. Check Time 1215	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,401	1,413	17.53	1,404	17.61	±10 µS/cm	N
pH (7)	10/2020	7.07	7.00	17.56	7.09	17.65	± 0.3 Ph *	N
pH (4)	3/2020	3.89	4.00	17.51	4.10	17.58	± 0.3 Ph *	N
pH (10)	12/31/2019	10.00	10.00	17.52	9.89	17.63	± 0.3 Ph *	N
ORP (240 mv)	10/2019	240.5	240.0	17.39	237.4	17.49	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 5/6/19

Field Instrument Calibration Log

Date: 5/8/19 **Weather:** Partly Cloudy, Sunny 50's-60's

Project/Site Name: Downs PFAS RIEW **Instrument:** YSI 556

Calibrated By: CV **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1250	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,405	1,413	18.61	1,404	18.12	±10 µS/cm	N
pH (7)	10/2020	7.08	7.00	18.44	6.88	18.15	± 0.3 Ph *	N
pH (4)	3/2020	3.96	4.00	18.57	4.06	18.31	± 0.3 Ph *	N
pH (10)	12/31/2019	9.90	10.00	18.38	10.00	18.20	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.4	240.0	18.50	240.9	18.18	±10 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	± 0.5 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 Variences on Field Forms)

Signature: **Date:** 5/8/19

Turbidity Instrument Calibration Log

Project/Site Name: Downs PFAS RT EW **Instrument:** LaMotte

Calibrated By: W **Serial Number:** 5108-5014

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
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 Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 5/8/19

KGS

Field Instrument Calibration Log

Date: 10/9/19 **Weather:** Cloudy -> Rainy ; 50's-60's (°F)

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 16100386

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	11/2019	1,406	1,413	18.21	1,414	18.61	±10 µS/cm	N
pH (7)	02/2021	6.93	7.00	18.07	7.01	17.99	± 0.3 Ph *	N
pH (4)	03/2021	3.99	4.00	18.08	4.03	18.31	± 0.3 Ph *	N
pH (10)	02/2021	10.01	10.00	18.06	10.00	18.32	± 0.3 Ph *	N
ORP (240 mv)	12/2019	245.9	240.0	18.41	239.3	18.59	±10 mv	N
Dissolved Oxygen (%)	–	93.9	100.0	18.01	103.2	18.01	-	–
Dissolved Oxygen (mg/L)	–	8.67	9.23	18.01	9.51	18.01	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 10/9/19

Turbidity Instrument Calibration Log

Project/Site Name: Downs Fall LTM 2019 **Instrument:** HACH 2100Q

Calibrated By: CAC **Serial Number:** 17060C059342

	AM Calibration				PM Post Calibration Check				
Date	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	Variance Noted
10/9/19	10.1/10.0	20.2/20.0	106/100	799/800	10.1	19.9	95.6	800	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: [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 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1447	1413	16.65	1410	17.61	±10 µS/cm	N
pH (7)	01/21	7.09	7.00	16.42	6.80	17.59	± 0.3 Ph *	N
pH (4)	03/20	3.97	4.00	16.65	4.28	17.64	± 0.3 Ph *	N
pH (10)	02/20	9.96	10.00	16.43	10.23	17.59	± 0.3 Ph *	N
ORP (240 mv)	06/23	240.8	240.0	16.80	238.6	17.50	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 10/10/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM 436 / A0C50

Calibrated By: B.A

Instrument: Hach 2100Q

Serial Number: 16010C047202

	AM Calibration				PM Post Calibration Check				
Date	**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**	**Variance Noted**
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: [signature]

Date: 10/10/19

KGS

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:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1515	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	03/20	1400	143	15.55	1416	18.63	±10 µS/cm	N
pH (7)	01/21	7.38	7.00	15.79	6.89	17.91	± 0.3 Ph *	
pH (4)	03/20	3.89	4.00	15.66	4.05	18.87	± 0.3 Ph *	
pH (10)	02/20	9.81	10.00	15.75	9.96	18.46	± 0.3 Ph *	
ORP (240 mv)	06/23	239.0	240.0	15.81	237.9	18.50	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 10/16/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM - AOC50 SHL

Calibrated By: B/A

Instrument: ~~YSI~~ Hach 2100Q

Serial Number: 16010C047202

	AM Calibration				PM Post Calibration Check				
Date	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	Variance Noted
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	~~23~~ 10.1/10	20.2/20	98.8/100	800/800	N
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 10/14 - 10/31

KGS

Field Instrument Calibration Log

Date: 11/6/15 **Weather:** Sun, 45°F

Project/Site Name: Devens LTM **Instrument:** YSI 556 MPS

Calibrated By: BnA **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1428	1413	17.41	1410	17.30	±10 µS/cm	N
pH (7)	01/21	7.20	7.00	17.68	7.04	17.25	± 0.3 Ph *	
pH (4)	03/21	3.81	4.00	17.53	3.96	18.01	± 0.3 Ph *	
pH (10)	03/20	9.91	10.00	18.10	10.05	17.57	± 0.3 Ph *	
ORP (240 mv)	06/23	256.1	240	17.08	235.1	18.10	±10 mv	
Dissolved Oxygen (%)	-	96.4	100	16.41	103.8	16.90	-	
Dissolved Oxygen (mg/L)	/	9.28	9.33	16.41	9.40	16.90	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	/	760	760	16.41	760	16.90	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Brett Q **Date:** 11/6/15

Turbidity Instrument Calibration Log

Project/Site Name: Devens 4th

Instrument: Hach 2100Q

Calibrated By: B.A

Serial Number: 160100 47202

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	20.6/20	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
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 11/1 - 11/13/19

KGS

Field Instrument Calibration Log

Date: 5/7/2020 **Weather:** 40°F, Sun.

Project/Site Name: Devens Supplemental Sampling **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 05G1941AD

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1391	1413	16.39	1411	17.28	±10 µS/cm	N
pH (7)	10/21	7.00	7.00	16.32	7.01	17.51	± 0.3 Ph *	
pH (4)	10/21	4.01	4.00	16.39	3.99	17.43	± 0.3 Ph *	
pH (10)	10/21	9.94	10.00	16.42	10.08	17.28	± 0.3 Ph *	
ORP (240 mv)	05/20	241.5	240.0	16.41	239.6	17.50	±10 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	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	–	745.1	745.1	16.60	746.5	17.20	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA **Date:** 5/7/20

KGS

Field Instrument Calibration Log

Date: 5/8/2020 **Weather:** 45°F, Sun

Project/Site Name: Devers Spng 2020 Supplemental **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 05G1941AD

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1415	1413	16.43	1416	17.81	±10 µS/cm	N
pH (7)	10/21	7.02	7.00	16.35	7.01	18.04	± 0.3 Ph *	
pH (4)	10/21	3.95	4.00	16.30	3.97	17.90	± 0.3 Ph *	
pH (10)	10/21	9.98	10.00	16.42	10.08	17.96	± 0.3 Ph *	
ORP (240 mv)	05/20	238.8	240.0	16.12	241.6	18.02	±10 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	± 0.5 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 Variences on Field Forms)

Signature: BrA G **Date:** 5/8/20

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens Supplemental

Instrument: Lamotte 2020we

Calibrated By: BrA

Serial Number: 981-2111

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	
5/6/2020	0.15	0.14	8.86	10.00	0.18	9.88	N
5/7/2020	0.19	0.14	9.17	10.00	0.16	9.91	N
5/8/2020	0.16	0.14	9.90	10.00	0.17	9.80	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Brett Cantor

Date: 5/6/2020
5/7/2020
5/8/2020

KGS

Field Instrument Calibration Log

Date: 5/7/20 **Weather:** 50's

Project/Site Name: Dam **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 06C657A1

Parameters	Solution Expiration Date	AM Calibration Time 640		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1.447	1.413	16.94	1.410	17.81	±10 µS/cm	N
pH (7)	2/21	7.09	7.00	16.78	7.11	17.77	± 0.3 Ph *	N
pH (4)	10/21	4.11	4.09	16.81	4.00	17.69	± 0.3 Ph *	N
pH (10)	10/21	9.63	10.00	17.01	10.03	17.83	± 0.3 Ph *	N
ORP (240 mv)	5/20	220.3	240.0	16.90	237.7	17.81	±10 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	± 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:** 5/7/20

KGS

Field Instrument Calibration Log

Date: 5/8/20 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 06C2657A1

Parameters	Solution Expiration Date	AM Calibration Time 650		Cal. Temp. (°C)	PM Post Cal. Check Time 1215	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	10/20	1.478	1.413	16.99	1.410	16.39	±10 µS/cm	N
pH (7)	2/21	7.30	7.00	16.83	7.03	16.47	± 0.3 Ph *	N
pH (4)	10/21	4.18	4.00	17.21	4.01	16.50	± 0.3 Ph *	N
pH (10)	10/21	9.83	10.00	17.09	10.00	16.51	± 0.3 Ph *	N
ORP (240 mv)	5/20	231.0	249.0	16.87	241.1	16.42	±10 mv	N
Dissolved Oxygen (%)	N/A	90.0%	100.0%	16.79	100.0%	16.39	-	N
Dissolved Oxygen (mg/L)	MA	9.47	10.00	16.89	9.81	16.27	± 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: [signature] **Date:** 5/8/20

Turbidity Instrument Calibration Log

Project/Site Name: Davis **Instrument:** LaMotte 2020we

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: _____ **Date:** 5/8/20

Field Instrument Calibration Log

Date: 10/10/19 **Weather:** 50°F Partially Cloudy

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 14A100102

Parameters	Solution Expiration Date	AM Calibration Time 0740		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1410	1413	19.55	1405	15.73	±10 µS/cm	N
pH (7)	02/21	7.25	7.00	19.63	6.91	15.89	± 0.3 Ph *	N
pH (4)	03/21	3.99	4.00	19.37	3.98	15.65	± 0.3 Ph *	N
pH (10)	02/21	9.98	10.00	19.10	9.95	15.92	± 0.3 Ph *	N
ORP (240 mv)	~~10/19~~	237.8	240	19.53	237.1	15.77	±10 mv	N
Dissolved Oxygen (%)	—	104.2	100.0	19.10	95.1	13.85	-	N
Dissolved Oxygen (mg/L)	—	9.81	9.45	19.10	9.89	13.85	± 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:** 10/10/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Ft. Devens, MA FAL'19 LTM

Instrument: Lamotte 2020WE

Calibrated By: Melissa Miller

Serial Number: 926-1811

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	
10/9/19	0.06	0.00	9.24	9.45	0.71	9.90	N
10/10/19	0.05	0.00	9.68	9.73	0.61	10.00	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 10/10/19

Field Instrument Calibration Log

Date: 10/15/15 **Weather:** Sun, 45°F

Project/Site Name: Devons LTM - ACC50 **Instrument:** YSI 556MPS

Calibrated By: B.A **Serial Number:** 15F10154767

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])		1414	1413	17.36	1411	19.99	±10 µS/cm	N
pH (7)		6.99	7.00	17.22	6.90	19.33	± 0.3 Ph *	
pH (4)		3.96	4.00	16.92	4.20	19.43	± 0.3 Ph *	
pH (10)		10.09	10.00	17.44	9.98	19.55	± 0.3 Ph *	
ORP (240 mv)		245.6	240.0	17.69	238.7	19.90	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: _____ **Date:** 10/15/15

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM - AOC50 SHL

Calibrated By: B+A

Instrument: ~~YSI~~ Hach 2100Q

Serial Number: 16010C047202

	AM Calibration				PM Post Calibration Check				
Date	**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**	**Variance Noted**
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	~~9.8~~ 10.1/10	20.2/20	98.8/100	800/800	N
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature: B+A

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:** 11G100386

Parameters	Solution Expiration Date	AM Calibration Time 0635		Cal. Temp. (°C)	PM Post Cal. Check Time 1520	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	11/2019 ~~2020~~	1409	1413	18.49	1392 → 1413	19.15	±10 µS/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	3.93	4.00	18.99	4.09 → 4.06	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 Variences 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: 170600059342
*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	
10/14/2019	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	9.71/10	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	95.3/100	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 +40/100	791/800	yes
* 10/25/2019	10.0/10	20.5/20	102/100	790/800	10.6/10	20.2/20	96.8/100	810/800	~~yes~~ no
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 10/25/2019

KGS

Field Instrument Calibration Log

Date: 10/16/19 **Weather:** 50-60°

Project/Site Name: Dennys Mall LTM **Instrument:** YSI 650 MDS

Calibrated By: Michael Spaulding **Serial Number:** 11G100 386

Parameters	Solution Expiration Date	AM Calibration Time 0620		Cal. Temp. (°C)	PM Post Cal. Check Time 1520	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/2019	1399	1414	17.48	1417 / 1413	18.46	±10 µS/cm	N
pH (7)	2/2021	6.99	7.00	17.65	7.00 / 7.00	19.80	± 0.3 Ph *	N
pH (4)	3/2021	4.00	4.00	17.55	4.08 / 4.00	18.79	± 0.3 Ph *	N
pH (10)	2/2021	10.18	10.03	17.63	10.01 / 10.00	18.60	± 0.3 Ph *	N
ORP (240 mv)	12/2019	238.1	240.1	17.59	236.7 / 239.9	18.61	±10 mv	N
Dissolved Oxygen (%)		102.6	100.0	17.75	102.6 / 100.0	18.82	-	N
Dissolved Oxygen (mg/L)		~~10.26~~ 9.76	9.51	17.75	~~10.26~~ 9.50 / 9.31	18.82	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)		760		17.75	760	18.82	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/16/19

Turbidity Instrument Calibration Log

Project/Site Name: FT Peck Fall LTM

Calibrated By: Michael Spalding

Instrument: ~~YSI 650 MDS~~ HACH 2100Q

Serial Number: ~~[illegible]~~ 17060C053432

	AM Calibration				PM Post Calibration Check				
Date	**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**	**Variance Noted**
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: [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

Project/Site Name: Fort Devens/Area 3 Synoptic Water Level Summer 2019

Date : 8/14/2019

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

Project/Site Name: Fort Devens/Area 3 Synoptic Water Level Summer 2019

Date : 8/14/2019

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 Spalding
Water Level Meter Model: Solinst 101 Snt 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
CV	G6M-96-22A							See well evaluation form	4.74
CV	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	31.95	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	14.86	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
1	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	~~0829~~ 0835	14.54	29.65	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
PFAS	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	Dry	31.00	Y	NA	Y	See well evaluation form	~~42.10~~ N/A
	G6P-97-05X	1103	27.26	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	~~N/A~~ 42.10
	G6M-02-01X	1205	54.32	89.38	NA	Y	Y	See well evaluation form	55.19
2 CV	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	59.03	66.88	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 **Date :** 10/7/19
Field Team Member: Kristen Essex **Weather:** Cloudy 70's
Water Level Meter Model: Solinst 101

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

Kristen

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	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
PFAS	50PZ-19-03	1144	45.10	52.85	Y	NA	Y	See well evaluation form	N/A
PFAS	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
PFAS	31PZ-19-01	0730	68.7	79.25	N	NA	Y	See well evaluation form	66.89
PFAS	50PZ-19-05	1124	44.40	52.80	Y	NA	Y	See well evaluation form	N/A
PFAS	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	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	0910	66.35	140.80	Y	NA	Y	See well evaluation form	66.64
CV	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 **Date :** 10/7/19
Field Team Member: Chris Vigneault **Weather:** Cloudy, 70-75°F
Water Level Meter Model: Solinst 101

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

Chris

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	136.81	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	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
not on 77.7 map	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	1015	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	92.27	N	N	Y	See well evaluation form	20.42 ?

Area 3 Synoptic Event, April 27, 2020

KGS

Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - Area 3 Synoptic (PFAS RI) **Date :** 4/27/2020

Field Team Member: Michael Spurlin **Weather:** 40-45°F light rain

Water Level Meter Model: Skinny Dipper A00225

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	1005	3.24	52.26	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 ded Tubing	14.97
	G6M-04-09X	0940	30.51	66.81	Y	–	Y	good ded tubing	30.87
	G6M-04-10X	0847	12.12	63.20	Y	–	Y	good Ded. Tubing	13.97
	G6M-04-10A	0842	11.36	41.81	Y	–	Y	good Ded. BP	13.3
	G6M-04-11X	0857	18.43	46.72	Y	–	Y	good casing loose Ded. Tubing	20.14
	G6M-04-13X	0837	13.14	41.70	Y	–	Y	good ded Tubing	15.18
	G6M-04-15X	0926	41.12	80.80	Y	–	Y	good ded. Tubing	43.04
	G6M-04-22X	0906	45.13	63.84	Y	–	Y	good ded tubing	46.57
	G6M-04-31X	0920	44.66	80.38	Y	–	Y	ded tubing Riser pipe loose	51.29
	G6M-07-02X	0814	13.09	29.64	Y	–	Y	ded BP	14.58
	G6M-13-05X	0720	13.49	56.18	Y	–	Y	ded tubing	14.97
	G6M-13-06X	0730	12.75	61.79	Y	–	Y	ded tubing	14.42
	G6M-95-19X	0759	11.09	58.67	Y	–	Y	ded tubing	13.04
	G6M-95-20X	0806	11.47	24.65	Y	–	Y	ded tubing	13.62
2	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 lock	N/A
	G6M-02-01X	1120	53.15	89.37	–	Y	Y	Road Box no threads	55.19
	G6M-04-01X	1130	51.25	75.79	–	Y	Y	Ded 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	Dent 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
3	G6M-03-07X								57.70
	G6M-04-02X								60.67
	G6M-04-04X								58.80
	G6M-13-03X								58.85
	50PZ-19-03								N/A
	50PZ-19-04								N/A
4	G6M-02-03X								58.15
	G6M-02-04X								60.13
	G6M-02-13X								61.63
	G6M-06-01X								
	G6M-13-02X								60.73
	G6M-97-28X								62.43
	50PZ-19-07								N/A
	31PZ-19-01								66.89
	50PZ-19-05								N/A
	50PZ-19-06								N/A
	G6M-02-06X								9.37
	G6M-02-07X								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

UGA plot 2

DP = dedicated pump
DT = dedicated tubing

UGA

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	57.70
	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	I	Injection cap stuck in place	
	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

WA p2of2

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
	G6M-04-05X	1038	52.97	112.74	✓		✓	DP	56.48
	G6M-04-06X	1053	59.54	106.48	✓		✓	DP	63.27
5	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	~~1059~~ 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							BA	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			-					

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								57.90
	30PZ-19-02								60.88
	30PZ-19-03								64.65
	30PZ-19-04								64.25
	G6M-03-07X								57.70
	G6M-04-02X								60.67
	G6M-04-04X								58.80
3	G6M-13-03X								58.85
	50PZ-19-03								N/A
	50PZ-19-04								N/A
	G6M-02-03X								58.15
	G6M-02-04X								60.13
	G6M-02-13X								61.63
4	G6M-06-01X								
	G6M-13-02X								60.73
	G6M-97-28X								62.43
	50PZ-19-07								N/A
	31PZ-19-01								66.89
	50PZ-19-05								N/A
	50PZ-19-06								N/A
	G6M-02-06X	1028	5.30	66.68	Y	-	Y	Good, 2" PVC SCH Tubing	9.37
	G6M-02-07X	1011	6.48	40.28	Y	-	Y	Good, 2" PVC SCH 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 (Union)	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
	G6M-04-08X	0800	4.98	92.12	Y	-	Y	Good, 2" PVC S/U Tubing	63.27
Nashua River	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 casing

KGS

Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens - Area 3 Synoptic (PFAS RI) **Date :** 4/27/2020

Field Team Member: BrA **Weather:** Rain, 37°F

Water Level Meter Model: Heron Slunny Dipper T

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 Gove nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 20VP-19-01 Date: 7/30/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 20	Driller: Jay Jumonville
Logger: Dave Kortjohn	Depth to Water: 17.0' bgs
Total Boring Depth: 21 ft. bgs (refusal)	Drilling Method: DPT Pump type: peristaltic
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 6712DT / SP22 tooling Tubing: HDPE
	YSI (model/serial number): Pro DSS / 17401163

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
17-21	0.12	0.75	16.6	7.26	232	8.06	55.8	654	1040	20VP-19-01-17-21	

Post Cal. Check Varience 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:

- step out boring completed to confirm refusal @ 21' bgs

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI (Rig #2)	Boring No.: 20VP-19-02 Date: 9/3/19; 9/4/19
Project No.: 1082-0011-531	Drilling Co.: TDS
Address: ABC 20/21 (Area 3)	Driller: Jay Jumonville Depth to Water: 9.0 ft BGS
Logger: Chris Vignola	Drilling Method: SP22 (with SP16 sized tooling put in afterwards) Pump type: Peristaltic Pump (Geopump)
Total Boring Depth: 34' BGS	Drilling Equip: Geoprobe 6712 DT Tubing: 1/4" HDPE
Turbidimeter (model/serial number): LaMotte 2020WE: 1828:0412	YSI (model/serial number): YSI Pro DSS: 18L100145

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged (gallons)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
9/3/19	9-13	0.29	1.0	14.0	6.29	295	7.30	101.5	10.59	1420	20VP-19-02-9-13	clear/little sand
9/4/19	19-23	0.61	1.0	14.3	6.91	417	6.16	67.6	652	0925	20VP-19-02-19-23	very light brown/cloudy FD taken ST: 0930
	29-33	0.93	1.25	15.0	7.32	618	2.93	-48.2	overrange	1030	20VP-19-02-29-33	brown/opaque
	34 ft Refusal										→	@1140, refusal was reached @34' BGS
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N				

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot 0.32/10 ft
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Refusal was reached @ 34' BGS

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 20VP-19-03 Date: 7/31/19 - 8-1-19
Project No.: 1082	Drilling Co.: TDS
Address: AOC20	Driller: Jay Jumonville
Logger: Dave Kortjohn/Garrett Hinebaugh	Depth to Water: 9.0' bgs
Total Boring Depth: 58'	Drilling Method: DPT Pump type: peristaltic
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 6712 Tubing: HDPE
	YSI (model/serial number): Pro DSS / 17401163

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	0.12	0.75	15.4	5.30	240	3.07	197.8	39.1	857	20VP-19-03-9-13	
19-23	0.92	~~1.00~~ 1.25 (D4)	17.2	6.10	173	8.92	183.0	29.3	1015	20VP-19-03-19-23	
29-33	0.72	1.25	19.4	6.64	191	4.84	-33.4	2523	1240	20VP-19-03-29-33	
39-43	1.02	1.50	20.1	6.55	474	7.35	-29.8	1754	1415	20VP-19-03-39-43	
49-53	1.32	1.80	15.4	6.44	283	1.8	-61.2	2152	940	20VP-19-03-49-53	09:40
~~54-58~~	1.60	2.02	18.4	7.02	994	2.63	-89.1	952	1200	20VP-19-03-59-63	refusal @ 58'BGS

Post Cal. Check Varience 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:

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 20VP-19-04 ~~19~~ Date: 7/22/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 20	Driller: Jay Jumonville Depth to Water: 21.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 56 ft. bgs (refusal)	Drilling Equip: Geoprobe 6712DT, SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we # 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
19-23	0.06	0.50	15.33	6.84	1832	9.51	175.8	10.79	1320	20VP-19-04-19-23	
29-33	0.36	~~1.00~~ 0.75 OK	14.71	6.34	1923	5.20	129.1	1253	1422	20VP-19-04-29-33	
39-43	0.66	1.25	14.48	6.50	1977	2.89	24.9	>4000	845	20VP-19-04-39-43	
49-53	0.96	1.50	14.75	6.74	1519	1.21	33.1	>4000	1108	20VP-19-04-49-53	

Post Cal. Check Varience 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:

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KOMAN Gov[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 20VP-19-05
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen
Logger: KGA	Drilling Method: DPT
Total Boring Depth: 22.5'	Drilling Equip: Geoprobe 7822
Turbidimeter (model/serial number): Lamotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Date: 7/22/19

Depth to Water: ~~[illegible]~~ 16'

Pump type: geotech/water

Tubing: HDPE

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
18-22	0.18	1.5	14.71	7.60	286	0.35	-12.1	2654	1220	20VP-19-05-18-22	geotech
Post Cal. Check Varience 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 ~~x2~~

Notes:
3-7' (Dry)
8-12' (Dry)
Refusal @ 22.5' (Bedrock) ~4" rock in sampler)

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Pease	Boring No.: 20VP-19-06	Date: 8/2/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: 61'	
Logger: VGL	Drilling Method: DPT	Pump type: Waterra	
Total Boring Depth: 156'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 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
8/2	63-67	0.18	1.0	16.47	7.21	1997	4.28	2.9	2280	1130	20VP-19-06-63-67	waterra
	73-77	0.48	1.0	17.50	7.16	2031	3.97	3.7	2490	1310	20VP-19-06-73-77	waterra
	83-87	0.78	1.0	17.31	7.21	2087	4.07	4.9	74,000	855	20VP-19-06-83-87	waterra
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	waterra
	103-107	1.38	2.0	17.79	7.23	2160	4.09	7.1	74,000	1340	20VP-19-06-103-107	waterra
	113-117	1.68	2.5	16.12	7.37	1917	1.39	-21.7	>74,000	835	20VP-19-06-113-117	waterra
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	waterra
	133-137	2.28	3.5	17.21	7.28	1987	1.80	-52.6	74,000	1450	20VP-19-06-133-137	waterra
8/7	143-147	2.58	3.5	17.56	6.95	1893	1.40	-43.5	74,000	1130	20VP-19-06-143-147	waterra
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	waterra
	Post Cal. Check Varience 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 (22)

Notes:
☆ Refusal @ 156'

KGS

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens 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: LGA / MM	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 157'	Drilling Equip: Geoprobe 7822 (SP22) Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 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
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	waterra
7/26	73-77	0.42	2.5	17.33	8.57	1624	1.04	-21.8	2263	0955	20VP-19-07-73-77	waterra
(MM)	83-87	0.72	3.25	19.24	8.55	1935	1.83	-37.7	886	1150	20VP-19-07-83-87	waterra
	93-97	1.02	3.75	insufficient Recharge for parameters					74,000	945	20VP-19-07-93-97	waterra
7/29 (MP)	103-107	1.32	4.25	20.96	7.01	1198	6.45	-22.2	74,000	1225	20VP-19-07-103-107	waterra
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	waterra
	123-127	1.92	3.0	21.12	7.19	1841	8.70	-38.1	74,000	1425/1420	20VP-19-07-123-127 / A3-VP-DUP-R1-20190729	waterra
7/31	133-137	2.22	2.75	18.96	6.86	1797	3.94	-53.5	74,000	1250	20VP-19-07-133-137	waterra
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	waterra
	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)	waterra
	Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (624)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: (53-57) Dry
☆ after 107' interval (hole collapse) offset and redrilled
☆ after 147' interval (hole collapse) offset and redrilled.

157' assumed refusal (discussed w/ Russ)

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 20VP-19-08 Date: 7/30/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 20	Driller: Jay Jumonville
Logger: Dave Korfjohn	Depth to Water: N/A
Total Boring Depth: 30'bgs (refusal)	Drilling Method: DPT
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 7712DT / SP22 tooling Pump type: N/A
	YSI (model/serial number): Pro DSS / 17401163 Tubing: ~~N/A~~ HDPE

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
				No samples collected							
Post Cal. Check Varience 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:

No water encountered before refusal @ 30' bgs

KGS

AOC 21

KOMAN Gov[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 21VP-19-01
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen
Logger: KWA	Drilling Method: DPT
Total Boring Depth: 95'	Drilling Equip: 7822 SP22
Turbidimeter (model/serial number): Lamotte 20 LOVE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Date: 7/23/19

Depth to Water: 21'

Pump type: geotech/water

Tubing: HDPE

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-DVP-R1-72319	
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	>4,000	1440	21VP-19-01-73-77	geotech
83-87	1.98	2.5	16.71	7.43	2156	2.07	-18.6	>4,000	1035	21VP-19-01-83-87	geotech
91-95	2.28	3.0	16.89	7.60	2173	2.31	-16.0	>4,000	1425	21VP-19-01-91-95	geotech

7/23

Post Cal. Check Varience 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: (13-17) Dry'

95' refusal

KGS

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293 Boston Post Road, Marlborough, MA

KOMAN Gove[illegible]nt 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 Jumonville Depth to Water: ~~13.05~~ 13.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic/ waterra
Total Boring Depth:	Drilling Equip: Geoprobe 6712 DT/SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 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 (waterra
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	1744	1.49	-193.2	>4000	1330	21VP-19-02-103-107	
Post Cal. Check Varience 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:

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 21VP-19-02 Date: 7/29/19
Project No.: 1082	Drilling Co.: TPS
Address: AOC 21	Driller: Jay Jumonville Depth to Water: 13.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 129' bgs (refusal)	Drilling Equip: Geoprobe 6712DT/SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-04:2	YSI (model/serial number): ~~E56 MDS/4268~~ OK Pro DPS/17H01163

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
113-117	3.12	3.50	21.7	7.25	1843	2.03	-183.2	>4000	1000	21VP-19-02-113-117	
123-127	3.42	3.50	21.2	6.95	1497	1.69	-122.7	>4000	1245	21VP-19-02-123-127	

Post Cal. Check Varience 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

KGS

AOC 30

KOMAN Gov[illegible]ent Solutions, LLC

Vertical Groundwater Profiling Log

Project: Davis	Boring No.: 30VP-19-01	Date: 7/17/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~19'	
Logger: WA	Drilling Method: DPT	Pump type: geotech	
Total Boring Depth: 32.5'	Drilling Equip: geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): Eutech 2020we 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
18-22	0.09	0.5	16.29	8.09	69	6.31	-13.1	1638	1025	30VP-19-01-18-22	geotech
28-32	0.39	1.0	16.89	7.79	89	5.26	-17.1	>4,000	1140	30VP-19-01-28-32	geotech
Post Cal. Check Varience 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:

Refusal @ 32.5'

KGS

KOMAN Gov[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-02 Date: 7/18/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen Depth to Water: 17'
Logger: KGA	Drilling Method: DPT Pump type: geotech
Total Boring Depth: 45'	Drilling Equip: Geoprobe 7822 (SP22) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2083- 5014	YSI (model/serial number): YSI 650XL 11B100184

7/18

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
18-22	0.15	1.0	11.73	7.97	32	0.66	-2.2	38.66	1400	30VP-19-02-18-22	geotech
28-32	0.45	1.0	12.91	7.63	62	1.97	-14.1	239	905/10	30VP-19-02-28-32/A3-VP-DUP-7AA	geotech
38-42	0.75	1.5	13.87	7.59	70	1.39	-19.7	621	1456	30VP-19-02-38-42	geotech

Post Cal. Check Varience 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 (x2)

Notes:

Refusal @ 45'

KGS

KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-03 Date: 7/8/19
Project No.: PFAS RI	Drilling Co.: TDJ
Address: Area 3	Driller: Jay
Logger: KMA / DEK	Depth to Water: 69'
Total Boring Depth: 119' bgs (refusal)	Drilling Method: DPT Pump type: bladder
Turbidimeter (model/serial number): LaMotte 2020e 5083-5014	Drilling Equip: Geoprobe 6712 (SP22) (Ki, L) Tubing: HDPE
	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°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
73-77	0.30	0.50	18.62	7.74	55	7.64	226	74,000	1110	30VP-19-03-73-77	bottom
83-87	0.60	1.0	18.67	6.69	96	9.07	35.6	74,000	1400	30VP-19-03-83-87	bottom
93-97	0.90	1.5	17.83	5.96	216	8.71	169.4	>4,000	1033	30VP-19-03-93-97	
103-107	1.20	1.75	16.46	6.53	378	8.51	148.3	1603	942	30VP-19-03-103-107	
113-117	1.50	2.25	17.07	6.03	388	8.45	90.7	>4000	1430	30VP-19-03-113-117	

Post Cal. Check Varience Observed (Y/N):

Notes: 63-67' (~~no~~ H_2O)

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

KGS

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-04 Date: 7/9/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen Depth to Water: ~68'
Logger: VGA	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 135'	Drilling Equip: Geoprobe 7822 DT (SP22) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020-E 5983-3014	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
7/9	73-77	0.27	1.5	15.59	7.52	61	9.97	39.8	74,000	950/955	30VP-19-04-73-77/A3	VP-DUP-RI-7/9/19
	83-87	0.57	1.5	18.86	6.03	64	5.83	51.2	74,000	1235	30VP-19-04-83-87	waterra
	93-97	0.87	1.5	18.69	6.19	71	4.21	69.7	74,000	1430	30VP-19-04-93-97	waterra
7/10	103-107	1.17	3.0	14.93	7.09	60	3.42	36.7	74,000	1025*	30VP-19-04-103-107	waterra *VGS/MSI
	113-117	1.47	2.0	15.89	7.01	58	3.37	35.1	74,000	1340	30VP-19-04-113-117	waterra
7/11	123-127	1.77	2.0	16.97	7.00	56	3.67	41.0	74,000	955	30VP-19-04-123-127	waterra
	131-135	2.07	2.5	16.99	7.18	55	3.79	46.1	74,000	1335	30VP-19-04-131-135	waterra

Post Cal. Check Varience 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:

* Refusal @ 135'

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-05	Date: 7/16/19	
Project No.: PFAS RF	Drilling Co.: TPS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~21'	
Logger: LMA	Drilling Method: DPT	Pump type: geotech/whale	
Total Boring Depth: 49'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020e 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
20-24	0.09	1.0	14.71	7.87	1769	6.05	-17.1	2240	1000	30VP-19-05-20-24	geotech
30-34	0.39	1.0	14.68	7.70	1890	6.00	-23.1	74,000	1110	30VP-19-05-30-34	geotech
40-44	0.69	1.0	14.89	7.50	1900	5.70	-31.7	74,000	1225	30VP-19-05-40-44	geotech
45-49	0.99	1.5	14.99	7.21	1871	4.90	-30.1	74,000	1430	30VP-19-05-45-49	geotech

Post Cal. Check Varience 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 (x2)

Notes:

* Refusal @ 49'

KGS

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 30VP-19-06	Date: 7/12/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~ 70'	
Logger: MA	Drilling Method: DPT	Pump type: Bennett	
Total Boring Depth: 89'	Drilling Equip: Geoprobe 7822 (SP16) (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100486		

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
73-77	0.2 L	0.5	18.05	8.10	614	1.53	-32.1	74.00 T	920	30VP-19-06-73-77	air in tubing
83-87	0.5 L	1.0	18.31	7.97	632	1.29	-41.6	74.00 T	1140	30VP-19-06-83-87	water
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (02)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 89'

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AOC 31

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Vertical Groundwater Profiling Log

Page (1 of 2)*

Project: Devens	Boring No.: 31VP-19-01
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen
Logger: VGA / MAM	Drilling Method: DPT
Total Boring Depth: 145.5	Drilling Equip: Geoprobe 7822 (SP22)
Turbidimeter (model/serial number): LaMotte 2020we 508 7-5014	YSI (model/serial number): YSI 630XL 11B100186

Date: 9/3/19
Depth to Water: 62'
Pump type: waterra
Tubing: HDPE

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
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-DUP-R1-9519 @ 1355)*	water
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 Varience 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:

Hole collapsed @ ~ 145/150'
will offset and redrill tomorrow

KGS

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Vertical Groundwater Profiling Log

Page 2 of 2 *

Project: Devens	Boring No.: 31VP-19-01 (Cont.) Date: 9/17/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen Depth to Water: 62'
Logger: MGA/MAM	Drilling Method: DPT Pump type: Waterra
Total Boring Depth: 195.5'	Drilling Equip: Geoprobe 7822 (SP22) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 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
163-167	3.15	3.5	16.01	6.77	179	3.47	101.6	79,090	1445	31VP-19-01-163-167	water
173-177	3.45	3.50	Minimal Recharge/dried sample						1130	31VP-19-01-173-177	Waterra
183-187	3.75	4.0	14.48	8.05	395	2.25	31.6	1567	1415	31VP-19-01-183-187	Waterra
195-195.5	4.05	4.25	18.48	7.99	417	1.79	11.2	>4,000	1240	31VP-19-01-195-195.5	Waterra

Post Cal. Check Varience 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:

See page 1

Refusal @ 195.5 ft

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Vertical Groundwater Profiling Log

Project: FT Devens RI	Boring No.: 31VP-19-04 Date: 8-5-14
Project No.: 1082	Drilling Co.: TDS
Address: AOC 34 - Airfield	Driller: Jay Jumonville 69.00' bgs
Logger: C. Hardbarger/D. Kortjohn	Drilling Method: DPT 6712 Depth to Water: ~~57.10~~ DTW
Total Boring Depth: 132 ft. bgs (refusal)	Drilling Equip: GeoProbe Pump type: Hydra
Turbidimeter (model/serial number): LaMotte 2020 SN-5083	YSI (model/serial number): YSI DSS/18L100145 Tubing: ITOPF

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC ~~(µS/cm)~~ mS/cm	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	633.7	10:30	31VP-19-04-69-73	
79-83	0.5	1.5	21.3	6.71	0.168	5.23	-45.9	824.50	1215	31VP-19-04-79-83	
89-93	0.5	2	21.6	6.70	0.155	3.29	-68.6	2350.71	1420	31VP-19-04-89-93	
99-103	1.38	2.25	23.0	6.80	0.088	7.29	7.3	2354	950	31VP-19-04-99-103	
109-113	1.68	2.50	19.0	6.68	0.092	6.77	-7.6	>4000	1258	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	1320	31VP-19-04-119-123	
128-132	2.25	2.50	21.7	7.39	0.222	1.18	-197.8	>4000	1130	31VP-19-04-128-132	
Post Cal. Check Varience 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 step off to collect sample from 59-63'.~~ PK

KGS

KOMAN Gove nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI (Rig #2)	Boring No.: 31VP-19-05 Date: 9/4/19 | 9/5/19
Project No.: 1082-~~001~~ 0011-531	Drilling Co.: TDS
Address: AOC 20/21 (Area 3)	Driller: Jay Jamesville
Logger: Chris Vigeola	Depth to Water: 7' BGS
Total Boring Depth: 37.5' BGS	Drilling Method: SP22 (with SP16 sized tooling put in afterwards) Pump type: Peristaltic Pump (Geopump)
Turbidimeter (model/serial number): LaMotte 2020 WE : 1828-042	Drilling Equip: Geoprobe ~~DT~~ 6712 DT Tubing: ¼" HDPE
	YSI (model/serial number): YSI Pro DSS: 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
9/4/19											
4-8	0.032	0.50	~~6.65~~ 17.0 (cv)	6.65	86	8.52	29.5	1525	1405	31VP-19-05-4-8	brown/cloudy
14-18	0.36	1.00	12.3	6.66	84	8.50	122.1	17.7	0900	31VP-19-05-14-18	clear/very little sand
24-28	0.68	1.00	15.0	6.82	81	7.98	33.7	1568	1025	31VP-19-05-24-28	brown/cloudy
33.5-37.5	1.00	1.50	11.9	6.89	86	8.47	55.2	3777	~~3777~~ 1140 (cv)	31VP-19-05-33.5-37.5	brown/cloudy-opaque
Refusal @37.5 BGS											Refusal @ 37.5' BGS
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot 0.32/10 Ft
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Hit refusal @ 37.5' BGS

Equipment blank taken on 09/05/19 @ 12 ; A3-VP-EB-R2-090519

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: SVP-19-06	Date: 9/24/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~12'	
Logger: VMT	Drilling Method: DPT	Pump type: geotech	
Total Boring Depth: 87'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020WE 6083-5014	YSI (model/serial number): YSI 650XL 11B101486		

	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
9/24	13-17	0.15	0.5	12.11	7.58	292	9.77	37.7	1282	1030	SVP-19-06-13-17 / AS-V2-DUP-R1-9241	geotech
	23-27	0.45	1.0	11.79	6.07	398	9.18	31.9	659	1120	SVP-19-06-23-27	geotech
	33-37	0.75	1.0	11.80	6.13	420	9.00	30.6	437	1210	SVP-19-06-33-37	geotech
	43-47	1.05	1.5	11.97	6.20	437	8.29	28.9	35.37	1350 ★	SVP-19-06-43-47 ★ MS/MSD	geotech
9/25	53-57	1.35	2.0	10.88	7.09	390	8.07	33.4	12.71	905	SVP-19-06-53-57	geotech
	63-67	1.65	2.5	11.02	6.49	390	7.93	34.9	10.90	1040	SVP-19-06-63-67	geotech
	73-77	1.95	2.5	11.18	6.66	347	7.80	37.8	2.59	1305	SVP-19-06-73-77	geotech
9/26	83-87	2.25	2.5	11.09	6.50	387	6.49	47.1	1247	1015	SVP-19-06-83-87	geotech

Post Cal. Check Varience 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 X

Notes:

★ 87' refusal

KGS

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 31VP-19-07	Date: 9/26/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~10'	
Logger: VM	Drilling Method: DPT	Pump type: geotech	
Total Boring Depth: 92'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): Lamotte 2020we 5083- 5014	YSI (model/serial number): YSI 650X2	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
9/26 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
9/27 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
9/30 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-90119
10/1 88-92	2.46	3.0	10.55	6.93	327	4.90	31.7	74,000	1045	31VP-19-07-88-92	geotech
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X4)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 92'

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EB1255

KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 31VP-19-~~08~~ 08	Date: 10/2/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~~4.2'~~ 9' open hole	
Logger: KGA + Kristen Esser	Drilling Method: DPT	Pump type: geotech	
Total Boring Depth: 90.5' bgs	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): Lamotte 2020 WE 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
10/2	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	>4,000	1405	31VP-19-08-33-37	geotech
10/3	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
10/4	73-77	2.04	2.5	12.2	5.02	1.151	3.76	196.2	9.86	0930	31VP-19-08-73-77	
	83-87	2.34	2.5	12.4	7.54	1.156	2.97	118.4	15.70	1140	31VP-19-08-83-87	

Post Cal. Check Varience 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: Hit refusal @ 90.5' bgs

SP16 casing inside 22 casing

KGS

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AOC 50

KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 50VP-19-01
Project No.: 1082	Date: 8/28/19 + 8/29/19
Address: AOC 50	Drilling Co.: TDS
Logger: Kristen Esther	Driller: Jay Jumonville
Total Boring Depth: 72' bgs	Depth to Water: 10.0' bgs
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Method: DPT
	Pump type: Peristaltic / Waterra
	Drilling Equip: Geoprobe 6712DT / SP22 tooling
	Tubing: HDPE
	YSI (model/serial number): Pro DSS / 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
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
A-23	0.45	0.60	17.0	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-R2-083319	Field Dup for 50VP-19-01-09-13
29-33	0.75	1.00	19.5	5.50	0.459	3.44	68.5	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	
8/29 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	3473	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 Varience 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

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: SOVP-19-02
Project No.: 6082	Date: 8/26/19 + 8/27/19
Address: AOC 50	Drilling Co.: TDS
Logger: Kristen Esser	Driller: Jay Jumonville
Total Boring Depth: 58' bgs	Drilling Method: DPT
Turbidimeter (model/serial number): Lamotte 2020 we 1828-0412	Drilling Equip: Geoprobe 6712/SP22 tooling
	YSI (model/serial number): Pro DSS/18L100145
	Depth to Water: 10.2 ftbgs
	Pump type: peristaltic Waterra
	Tubing: HDPE

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	1456	1238	SOVP-19-02-09-13	
19-23	0.45	0.6	16.7	5.76	0.126	4.83	57.8	overrange >4000	1358	SOVP-A-02-19-23	
8/27 29-33	0.75	1.0	11.7	5.55	0.119	6.52	64.5	3060	0841	SOVP-19-02-29-33	
8/27 39-43	1.05	1.2	14.4	5.91	0.0716	5.16	52.1	730	1014	SOVP-19-02-39-43	
49-53	1.35	1.5	15.7	6.31	0.608	3.03	-8.6	643	1205	SOVP-19-02-49-53	
~~59-63~~	~~1.65~~									~~SOVP-19-02-59-63~~	MS/MSD
54-58	1.5	1.6	20.6	7.01	0.689	4.31	3.4	overrange >4000	1430	SOVP-19-02-54-58	MS/MSD Refusal @ 58' bgs Waterra

Post Cal. Check Varience Observed (Y/N):

Notes: Refusal at 58' bgs
MS/MDS taken at 54-58' bgs

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

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: SOVP-19-03 Date: 8/23/19+
Project No.: 1082	Drilling Co.: TDS
Address: AOC 50	Driller: Jay Jimonville
Logger: Dave Kortjohn / Kristen Esser	Depth to Water: 10.0' bgs
Total Boring Depth: 56' bgs	Drilling Method: DPT Pump type: peristaltic/ Waterra
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 6712DT / SP22 tooling Tubing: HDPE
	YSI (model/serial number): Pro DSS / 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
14-18	~~0.29~~ ~~0.15~~ (KE)	0.75	14.4	5.46	1308	8.16	139.4	~~5.71~~	950	SOVP-19-03-14-18	
24-28	~~0.54~~ ~~0.45~~ (KE)	1.0	14.0	5.98	0.719	4.87	25.9	2750	1100	SOVP-19-03-24-28	
34-38	~~0.84~~ ~~0.75~~ (KE)	1.25	14.10	6.27	0.076	4.51	35.9	2764	1230	SOVP-19-03-34-38	Waterra
44-48	~~1.14~~ ~~1.05~~ (KE)	1.5	14.1	6.15	0.100	5.22	47.6	3391	1350	SOVP-19-03-44-48	Waterra
~~54-56~~ (8/26 KE)	~~1.34~~	~~2.2~~	~~11.4~~	~~6.16~~	~~0.183~~	~~3.02~~	~~11.3~~	~~74000~~	0830 (8/26 KE)		~~Refusal @ 54'+ Waterra~~ (KE 8/26)
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (KE) x2
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (KE)

Notes: See 8/26/19 Log for 54-56 ft bgs + 9-13 ft bgs

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 50VP-19-03 Date: 8/26/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 50	Driller: Jay Jumonville
Logger: Kristen Esser	Depth to Water: 10.8 'bgs
Total Boring Depth: 56' bgs	Drilling Method: DPT Pump type: waterra / peristaltic
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 6712 DT/SP22 tooling Tubing: HDPE
	YSI (model/serial number): Pro DSS / 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
54-56	1.34	2.2	11.4	6.16	0.183	3.02	11.3	overrange 74000	0830	50VP-19-03-54-56	waterra Hit refusal @ 56' bgs
9-13	0.15	0.4	14.6	5.31	2.512	6.97	119.8	25.2	1005	50VP-19-03-09-13	Peristaltic; offset from initial boring
9-13	0.15	0.5	15.8	5.27	2.511	7.11	116.4	25.1	1010	~~A3-VP-EB-R2-082619~~ A3-VP-DUP-R2-082619	Peristaltic; offset from initial boring ~~Field Dup~~
Post Cal. Check Varience 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:
- Hit refusal at 56' bgs
- 9-13' bgs offset from original bore hole
- Field Dup taken @ 9-13' bgs
- See 8/23 log for 14-48' bgs

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 50VP-19-04 Date: 7/17/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 50	Driller: Jay Jumonville
Logger: Dave Kortjohn	Depth to Water: ~~46.0~~ 45.01 bgs
Total Boring Depth: 94 ft. bgs (refusal)	Drilling Method: DPT Pump type: waterra
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 6712DT / SP22 tooling Tubing: HDPE
	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
49-53	0.24	0.75	17.06	5.89	211	6.59	112.7	2541	1015	50VP-19-04-49-53	A3-VP-DUP-R2-071719 @1020
59-63	0.54	1.50	17.25	4.76	1170	6.76	152.3	2358	1142	50VP-19-04-59-63	
69-73	0.84	1.75	17.52	5.01	1682	6.30	78.8	2120	1345	50VP-19-04-69-73	
79-83	1.14	2.00	15.63	6.64	1106	6.67	119.5	>4000	1010	50VP-19-04-79-83	
89-93	1.44	2.25	17.14	7.08	694	6.22	-102.6	>4000	1310	50VP-19-04-89-93	

Post Cal. Check Varience 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:

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Vertical Groundwater Profiling Log

Project: Dovers	Boring No.: SOVP-19-05 Date: 10/18/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen Depth to Water: ~61'
Logger: VMA	Drilling Method: DPT Pump type: submerg
Total Boring Depth: 107'	Drilling Equip: Geoprobe 7822 (SP22) Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020WE 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°)	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	SOVP-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	SOVP-19-05-73-77/A3-VP-DVP-RI-101819	
83-87	0.78	1.5	13.19	6.07	1769	4.97	83.1	74,000	1330	SOVP-19-05-83-87	water
93-97	1.08	2.5	13.07	6.11	1470	4.21	99.7	74,000	840	SOVP-19-05-93-97	water
103-107	1.38	2.5	13.29	6.18	1639	3.97	126.1	74,000	1040	SOVP-19-05-103-107	water
Post Cal. Check Varience Observed (Y/N):											

10/18

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (SP)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot (SP)

Notes:

✱ tooling deflected / refusal after 107' sample (107' Final depth)

✱SP-16 inside SP-22 casing

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: SOVP-19-06 (P2)	Date: 7/1/19 (Event 19-03)	
Project No.: Devens	Drilling Co.: TDS		
Address: Area 3	Driller: Jay	Depth to Water: ~57'	
Logger: V.L.A	Drilling Method: DPT	Pump type: waterra	
Total Boring Depth: 96'	Drilling Equip: Geoprobe 6712 (SP22) (Rig 2)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 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
~~63-67~~ 67	0.30	0.50	18.71	7.79	520	9.69	0.9	74,000	10.45	SOVP-19-06-63-67	waterra
73-77	0.60	1.0	19.27	6.81	739	4.67	0.4	74,000	1315	SOVP-19-06-73-77	waterra
83-87	0.99	1.25	18.69	6.79	821	3.97	1.6	74,000	830/835	SOVP-19-06-83-87/A3-VP-DUP-R2-7219	
92-96	1.20	1.5	18.91	6.83	797	5.06	2.9	74,000	1145	SOVP-19-06-92-96 (X) MS/MSD	waterra

Post Cal. Check Varience 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 X (X2)

Notes:

~ 200' away DTW was 56.45' from 667-13-03X

(X) Refusal @ 96'

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: SOVP-19-07	Date: 10/7/19, 10/8/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Mike Allen	Depth to Water: ~62'	
Logger: WA / MM	Drilling Method: DPT	Pump type: Waterra	
Total Boring Depth: 164'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): Lamotte 2020we 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°)	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	SOVP-19-07-63-67	waterra
	73-77	0.45	3.0	14.14	6.54	242	9.30	76.0	74,000	1205	SOVP-19-07-73-77	waterra
	83-87	0.75	2.0	14.30	6.67	269	8.70	79.6	74,000	1330	SOVP-19-07-83-87	waterra
10/8/19	93-97	1.05	~~1.25~~ 1.25	minimal		recharge. Direct sample				1050	SOVP-19-07-93-97	waterra
	103-107	1.35	2.00	14.39	6.84	296	6.60	~~50.0~~ 50.0	74,000	1410	SOVP-19-07-103-107,	waterra
10/9	113-117	1.65	3.0	14.11	6.63	238	7.80	67.1	74,000	945/950	SOVP-19-07-113-117 / A3-VP-DUP-R1-10/9/19	waterra
	123-127	1.95	3.0	14.26	7.11	299	7.30	74.1	74,000	1300	SOVP-19-07-123-127	waterra
10/10	133-137	2.25	3.0	14.49	6.79	320	6.97	81.7	74,000	1100	SOVP-19-07-133-137	waterra
	143-147	2.55	3.0	14.11	6.69	301	6.77	79.2	74,000	1410/1415	SOVP-19-07-143-147	waterra
10/14	153-157	2.85	3.0	14.50	6.80	389	7.03	91.6	74,000	1125*	SOVP-19-07-153-157 A3-VP-DUP-R1-10/10/19	
	Post Cal. Check Varience Observed (Y/N):											
10/11	160-164	3.15	2.0	14.7	6.97	421	6.50	102.6	74,000	955/1000	SOVP-19-07-160-164 / A3-VP-DUP-R1-10/15/19	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (XL)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot X

Notes:

★ detection @ 155' unable to sample. will offset and try new hole to 157' next day

★ SP+tb inside SP22 casing

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 50VP-19-08	Date: ~~9/6/19~~ 9/6/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Jay (9/10 Matt)	Depth to Water: 8'	
Logger: KGA	Drilling Method: DPT ~~67120T~~	Pump type: geotech	
Total Boring Depth: 83'	Drilling Equip: Geoprobe 67120T (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): Lamotte 2020WE ~~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°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
9/6	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
9/10	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

Post Cal. Check Varience 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 ~~X~~

Notes:
☆ Stopped @ 83' due to nearby 80-90' screened well

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: SOVP-19-09-	Date: 8/16/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: 42'	
Logger: WGA	Drilling Method: DPT	Pump type: Waterra	
Total Boring Depth: 107.5'	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 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
8/16	53-57	0.45	1.5	15.32	7.83	77	1.60	16.9	2200	1135/1140	SOVP-19-09-53-57/A3-VP-DVP-RI-81619	
8/19	63-67	0.75	1.5	13.67	6.94	70	3.97	17.3	1930	855	SOVP-19-09-63-67	Waterra
	73-77	1.05	2.5	14.97	7.03	68	2.96	18.0	74,000	1030	SOVP-19-09-73-77	waterra
	83-87	1.35	3.0	14.87	6.00	64	1.21	45.3	74,000	1220	SOVP-19-09-83-87	waterra
8/14	93-97	—	no water accum, extremely fine sediment clogging screen / unable to sample									waterra
	103-107	1.95	2.0	15.21	6.31	63	1.87	59.0	74,000	1210	SOVP-19-09-103-107	waterra
•	43-47	0.15	1.5	16.07	7.09	84	2.63	12.9	384	1035	SOVP-19-09-43-47	waterra

Post Cal. Check Varience 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:
• offset for 43-47' interval
☆ Refusal @ 107.5'

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Revere	Boring No.: SOVP-19-10 Date: 8/14/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Alfred Allen Depth to Water: 52'
Logger: VMA	Drilling Method: DPT Pump type: waterra
Total Boring Depth:	Drilling Equip: Geoprobe 7822 (SP22) Tubing: TF HDPE
Turbidimeter (model/serial number): Hach 2100Q 6053-5014	YSI (model/serial number): YSI 650 XL 16B100486

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
8/14 53-57	0.15	1.0	15.93	7.01	278	2.71	-8.8	74,000	1145	SOVP-19-10-53-57	waterra
63-67	0.45	2.0	14.07	6.15	107	2.43	34.0	2630	1340	SOVP-19-10-63-67	waterra
73-77	0.75	1.5	17.55	6.55	91	0.90	31.7	74,000	850	SOVP-19-10-73-77	waterra

Post Cal. Check Varience 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 (SP22)

Notes:

☆ Refusal @ 79'
☆ offset and redrilled Refusal @ 75.5'

KGS

1365

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: SOVP-19-11	Date: 8/23/19 - 8/26/19 - 8/27/19 - 8/28/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen	Depth to Water: ~41'	
Logger: LHA / CLV	Drilling Method: DPT	Pump type: Waterra	
Total Boring Depth: 115' BGS	Drilling Equip: Geoprobe 7822 (SP22)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 2081-2014	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
8/23	43-47	0.18	2.0	17.68	8.01	48	9.78	15.8	2046	1135	SOVP-19-11-43-47	water
8/26	53-57	0.50	2.5	13.33	8.02	42	9.88	63.8	(overrange) ++++	0930	SOVP-19-11-53-57	brown/opaque
	63-67	0.82	2.5	15.52	5.68	~~53.0~~ 20 (cw)	7.87	53.0	(overrange) ++++	1125	SOVP-19-11-63-67	gray brown/opaque
	73-77	1.14	2.5	16.62	5.61	44	3.32	38.0	(overrange) ++++	1525	SOVP-19-11-73-77	gray brown/opaque
8/27	83-87	1.46	2.5	14.12	8.20	40	9.91	76.2	(overrange) ++++	0940	SOVP-19-11-83-87	dark brown/opaque
	93-97	1.78	3.0	15.40	6.57	44	9.63	42.1	(overrange) ++++	1220	SOVP-19-11-93-97	dark brown/opaque
8/28	103-107	2.10	3.0	15.91	7.34	145	1.63	47.6	(overrange) ++++	0945	SOVP-19-11-103-107	light gray/brown/opaque
	111-115	2.36	3.5	18.26	7.61	156	4.94	24.1	(overrange) +++	1230	SOVP-19-11-111-115	light gray/cloudy
Post Cal. Check Varience 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 (x2)

Notes:

8/28/19: hit refusal @ 115' BGS

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: SOV2-19-12	Date: 8/9/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address: Area 3	Driller: Alfred Allen		
Logger: KGA	Drilling Method: DPT	Depth to Water: ~52	
Total Boring Depth: 97.5'	Drilling Equip: Geoprobe 7822 (5722)	Pump type: Waterra	
Turbidimeter (model/serial number): LaMotte 2020we 5283-5014	YSI (model/serial number): YSI 650XL 11B100186	Tubing: HDPE	

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	SOV2-19-12-53-57	Waterra
63-67	0.45	1.5	16.44	6.26	66	9.70	33.0	74,000	1335	SOV2-19-12-63-67	Waterra
73-77	0.75	1.5	15.76	6.88	92	8.54	26.9	74,000	900	SOV2-19-12-73-77	Waterra
83-87	1.05	2.5	16.07	6.73	94	8.37	25.1	74,000	1145	SOV2-19-12-83-87	Waterra
93-97	1.35	2.5	16.47	6.86	99	8.19	23.1	74,000	1340/1345	SOV2-19-12-93-97/A3-UP-DUP-R1-8124	

8/9
8/12

Post Cal. Check Varience 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 (62)

Notes:

☆ Refusal @ 97.5'

KGS

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 50VP-19-13 Date: 8/12/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 50	Driller: Jay Jumonville Depth to Water: 68.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 181 ft. bgs (refusal)	Drilling Equip: Geoprobe 6712DT / SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): Pro DSS / ~~17401163~~ (DE) 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~~ (DE) 85.0	691	917	50VP-19-13-99-103	
109-113	1.35	1.50	19.2	6.84	328	3.96	~~27.0~~ (DE)	>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/MSD
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 Varience 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:

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Vertical Groundwater Profiling Log

(Page 2 of 2)

Project: Devens	Boring No.: SOVP-19-13 (cont.) Date: 8/20/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: Area 3	Driller: Jay
Logger: KLA	Depth to Water: 68'
Total Boring Depth: 181' (refusal)	Drilling Method: DPT Pump type: bladder
Turbidimeter (model/serial number): LaMotte 2020we 5083 - 5014	Drilling Equip: Geoprobe 6712DT (SP22) Tubing: HDPE
	YSI (model/serial number): YSI650XL 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
164-168	3.00	4.0	17.90	7.01	369	1.97	-18.9	74,000	920	SOVP-19-13-164-168	water
174-178	3-30	4.0	17.77	6.89	372	2.39	-39.1	74,000	1325	SOVP-19-13-174-178	water

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (60.2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot X

Notes:

* Refusal @ 181' (8/21)

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Vertical Groundwater Profiling Log

Project: Devens - AOC 50 Western Plume Delineation	Boring No.:	G6M-18-01	Date: 10/25/2018
Project No.: 1082-0005-005	Drilling Co.:	Cascade	
Address: Former Moore Army Airfield, Devens MA	Driller:	Christopher Aldrich	Depth to Water: 60.67
Logger: Brett Anchukaitis	Drilling Method:	Direct Push	Pump type: Hydrolift II Waterra
Total Boring Depth: 118 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):	YSI 556 MPS	

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
110-114	1.6	2.3	10.98	6.99	114	6.77	20.4	687	0830	G6M-18-01-GW-110-114	

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:

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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): 06H2823AL		

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
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	[redacted]0.84	1.50	11.28	5.97	145	4.50	124.4	2385	1115	G6M-18-01-GW-80-84	FRS 80'-84' DTW 61ft
90-94	1.06	2.00	12.19	6.11	76	5.27	60.0	overrange HHH	1410	G6M-18-01-GW-90-94	90'-94' DTW: 61ft
100-104	1.38	2.50	12.28	6.33	157	4.25	32.6	overrange HHH	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: purging a bit extra (double ~~the~~ of 2 well volumes) as it is extremely silty and a slow flow rate would allow silt to partially settle and clog tubing/valve.

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~~3 PFAS~~
~~94 VOC~~
~~3 VOC 94 PFAS on COC~~

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Vertical Groundwater Profiling Log

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):	06H2823AL	

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 SP16
60-64	NA	–	–	–	–	–	–	–	1100	18-02-60-64	~~dry~~
64-68	~~0.86 0.96 gal~~ (EV)	1.90 gal	14.63	6.34	80	7.32	137.	785	1253	18-02-64-68	DTW: 63.8
74-78	~~0.50 2.71 gal~~ (EV)	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 >1111	~~1045~~ 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 @ Rinsate 1448
~~VOA 128~~											

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

10/22/18

10/23/18

Notes: 60-64 DTW: 62.6 DTB: 64.1 > not enough water to extract; 2 attempts

10/23/18 sand clogging lines, took extra time to sample

- overpurged 64-68, 74-78: ~~thought we were~~ to make sure sand/silt gets purged (and the rest)

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Calibration Sheets

KGS

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:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0850		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/2019	1,494 µs/cm°	1,413 µS/cm°	19.23	1,504 µs/cm°	1,413 µs/cm°	18.56	±10 µS/cm
pH (7)	02/29/2020	6.85	7.00	19.18	7.13	7.00	18.19	± 0.3 pH *
pH (4)	09/30/2019	3.92	4.00	19.21	4.00	4.00	17.85	± 0.3 pH *
pH (10)	12/31/2019	10.04	10.01	19.19	9.99	10.00	18.65	± 0.3 pH *
ORP (240 mv)	10/31/2022	242.8	240.0	19.11	242.2	240.0	18.27	±10 mv
Dissolved Oxygen (%)	–	102.4	100	–	87.6	100	–	-
Dissolved Oxygen (mg/L)	–	10.1	8.89	–	8.92	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: [signature] **Date:** 10/22/18

KGS

Field Instrument Calibration Log

Date: 10/23/18 **Weather:** 45°F Cloudy, afternoon rain

Project/Site Name: AOC 50 Vertical Profiling **Instrument:** YSI 556 MPS

Calibrated By: Chris Vigwla **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0545		Cal. Temperature °C	Afternoon Calibration Time 1730		Cal. Temperature °C	Post Cal. Criteria
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	14.72	± 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: [signature] **Date:** 10/23/18

KGS

Field Instrument Calibration Log

Date: 10/24/18 **Weather:** 50° Partly Sunny, some light rain

Project/Site Name: AOC Vertical Profiling **Instrument:** YSI 556

Calibrated By: Chris Vignola **Serial Number:** 06142823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/2018	1,477µS/cm°	1,413µS/cm°	14.24	1,470µS/cm°	1,413µS/cm°	12.11	±10 µS/cm
pH (7)	02/29/2020	6.98	7.00	15.05	6.99	7.00	11.98	± 0.3 pH *
pH (4)	09/30/2019	3.94	4.00	14.03	3.91	4.00	11.78	± 0.3 pH *
pH (10)	12/31/2019	9.96	10.00	14.65	9.94	10.00	12.02	± 0.3 pH *
ORP (240 mv)	10/31/2022	246.1	240.0	14.82	243.5	240.0	12.09	±10 mv
Dissolved Oxygen (%)	–	98.6	100	–	97.1	100	–	-
Dissolved Oxygen (mg/L)	–	10.5	8.83	–	10.21	8.83	–	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes:

*** pH Unit with pH 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 10/24/18

KGS

Field Instrument Calibration Log

Date: 10/25/18 **Weather:** Cloudy, 34°F

Project/Site Name: AOCSO PFAS Vertical Profiling **Instrument:** ~~YSI~~ YSI 556MPS

Calibrated By: BrA **Serial Number:**

Parameters	Solution Expiration Date	Morning Calibration Time 0430		Cal. Temperature °C	Afternoon Calibration Time 1230		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 ~~µS~~ mS/cm°)	12/31/2018	1.362	1.413	14.15	1412	1413	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:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 10/25/18

KGS

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: [signature]

Date: 10/22, 23, 24/18
10/25/18

KGS

Field Instrument Calibration Log

Date: 7/1/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	1/19	1.439	1.413	22.19°	1.418	22.87°	±10 µS/cm	N
pH (7)	10/20	7.46	7.00	22.27°	7.06	22.41°	± 0.3 Ph *	N
pH (4)	3/20	4.18	4.00	22.13°	4.11	22.21°	± 0.3 Ph *	N
pH (10)	2/20	9.70	10.00	22.09°	9.97	22.07°	± 0.3 Ph *	N
ORP (240 mv)	10/22	249.7	240.0	22.18°	237.7	22.06°	±10 mv	N
Dissolved Oxygen (%)	N/A	109.7%	100.0%	22.00°	101.6%	22.07°	-	N
Dissolved Oxygen (mg/L)	N/A	10.39	10.00	21.78°	9.97	22.01°	± 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:** 7/1/19

KGS

Field Instrument Calibration Log

Date: 7/2/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: RP VBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.401	1.413	21.78°	1.418	20.31°	±10 µS/cm	N
pH (7)	10/20	7.31	7.00	21.69°	7.11	20.21°	± 0.3 Ph *	N
pH (4)	3/20	4.29	4.00	21.54°	4.00	20.20°	± 0.3 Ph *	N
pH (10)	2/20	10.31	10.00	21.45°	10.01	20.33°	± 0.3 Ph *	N
ORP (240 mv)	10/22	246.7	240.0	21.67°	241.1	20.47°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.6%	100.0%	21.30°	98.2%	20.51°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	21.20°	9.90	20.01°	± 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:** 7/2/19

KGS

Field Instrument Calibration Log

Date: 7/8/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650 XL

Calibrated By: WGL **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	22.07°	1.418	23.07°	±10 µS/cm	N
pH (7)	10/20	6.87	7.00	22.37°	7.07	23.01°	± 0.3 Ph *	N
pH (4)	3/20	4.31	4.00	22.30°	4.07	23.00°	± 0.3 Ph *	N
pH (10)	2/20	9.72	10.00	22.21°	9.89	22.90°	± 0.3 Ph *	N
ORP (240 mv)	10/22	252.1	240.0	22.17°	241.7	22.93°	±10 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°	± 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: _____ **Date:** 7/8/19

KGS

Field Instrument Calibration Log

Date: 7/9/19 **Weather:** 80's

Project/Site Name: Devins **Instrument:** YSI 650 XL

Calibrated By: VGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.403	1.413	22.10°	1.419	21.70°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	22.18°	7.01	21.50°	± 0.3 Ph *	N
pH (4)	3/20	4.03	4.00	22.27°	4.06	21.47°	± 0.3 Ph *	N
pH (10)	2/20	9.97	10.00	22.27°	10.00	21.57°	± 0.3 Ph *	N
ORP (240 mv)	10/22	247.1	240.0	21.79°	241.7	21.60°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.6%	100.0%	21.77°	92.6%	21.55°	-	N
Dissolved Oxygen (mg/L)	N/A	9.90	10.00	21.39°	9.99	21.30°	± 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:** 7/9/19

KGS

Field Instrument Calibration Log

Date: 7/10/19 **Weather:** 80's

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: KGA **Serial Number:** 11B109 186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.378	1.413	21.70°	1.411	20.17°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	21.67°	7.00	20.20°	± 0.3 Ph *	N
pH (4)	3/20	4.11	4.00	21.80°	4.03	20.17°	± 0.3 Ph *	N
pH (10)	2/20	9.90	10.00	21.73°	10.00	20.20°	± 0.3 Ph *	N
ORP (240 mv)	10/22	249.7	240.0	21.56°	237.7	20.19°	±10 mv	N
Dissolved Oxygen (%)	N/A	119.7%	100.0%	21.78°	96.1%	20.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	21.30°	9.93	20.03°	± 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:** 7/10/19

KGS

Field Instrument Calibration Log

Date: 7/11/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: KGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.439	1.413	22.03°	1.412	21.03°	±10 µS/cm	N
pH (7)	10/20	7.13	7.00	22.00°	7.11	21.00°	± 0.3 Ph *	N
pH (4)	3/20	4.11	4.00	21.93°	4.01	20.87°	± 0.3 Ph *	N
pH (10)	2/20	9.93	10.00	21.90°	9.83	20.77°	± 0.3 Ph *	N
ORP (240 mv)	10/22	237.1	240.0	21.87°	242.7	20.66°	±10 mv	N
Dissolved Oxygen (%)	N/A	101.6%	100.0%	20.92°	101.7%	20.50°	-	N
Dissolved Oxygen (mg/L)	N/A	9.90	10.00	20.81°	9.97	20.41°	± 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 Variences on Field Forms)

Signature: [signature] **Date:** 7/11/19

KGS

Field Instrument Calibration Log

Date: 7/12/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VHT **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.409	1.413	24.02°	1.407	22.91°	±10 µS/cm	N
pH (7)	10/20	6.87	7.00	24.36°	7.03	22.80°	± 0.3 Ph *	N
pH (4)	3/20	4.39	4.00	24.20°	4.06	22.79°	± 0.3 Ph *	N
pH (10)	2/20	9.39	10.00	24.30°	10.11	22.67°	± 0.3 Ph *	N
ORP (240 mv)	10/22	244.3	240.0	24.42	237.1	22.69°	±10 mv	N
Dissolved Oxygen (%)	N/A	98.2%	100.0%	23.97°	102.1%	22.62°	-	N
Dissolved Oxygen (mg/L)	N/A	9.20	10.00	23.77°	9.87	22.39°	± 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:** 7/12/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020we

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	
7/1/19	0.17	0.00	9.71	10.00	0.06	10.03	N
7/2/19	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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: _____

Date: 7/12/19

KGS

Field Instrument Calibration Log

Date: 7/16/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: [redacted] MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.439	1.413	22.17°	1.410	22.61°	±10 µS/cm	N
pH (7)	10/20	7.31	7.00	22.47°	7.03	22.79°	± 0.3 Ph *	N
pH (4)	3/20	4.18	4.00	22.59°	3.93	22.81°	± 0.3 Ph *	N
pH (10)	2/20	9.87	10.00	22.47°	10.11	22.71°	± 0.3 Ph *	N
ORP (240 mv)	10/22	229.7	240.0	22.30°	232.6	22.67°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.6%	100.0%	22.27°	92.1%	22.09°	-	N
Dissolved Oxygen (mg/L)	N/A	9.71	10.00	22.03°	9.79	22.01°	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [redacted] **Date:** 7/16/19

KGS

Field Instrument Calibration Log

Date: 7/17/19 **Weather:** 80's

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: RLA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	21.70°	1.407	20.97°	±10 µS/cm	N
pH (7)	10/20	6.71	7.00	21.89°	7.07	20.87°	± 0.3 Ph *	N
pH (4)	3/20	4.20	4.00	21.67°	4.01	20.79°	± 0.3 Ph *	N
pH (10)	2/20	9.90	10.00	21.73°	9.90	20.83°	± 0.3 Ph *	N
ORP (240 mv)	10/22	230.6	240.0	21.69°	242.7	20.72°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	20.97°	97.1%	20.81°	-	N
Dissolved Oxygen (mg/L)	N/A	10.47	10.00	20.67°	9.87	20.21°	± 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: RLA **Date:** 7/17/19

KGS

Field Instrument Calibration Log

Date: 7/18/19 **Weather:** ~~[illegible]~~ 70s

Project/Site Name: Devers **Instrument:** RT YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.436	1.413	22.78°	1.407	20.03°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	22.69°	7.03	19.76°	± 0.3 Ph *	N
pH (4)	3/20	4.00	4.00	22.63°	4.01	19.69°	± 0.3 Ph *	N
pH (10)	2/20	10.03	10.00	22.71°	9.93	19.71°	± 0.3 Ph *	N
ORP (240 mv)	10/22	227.1	240.0	22.76°	242.2	19.79°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.6%	100.0%	22.11°	96.1%	19.70°	-	N
Dissolved Oxygen (mg/L)	N/A	10.47	10.00	22.01°	9.88	19.21°	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 7/18/19

KGS

Field Instrument Calibration Log

Date: 7/19/19 **Weather:** 90's

Project/Site Name: Devas **Instrument:** YSI 650XL

Calibrated By: PCA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 620		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.521	1.413	23.19°	1.407	21.16°	±10 µS/cm	N
pH (7)	10/20	7.31	7.00	23.21°	7.03	21.21°	± 0.3 Ph *	N
pH (4)	3/20	4.19	4.00	23.10°	4.00	21.13°	± 0.3 Ph *	N
pH (10)	2/20	10.47	10.00	23.21°	10.01	21.02°	± 0.3 Ph *	N
ORP (240 mv)	10/22	249.7	240.0	23.07°	241.1	21.00°	±10 mv	N
Dissolved Oxygen (%)	N/A	123.3%	100.0%	23.00°	92.1%	20.97°	-	N
Dissolved Oxygen (mg/L)	N/A	7.57	10.09	22.87°	9.99	20.81°	± 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:** 7/19/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: JGA

Serial Number: 11B100186

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	
7/16/19	0.40	0.00	9.80	10.00	0.09	9.90	N
7/17/19	0.21	0.00	9.92	10.00	0.01	9.93	N
7/18/19	0.03	0.00	10.27	10.00	0.07	10.09	N
7/19/19	0.21	0.00	10.07	10.00	0.11	10.10	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 7/19/19

KGS

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 Time 800		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	~~1.43~~ 1.398 (DK)	1.413	28.84	1.407	28.50	±10 µS/cm	N
pH (7)	3/2020	6.98	7.00	26.08	7.02	28.34	± 0.3 Ph *	N
pH (4)	3/2020	3.71	3.95	26.63	3.92	28.22	± 0.3 Ph *	N
pH (10)	2/2020	9.81	10.00	25.83	9.95	28.03	± 0.3 Ph *	N
ORP (240 mv)	1/2023	254.2	240.0	28.00	242.3	28.09	±10 mv	N
Dissolved Oxygen (%)	—	127.3	100.0	28.07	~~102.3~~ ~~102.3~~ (DK)	28.52	-	N
Dissolved Oxygen (mg/L)	—	9.95	7.17	28.07	7.49	28.52	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 7/17/19

KGS

Field Instrument Calibration Log

Date: 7/18/19 **Weather:** 65°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Korfjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.411	1.413	23.90	1.409	23.27	±10 µS/cm	N
pH (7)	3/2020	6.98	7.00	24.70	7.03	23.98	± 0.3 Ph *	N
pH (4)	3/2020	4.07	4.01	22.98	4.03	23.29	± 0.3 Ph *	N
pH (10)	2/2020	10.08	10.00	23.39	10.02	23.45	± 0.3 Ph *	N
ORP (240 mv)	1/2023	237.6	240.0	24.10	238.2	23.94	±10 mv	N
Dissolved Oxygen (%)	—	82.8	100.0	21.82	98.3	22.12	-	N
Dissolved Oxygen (mg/L)	—	7.24	8.76	21.82	8.44	22.12	± 0.5 mg/L < 0.5 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: Dave Korfjohn **Date:** 7/18/19

KGS

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 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1320	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.388	1.413	23.17	1.409	26.48	±10 µS/cm	N
pH (7)	3/2020	7.06	7.00	22.83	7.02	26.34	± 0.3 Ph *	N
pH (4)	3/2020	4.21	4.03	22.81	4.10	26.83	± 0.3 Ph *	N
pH (10)	2/2020	9.91	10.00	22.38	9.98	26.45	± 0.3 Ph *	N
ORP (240 mv)	1/2023	236.6	240.0	23.16	239.3	26.48	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 7/19/19

KGS

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 Korfjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 800		Cal. Temp. (°C)	PM Post Cal. Check Time 1435	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.427	1.413	28.68	1.414	28.52	±10 µS/cm	N
pH (7)	3/2020	7.03	7.00	28.49	7.01	28.59	± 0.3 Ph *	N
pH (4)	1/2021	3.62	4.00	27.60	3.89	28.29	± 0.3 Ph *	N
pH (10)	2/2020	9.91	10.00	27.29	10.02	28.35	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.0	240.0	28.06	235.6	28.42	±10 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	± 0.5 mg/L < 0.5 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: Dave Korfjohn **Date:** 7/22/19

KGS

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 740		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	11/2019	1.368	1.413	21.90	1.413	22.54	±10 µS/cm	N
pH (7)	3/2020	7.07	7.00	22.20	7.03	22.59	± 0.3 Ph *	N
pH (4)	3/2020	3.71	3.97	22.18	3.92	22.39	± 0.3 Ph *	N
pH (10)	2/2020	9.96	10.00	22.06	9.93	22.48	± 0.3 Ph *	N
ORP (240 mv)	1/2023	251.2	240.1	22.10	245.2	22.51	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 7/23/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: ~~YSI 650 MDS~~ (DK) LaMotte 2020we

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: Dave Kortjohn

Date: 7/23/19

KGS

Field Instrument Calibration Log

Date: 7/22/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: V/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 620		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.379	1.413	22.21°	1.407	20.15°	±10 µS/cm	N
pH (7)	10/20	6.81	7.00	22.31°	7.11	20.20°	± 0.3 Ph *	N
pH (4)	3/20	4.39	4.00	22.18°	4.02	20.13°	± 0.3 Ph *	N
pH (10)	2/20	9.62	10.00	22.19°	10.03	20.14°	± 0.3 Ph *	N
ORP (240 mv)	10/22	259.7	240.0	22.07°	240.3	20.18	±10 mv	N
Dissolved Oxygen (%)	N/A	118.6%	100.0%	21.70°	91.6%	19.27°	-	N
Dissolved Oxygen (mg/L)	N/A	10.17	10.00	21.68°	9.90	19.30°	± 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:** 7/22/19

KGS

Field Instrument Calibration Log

Date: 7/23/19 **Weather:** 70's Heavy Rain

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VLA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.432	1.413	21.31°	1.407	19.78°	±10 µS/cm	N
pH (7)	10/20	7.30	7.00	21.20°	7.00	19.67°	± 0.3 Ph *	N
pH (4)	3/20	4.19	4.00	21.17°	4.03	19.73°	± 0.3 Ph *	N
pH (10)	2/20	10.40	10.00	21.40°	10.15	19.80°	± 0.3 Ph *	N
ORP (240 mv)	10/22	227.1	240.0	21.37°	241.1	19.77°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	21.01°	109.1%	19.73°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	20.97°	9.79	19.51°	± 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:** 7/23/19

KGS

Field Instrument Calibration Log

Date: 7/24/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.381	1.413	21.70°	1.411	19.90°	±10 µS/cm	N
pH (7)	10/20	7.46	7.00	21.63°	7.02	19.87°	± 0.3 Ph *	N
pH (4)	3/20	4.31	4.00	21.58°	4.01	19.93°	± 0.3 Ph *	N
pH (10)	2/20	10.21	10.00	21.68°	10.00	19.87°	± 0.3 Ph *	N
ORP (240 mv)	10/22	253.7	240.0	21.72°	240.3	19.86°	±10 mv	N
Dissolved Oxygen (%)	N/A	121.6%	100.0%	21.30°	100.2%	19.31°	-	N
Dissolved Oxygen (mg/L)	N/A	9.52	10.00	21.27°	10.01	19.20°	± 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:** 7/24/19

KGS

Field Instrument Calibration Log

Date: 7/25/19 **Weather:** Dewns

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: MM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.451	1.413	19.21°	1.420	20.18°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	19.19°	7.03	20.17°	± 0.3 Ph *	N
pH (4)	3/20	4.13	4.00	19.17°	4.01	20.39°	± 0.3 Ph *	N
pH (10)	2/20	9.90	10.00	19.27°	10.01	20.41°	± 0.3 Ph *	N
ORP (240 mv)	10/22	231.6	240.0	19.29°	237.1	20.32°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.1%	100.0%	19.07°	101.6%	20.00°	-	N
Dissolved Oxygen (mg/L)	N/A	9.63	10.00	19.00°	9.81	19.92	± 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:** 7/25/19

KGS

Field Instrument Calibration Log

Date: 7/26/19 **Weather:** Devens, MA 70°F Sunny

Project/Site Name: Devens MA PFAS RI **Instrument:** YSI 650 XL

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 710		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/19	1410	1413	18.98	1411	24.16	±10 µS/cm	N
pH (7)	10/20	6.98	7.00	19.05	6.98	24.13	± 0.3 Ph *	N
pH (4)	3/20	3.97	4.00	19.10	3.99	23.98	± 0.3 Ph *	N
pH (10)	2/20	9.95	10.00	19.07	9.98	23.89	± 0.3 Ph *	N
ORP (240 mv)	10/22	232.5	240.0	19.20	235.2	23.92	±10 mv	N
Dissolved Oxygen (%)	NA	95.3	100%	18.75	96.8	33.00	-	—
Dissolved Oxygen (mg/L)	NA	9.78	10.00	18.75	9.55	33.00	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	—
Barometric Pressure (mmHg)	NA	—	760	—	—	760	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 7/26/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020 we

Calibrated By: VGL / MM

Serial Number: 5083-514

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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 7/25/19
7/26/19

KGS

Field Instrument Calibration Log

Date: 07/29/19 **Weather:** 70°F, Devens, 90°F

Project/Site Name: Devens, MA PFAS RI **Instrument:** YSI 650XL

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0655		Cal. Temp. (°C)	PM Post Cal. Check Time 1405	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1346	1413	27.79	1410	32.47	±10 µS/cm	N
pH (7)	10/20	7.65	7.00	27.62	6.91	32.67	± 0.3 Ph *	N
pH (4)	3/20	4.08	4.00	28.10	3.98	32.59	± 0.3 Ph *	N
pH (10)	2/20	10.00	10.00	27.97	9.89	32.65	± 0.3 Ph *	N
ORP (240 mv)	10/22	232.6	240.0	28.18	234.0	32.61	±10 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	± 0.5 mg/L < 0.5 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

KGS

Field Instrument Calibration Log

Date: 7/30/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: [redacted] **Serial Number:** 18B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	24.21°	1.421	23.16°	±10 µS/cm	N
pH (7)	10/20	7.18	7.00	24.30°	7.11	23.18°	± 0.3 Ph *	N
pH (4)	3/20	4.16	4.00	24.32°	4.00	23.21°	± 0.3 Ph *	N
pH (10)	2/20	9.90	10.00	24.29°	10.11	23.07	± 0.3 Ph *	N
ORP (240 mv)	10/22	226.3	240.0	24.18°	241.1	23.00°	±10 mv	N
Dissolved Oxygen (%)	N/A	90.2%	100.0%	24.03°	102.6%	23.00°	-	N
Dissolved Oxygen (mg/L)	N/A	8.99	10.00	24.19°	9.90	22.62°	± 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: [redacted] **Date:** 7/30/19

KGS

Field Instrument Calibration Log

Date: 7/31/19 **Weather:** 80's

Project/Site Name: Dever **Instrument:** YSI 650XL

Calibrated By: VBM **Serial Number:** 11B109186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.400	1.413	19.97°	1.426	22.60°	±10 µS/cm	N
pH (7)	2/21	7.31	7.00	20.18°	7.03	22.58°	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	20.21°	4.07	22.63°	± 0.3 Ph *	N
pH (10)	2/21	10.46	10.00	20.20°	10.11	22.57°	± 0.3 Ph *	N
ORP (240 mv)	10/19	221.7	240.0	20.13°	241.7	22.53°	±10 mv	N
Dissolved Oxygen (%)	N/A	89.7%	100.0%	19.41°	118.6%	22.30°	-	N
Dissolved Oxygen (mg/L)	N/A	9.66	10.00	19.31°	9.87	22.27°	± 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: _____ **Date:** 7/31/19

KGS

Field Instrument Calibration Log

Date: 8/1/19 **Weather:** 70s

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: [illegible] **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.429	1.413	21.16°	1.410	22.71°	±10 µS/cm	N
pH (7)	2/21	7.21	7.00	21.20°	7.03	22.68°	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	21.29°	4.00	22.63°	± 0.3 Ph *	N
pH (10)	2/21	10.13	10.00	21.30°	10.01	22.81°	± 0.3 Ph *	N
ORP (240 mv)	10/19	242.7	240.0	21.23°	237.6	22.74°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	21.01°	101.6%	22.30°	-	N
Dissolved Oxygen (mg/L)	N/A	9.90	10.00	20.97°	9.97	22.47°	± 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:** 8/1/19

KGS

Field Instrument Calibration Log

Date: 8/2/19 **Weather:** Clear 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.432	1.413	19.21°	1.420	18.37°	±10 µS/cm	N
pH (7)	2/21	7.31	7.00	19.17°	7.03	18.60°	± 0.3 Ph *	N
pH (4)	3/21	4.26	4.00	19.16°	4.09	18.47°	± 0.3 Ph *	N
pH (10)	2/21	10.03	10.00	19.37°	10.07	18.37°	± 0.3 Ph *	N
ORP (240 mv)	10/19	243.7	240.0	19.32°	240.6	18.27°	±10 mv	N
Dissolved Oxygen (%)	N/A	103.2%	60.0%	19.21°	101.1%	18.19°	-	N
Dissolved Oxygen (mg/L)	N/A	9.97	10.00	19.17°	9.98	18.26°	± 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:** 8/2/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: Lamotte 2020 we

Calibrated By: MM / [illegible]

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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 07/29/19

8/2/19

KGS

Field Instrument Calibration Log

Date: 7/24/19 **Weather:** 78°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 930		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	1/2019	1.410	1.413	25.21	1.412	25.69	±10 µS/cm	N
pH (7)	3/2020	7.17	7.00	23.68	7.10	25.34	± 0.3 Ph *	N
pH (4)	~~3/20~~ 1/2021	3.62	4.00	25.20	3.90	25.31	± 0.3 Ph *	N
pH (10)	2/2020	9.68	10.00	24.75	9.83	25.26	± 0.3 Ph *	N
ORP (240 mv)	1/2023	238.1	240.0	25.54	239.3	25.39	±10 mv	N
Dissolved Oxygen (%)	—	101.0	100.0	24.97	79.3	26.83	-	Y
Dissolved Oxygen (mg/L)	—	8.39	8.28	24.97	6.73	26.83	± 0.5 mg/L < 0.5 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: Dave Kortjohn **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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.407	1.413	20.38	1.413	22.38	±10 µS/cm	N
pH (7)	3/2020	6.88	7.00	20.61	7.09	22.24	± 0.3 Ph *	N
pH (4)	1/2021	3.63	3.95	21.11	3.83	22.31	± 0.3 Ph *	N
pH (10)	2/2020	9.82	10.00	20.81	9.89	22.51	± 0.3 Ph *	N
ORP (240 mv)	1/2023	244.8	240.0	20.79	242.3	22.42	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 7/25/19

Field Instrument Calibration Log

Date: 7/26/19 **Weather:** 80°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DDS ~~+10t~~ 626910-10

Calibrated By: Dave Korfjohn **Serial Number:** ~~18L100145~~ (DK) 17L101163

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.393	1.410	23.20	1.411	24.10	±10 µS/cm	N
pH (7)	2/2021	7.06	7.00	23.50	7.01	24.20	± 0.3 Ph *	N
pH (4)	3/2021	3.91	4.00	23.00	3.98	24.10	± 0.3 Ph *	N
pH (10)	2/2021	10.08	10.00	23.25	10.03	24.30	± 0.3 Ph *	N
ORP (240 mv)	10/2019	234.2	240.0	22.60	239.6	24.10	±10 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	± 0.5 mg/L < 0.5 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: Dave Korfjohn **Date:** 7/26/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: ~~650~~ 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	
7/24/19	0.01	0.01	9.83	10.00	0.01	9.79	
7/25/19	0.01	0.01	9.11	10.00	0.01	9.85	
7/26/19	0.00	0.00	9.59	10.00	0.00	9.92	

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.409	1.413	26.9	1.412	27.9	±10 µS/cm	N
pH (7)	2/2021	7.18	7.00	27.0	7.03	27.9	± 0.3 Ph *	N
pH (4)	3/2021	4.19	4.01	26.8	4.02	28.3	± 0.3 Ph *	N
pH (10)	2/2021	9.78	9.98	26.7	9.97	27.8	± 0.3 Ph *	N
ORP (240 mv)	10/2019	226.6	240.0	26.5	236.7	28.1	±10 mv	N
Dissolved Oxygen (%)	—	99.5	8.10	25.8	99.8	26.3	-	N
Dissolved Oxygen (mg/L)	—	100.0	8.12	25.8	8.12	26.3	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	755.9	—	—	755.9	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 7/29/19

KGS

Field Instrument Calibration Log

Date: 7/30/19 **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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.410	1.413	26.7	1.413	27.8	±10 µS/cm	N
pH (7)	2/2021	7.12	7.00	27.1	7.02	27.5	± 0.3 Ph *	N
pH (4)	3/2021	4.17	4.00	27.1	4.03	27.9	± 0.3 Ph *	N
pH (10)	2/2021	9.93	10.00	26.9	9.99	27.5	± 0.3 Ph *	N
ORP (240 mv)	10/2019	229.3	240.0	27.2	239.6	27.9	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 7/30/19

KGS

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 Kerfjohn **Serial Number:** 17401163

Parameters	Solution Expiration Date	AM Calibration Time ~~1445~~ (OK) 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.377	1.413	30.3	1.413	30.9	±10 µS/cm	N
pH (7)	2/2021	6.90	7.00	30.0	6.98	30.7	± 0.3 Ph *	N
pH (4)	3/2021	4.03	4.00	30.3	4.02	30.5	± 0.3 Ph *	N
pH (10)	2/2021	9.92	10.00	30.5	9.98	30.6	± 0.3 Ph *	N
ORP (240 mv)	10/2019	218.2	240.0	30.3	238.1	30.9	±10 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	± 0.5 mg/L < 0.5 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: Dave Kerfjohn **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:** ~~18100145~~ DK 17401163

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.621	1.413	23.0	1.415	22.8	±10 µS/cm	N
pH (7)	10/2020	7.02	7.00	21.4	7.00	22.3	± 0.3 Ph *	N
pH (4)	3/2021	3.73	4.00	22.4	3.98	22.5	± 0.3 Ph *	N
pH (10)	2/2021	10.24	10.02	22.6	10.02	22.7	± 0.3 Ph *	N
ORP (240 mv)	10/2019	249.0	240.0	23.1	242.3	23.2	±10 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	± 0.5 mg/L < 0.5 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: David K Kortjohn **Date:** 8/6/19

KGS

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 Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.371	1.413	25.5	1.412	25.9	±10 µS/cm	N
pH (7)	10/2020	7.00	7.00	26.1	7.02	25.8	± 0.3 Ph *	N
pH (4)	3/2021	3.71	4.00	25.8	3.99	26.1	± 0.3 Ph *	N
pH (10)	2/2021	10.23	9.99	26.0	10.00	26.3	± 0.3 Ph *	N
ORP (240 mv)	10/2019	234.8	240.0	25.6	239.4	26.2	±10 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	± 0.5 mg/L < 0.5 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: [signature] **Date:** 8/7/19

KGS

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 Time 740		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.401	1.413	25.5	1.414	26.3	±10 µS/cm	N
pH (7)	10/2020	7.07	7.00	25.3	7.03	26.1	± 0.3 Ph *	N
pH (4)	3/2021	3.82	4.01	25.4	4.00	25.9	± 0.3 Ph *	N
pH (10)	2/2021	10.23	10.00	25.4	10.01	26.3	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.2	240.0	25.6	239.3	26.1	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 8/8/19

Field Instrument Calibration Log

Date: 8/12/19 **Weather:** 75°F, sunny

Project/Site Name: Devens PFAS AI **Instrument:** YSI Pro DSS

Calibrated By: Dave Kortjohn **Serial Number:** 17401163

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.394	1.413	21.8	1.410	24.9	±10 µS/cm	N
pH (7)	10/2020	~~7.02~~ 6.89 OK	7.00	21.6	7.01	25.4	± 0.3 Ph *	N
pH (4)	3/2021	3.78	4.00	21.5	3.98	25.3	± 0.3 Ph *	N
pH (10)	2/2021	10.24	10.02	21.3	10.13	25.6	± 0.3 Ph *	N
ORP (240 mv)	10/2019	245.1	240.0	21.6	241.3	25.2	±10 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	± 0.5 mg/L < 0.5 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: [signature] **Date:** 8/12/19

KGS

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 Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1320	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	1/5/2019	1.409	1.413	27.7	1.411	27.9	±10 µS/cm	N
pH (7)	10/2020	6.94	7.00	26.7	6.98	27.6	± 0.3 Ph *	N
pH (4)	3/2021	3.86	4.01	27.2	3.98	27.5	± 0.3 Ph *	N
pH (10)	2/2021	10.27	10.00	27.3	10.03	27.4	± 0.3 Ph *	N
ORP (240 mv)	10/2019	225.6	240.0	26.8	238.6	27.3	±10 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	± 0.5 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: Dave Kortjohn **Date:** 8/13/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI **Instrument:** LaMotte 2020 we

Calibrated By: Dave Kortjohn **Serial Number:** 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
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	

Post Calibration Criteria	
-	±0.5

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn **Date:** 8/13/19

KGS

Field Instrument Calibration Log

Date: 8/1/14 **Weather:** Sunny 80°

Project/Site Name: Olmen **Instrument:** YSI PRO DSS

Calibrated By: GH **Serial Number:** 18L00145

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	03/2020	1.251	1.413	24.4	1.412	27.2	±10 µS/cm	N
pH (7)	2/2021	7.01	7.00	24.5	6.97	26.8	± 0.3 Ph *	N
pH (4)	03/2021	4.00	4.00	24.2	4.02	26.8	± 0.3 Ph *	N
pH (10)	2/2021	10.01	10.01	24.4	9.95	26.3	± 0.3 Ph *	N
ORP (240 mv)	10/2019	238	240	24.3	246.0	27.0	±10 mv	N
Dissolved Oxygen (%)		99.5	99.5	25.2	99.8	26.9	-	N
Dissolved Oxygen (mg/L)		8.37	8.37	25.2	7.96	26.9	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)		757.0	756.5	25.2	756.7	27.1	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 8-1-2014

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devin

Instrument: Lamotte 2020

Calibrated By: CH

Serial Number: 1828

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	
8/4/2016	1.12	0	6.84	10.0	0.40	9.34	NA

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____

Date: _____

KGS

Field Instrument Calibration Log

Date: 8-5-2019 **Weather:** Sunny 80°

Project/Site Name: Ft. Devens RI **Instrument:** YSI DO5

Calibrated By: GH **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 6:40		Cal. Temp. (°C)	PM Post Cal. Check Time 1520	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	3/2020	1.377	1.413	21.0	1.479	~~26.5~~ ~~1.413~~ (GH)	±10 µS/cm	Y
pH (7)	2/2020	7.08	7.01	21.1	7.04	26.6	± 0.3 Ph *	N
pH (4)	2/2021	4.09	4.00	21.1	3.98	26.6	± 0.3 Ph *	N
pH (10)	2/2021	9.94	10.01	21.0	10.09	26.4	± 0.3 Ph *	N
ORP (240 mv)	10/2019	238.2	240.0	21.1	238.5	~~26.0~~	±10 mv	N
Dissolved Oxygen (%)	-	97.3	99.6	21.8	98.2	~~99.6~~ 28.1 (GH)	-	N
Dissolved Oxygen (mg/L)	-	8.79	8.76	21.8	8.82	(GH) ~~8.76~~ 28.1	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	755.3	755.4	21.8	756.1	-	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 8-5-19

Turbidity Instrument Calibration Log

Project/Site Name: FT ORD/MZ

Instrument: Lamotte 2020 WE

Calibrated By: GH

Serial Number: 5083

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	1.2	0.4	7.51	10.0	0.6	9.6	NA

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____

Date: _____

KGS

Field Instrument Calibration Log

Date: 8/5/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.392	1.413	18.16°	1.420	18.47°	±10 µS/cm	N
pH (7)	2/21	7.26	7.00	18.18°	7.06	18.49°	± 0.3 Ph *	N
pH (4)	3/21	4.21	4.00	18.30°	4.00	18.50°	± 0.3 Ph *	N
pH (10)	2/21	10.31°	10.00	18.27°	9.90	18.47°	± 0.3 Ph *	N
ORP (240 mv)	10/19	249.7	240.0	18.26°	236.3	18.44°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.6%	100.0%	18.40°	93.1%	18.40°	-	N
Dissolved Oxygen (mg/L)	N/A	10.29	10.00	18.18°	10.10	18.20°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	18.15°	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 8/5/19

KGS

Field Instrument Calibration Log

Date: 8/6/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: KMR **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.451	1.413	19.92°	1.420	20.13°	±10 µS/cm	N
pH (7)	2/21	7.30	7.00	19.96°	6.87	20.18°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	19.91°	4.09	20.20°	± 0.3 Ph *	N
pH (10)	2/21	10.80	10.00	19.97°	9.79	20.17°	± 0.3 Ph *	N
ORP (240 mv)	10/19	246.1	240.0	19.58°	231.1	20.11°	±10 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°	± 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:** 8/6/19

KGS

Field Instrument Calibration Log

Date: 8/7/19 **Weather:** ~~D~~ 70's Hazy Later Rain / Thunder

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.387	1.413	21.16°	1.409	18.60°	±10 µS/cm	N
pH (7)	2/21	6.87	7.00	21.19°	7.11	18.57°	± 0.3 Ph *	N
pH (4)	3/21	4.13	4.00	21.17°	4.00	18.42°	± 0.3 Ph *	N
pH (10)	2/21	9.90	10.00	21.02°	10.11	18.39°	± 0.3 Ph *	N
ORP (240 mv)	10/19	252.6	240.0	21.03°	242.6	18.37°	±10 mv	N
Dissolved Oxygen (%)	N/A	100.0%	100.0%	21.10°	92.1%	18.36°	-	N
Dissolved Oxygen (mg/L)	N/A	9.72	10.00	20.97°	9.90	18.11°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	18.13°	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 8/7/19

KGS

Field Instrument Calibration Log

Date: 8/8/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.382	1.413	18.63°	1.403	19.87°	±10 µS/cm	N
pH (7)	2/21	7.18	7.00	18.79°	7.02	19.96°	± 0.3 Ph *	N
pH (4)	3/21	4.12	4.00	18.69°	4.02	20.31°	± 0.3 Ph *	N
pH (10)	2/21	10.27	10.00	18.73°	10.06	20.26°	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.6	240.0	18.82°	237.2	20.24°	±10 mv	N
Dissolved Oxygen (%)	N/A	100.9%	100.0%	18.71°	111.1%	20.03°	-	N
Dissolved Oxygen (mg/L)	N/A	9.97	10.00	18.37°	10.07	20.09°	± 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:** 8/8/19

KGS

Field Instrument Calibration Log

Date: 8/9/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varienc Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.431	1.413	20.06°	1.422	20.19°	±10 µS/cm	N
pH (7)	2/21	7.16	7.00	20.13°	7.10	20.01°	± 0.3 Ph *	N
pH (4)	3/21	4.09	4.00	20.20°	4.03	19.77°	± 0.3 Ph *	N
pH (10)	2/21	10.18	10.00	20.14°	10.01	19.86°	± 0.3 Ph *	N
ORP (240 mv)	10/19	241.1	240.0	20.18°	239.0	19.89°	±10 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°	± 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 Form

Signature: [signature] **Date:** 8/9/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020WE

Calibrated By: KGS

Serial Number: 5083-5014

Date	AM Calibration Pre-Cal 0 NTU	AM Calibration Post-Cal 0 NTU	AM Calibration Pre-Cal 10 NTU	AM Calibration Post-Cal 10 NTU	PM Post Calibration Check 0 NTU	PM Post Calibration Check 10 NTU	Variance Noted
☆ 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: [signature]

Date: 8/9/19

☆ SN = 1828-0412

KGS

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 740		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.408	1.413	24.1	1.413	24.3	±10 µS/cm	N
pH (7)	10/2020	7.41	7.00	23.8	7.10	24.2	± 0.3 Ph *	N
pH (4)	3/2021	4.43	4.00	24.3	4.08	24.3	± 0.3 Ph *	N
pH (10)	2/2021	9.87 ~~10.43~~ DK	10.00	25.1	9.98	24.6	± 0.3 Ph *	N
ORP (240 mv)	10/2019	246.4	240.0	24.2	241.2	24.8	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 8/14/19

KGS

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 Korfjohn **Serial Number:** ~~17401163~~ OK 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1.393	1.413	23.5	1.414	25.5	±10 µS/cm	N
pH (7)	10/2020	6.64	7.00	24.1	6.96	25.3	± 0.3 Ph *	N
pH (4)	3/2021	4.17	4.00	23.5	4.03	25.3	± 0.3 Ph *	N
pH (10)	2/2021	9.47	10.01	23.8	9.94	25.6	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.5	240.0	23.5	238.6	25.5	±10 mv	N
Dissolved Oxygen (%)	—	98.9	99.5	21.7	99.6	24.3	-	N
Dissolved Oxygen (mg/L)	—	8.74	8.74	21.7	8.79	24.3	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	755.7	—	—	756.3	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Korfjohn **Date:** 8/15/19

KGS

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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.417	1.413	24.3	1.415	26.8	±10 µS/cm	N
pH (7)	10/2020	6.87	7.00	24.6	6.99	27.3	± 0.3 Ph *	N
pH (4)	3/2021	10.08	10.00	24.6	10.03	27.1	± 0.3 Ph *	N
pH (10)	2/2021	4.11	4.00	24.2	4.03	26.9	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.0	240.0	24.3	239.3	26.9	±10 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	± 0.5 mg/L < 0.5 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: Dave Kortjohn **Date:** 8/16/19

KGS

Field Instrument Calibration Log

Date: 8/19/19 **Weather:** 80-85°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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.403	1.413	28.1	1.413	30.7	±10 µS/cm	N
pH (7)	10/2020	6.86	7.00	27.5	6.94	30.4	± 0.3 Ph *	N
pH (4)	3/2021	4.14	4.01	27.8	4.03	30.5	± 0.3 Ph *	N
pH (10)	2/2021	10.01	10.00	27.6	10.00	30.6	± 0.3 Ph *	N
ORP (240 mv)	10/2019	229.7	240.0	27.9	239.6	30.5	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 8/19/19

KGS

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 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1240	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.411	1.413	26.5	1.412	27.6	±10 µS/cm	N
pH (7)	10/2020	6.89	7.00	26.7	7.01	27.7	± 0.3 Ph *	N
pH (4)	3/2021	4.11	4.00	26.5	4.02	27.5	± 0.3 Ph *	N
pH (10)	2/2021	10.06	10.00	26.6	10.00	27.7	± 0.3 Ph *	N
ORP (240 mv)	10/2019	232.4	240.0	26.3	238.3	27.7	±10 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	± 0.5 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 Variences on Field Forms)

Signature: David Kortjohn **Date:** 8/21/19

KGS

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 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	10/2019	1.406	1.413	24.9	1.423	26.1	±10 µS/cm	N
pH (7)	10/2020	6.82	7.00	25.3	6.89	25.9	± 0.3 Ph *	N
pH (4)	3/2021	4.09	4.01	24.9	4.12	25.7	± 0.3 Ph *	N
pH (10)	2/2021	10.02	10.00	24.9	10.12	25.8	± 0.3 Ph *	N
ORP (240 mv)	10/2019	241.0	240.0	25.0	238.4	26.0	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 8/23/19

KGS

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: Dave Kortjohn

Date: 8/23/19

KGS

Field Instrument Calibration Log

Date: 8/12/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
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 Variences on Field Forms

Signature: [signature] **Date:** 8/12/19

KGS

Field Instrument Calibration Log

Date: ~~8/14/19~~ 8/14/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VBL **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.382	1.413	20.03°	1.399	18.78°	±10 µS/cm	N
pH (7)	2/21	7.49	7.00	20.18°	7.02	18.60°	± 0.3 Ph *	N
pH (4)	3/21	4.02	4.00	20.17°	4.11	18.71°	± 0.3 Ph *	N
pH (10)	2/21	10.11	10.00	20.30°	10.03	18.63°	± 0.3 Ph *	N
ORP (240 mv)	10/19	237.1	240.0	20.18°	237.7	18.59°	±10 mv	N
Dissolved Oxygen (%)	N/A	100.1%	100.0%	20.03°	100.6%	18.41°	-	N
Dissolved Oxygen (mg/L)	N/A	10.16	10.00	19.97	9.90	18.39°	± 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:** 8/14/19

KGS

Field Instrument Calibration Log

Date: 8/15/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650 XL

Calibrated By: KML **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.432	1.413	19.07°	1.416	17.31°	±10 µS/cm	N
pH (7)	2/21	7.20	7.00	19.13°	7.02	17.46°	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	19.18°	4.01	17.36°	± 0.3 Ph *	N
pH (10)	2/21	9.73	10.00	19.03°	10.03	17.40°	± 0.3 Ph *	N
ORP (240 mv)	10/19	256.7	240.0	19.09°	241.1	17.27°	±10 mv	N
Dissolved Oxygen (%)	N/A	109.2%	100.0%	19.00°	101.2%	17.23°	-	N
Dissolved Oxygen (mg/L)	N/A	10.07	10.00	18.97°	9.97	17.18°	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 8/15/19

KGS

Field Instrument Calibration Log

Date: 8/16/19 **Weather:** 80's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: KBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.378	1.413	21.17°	1.410	20.03°	±10 µS/cm	N
pH (7)	2/21	7.21	7.00	21.30°	7.03	20.09°	± 0.3 Ph *	N
pH (4)	3/21	4.06	4.00	21.13°	4.06	20.18°	± 0.3 Ph *	N
pH (10)	2/21	10.01	10.00	21.16°	10.11	20.27°	± 0.3 Ph *	N
ORP (240 mv)	10/19	252.6	240.0	21.21°	241.1	20.13°	±10 mv	N
Dissolved Oxygen (%)	N/A	131.7%	100.0%	21.20°	107.1%	19.78°	-	N
Dissolved Oxygen (mg/L)	N/A	9.87	10.00	21.01°	9.92	19.21°	± 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:** 8/16/19

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020we

Calibrated By: MA

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~~	MA		
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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 8/16/19

KGS

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 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.437	1.413	20.15°	1.410	19.70°	±10 µS/cm	N
pH (7)	2/21	7.21	7.00	20.18°	7.03	19.68°	± 0.3 Ph *	N
pH (4)	3/21	4.03	4.00	20.19°	4.11	19.60°	± 0.3 Ph *	N
pH (10)	2/21	9.60	10.00	20.09°	10.09	19.73°	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.2	240.0	20.17°	247.7	19.71°	±10 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°	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 8/19/19

KGS

Field Instrument Calibration Log

Date: 8/20/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: [illegible] **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.432	1.413	20.19°	1.411	22.60°	±10 µS/cm	N
pH (7)	2/21	7.21	7.00	20.37°	7.00	22.77°	± 0.3 Ph *	N
pH (4)	3/21	4.06	4.00	20.41°	4.11	22.80°	± 0.3 Ph *	N
pH (10)	2/21	10.20	10.00	20.40°	9.87	22.69°	± 0.3 Ph *	N
ORP (240 mv)	10/19	227.1	240.0	20.39°	241.1	22.70°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	20.01°	93.2%	22.10°	-	N
Dissolved Oxygen (mg/L)	N/A	9.63	10.00	20.13°	9.80	22.03°	± 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:** 8/20/19

KGS

Field Instrument Calibration Log

Date: 8/21/19 **Weather:** 70's heavy rain

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: RLG **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.430	1.413	17.89°	1.410	16.97°	±10 µS/cm	N
pH (7)	2/21	7.09	7.00	18.03°	7.02	17.11°	± 0.3 Ph *	N
pH (4)	3/21	4.16	4.00	18.11°	4.01	17.27°	± 0.3 Ph *	N
pH (10)	2/21	10.16	10.00	18.40°	10.15	17.80°	± 0.3 Ph *	N
ORP (240 mv)	10/19	253.1	240.0	18.24°	241.7	17.63°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.0%	100.0%	18.12°	107.6%	17.30°	-	N
Dissolved Oxygen (mg/L)	N/A	10.47	10.00	18.17°	9.90	17.20°	± 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:** 8/21/19

KGS

Field Instrument Calibration Log

Date: 8/22/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 620		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.432	1.413	22.16°	1.403	24.18°	±10 µS/cm	N
pH (7)	2/21	7.18	7.00	22.30°	7.20	24.21°	± 0.3 Ph *	N
pH (4)	3/21	4.21	4.00	22.46°	4.09	24.30°	± 0.3 Ph *	N
pH (10)	2/21	10.36	10.00	22.38°	9.89	24.27°	± 0.3 Ph *	N
ORP (240 mv)	10/19	251.7	240.0	22.21°	243.7	24.23°	±10 mv	N
Dissolved Oxygen (%)	N/A	89.1%	100.0%	22.01°	96.1%	24.02°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	22.11°	9.82	24.11	± 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:** 8/24/19

KGS

Field Instrument Calibration Log

Date: 8/23/19 **Weather:** 80's

Project/Site Name: Davis **Instrument:** YSI 6560L

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 620		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	3/20	1.447	1.413	21.16°	1.420	15.98°	±10 µS/cm	N
pH (7)	2/21	7.38	7.00	21.33°	7.11	15.87°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	21.39°	4.18	15.84°	± 0.3 Ph *	N
pH (10)	2/21	9.72	10.00	21.19°	9.90	15.93°	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.6	240.0	21.47°	246.1	15.82°	±10 mv	N
Dissolved Oxygen (%)	N/A	139.2%	100.0%	21.00°	97.1%	15.71°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	20.92°	9.90	15.32°	± 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: _____ **Date:** 8/23/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020e

Calibrated By: NA

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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 8/23/19

KGS

Field Instrument Calibration Log

Date: 8/26/19 **Weather:** Sunny, 60's-70's (°F)

Project/Site Name: Downs PFAS; Rig #1 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1,419	1,413	17.98	1,419	22.30	±10 µS/cm	N
pH (7)	2/21	7.21	~~7.00~~ 7.01	17.61	6.82	21.68	± 0.3 Ph *	N
pH (4)	3/21	4.00	4.00	17.70	4.10	22.15	± 0.3 Ph *	N
pH (10)	2/21	10.09	10.00	17.81	10.15	23.19	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.6	240.0	18.08	231.7	22.71	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 8/26/19

KGS

Field Instrument Calibration Log

Date: 8/27/19 **Weather:** Sunny, 70's (°F)

Project/Site Name: Downs PFAS RI; Rig #7 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 11B100184

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.4125	1,413	18.21	1,404	21.56	±10 µS/cm	N
pH (7)	2/21	6.89	7.00	18.25	6.94	21.24	± 0.3 Ph *	N
pH (4)	3/21	3.85	4.00	18.15	4.12	22.01	± 0.3 Ph *	N
pH (10)	2/21	9.86	10.00	18.08	9.94	21.41	± 0.3 Ph *	N
ORP (240 mv)	10/19	255.9	240.0	18.10	231.1	22.12	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 8/27/19

KGS

Field Instrument Calibration Log

Date: 8/28/19 **Weather:** Sunny 70's - 80's

Project/Site Name: Dorms PFAS RI : R.g #1 **Instrument:** YSI 650 MDS

Calibrated By: AV **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0625		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1,442	1,413	21.10	1,405	24.80	±10 µS/cm	N
pH (7)	2/21	7.40	7.00	21.01	6.88	24.29	± 0.3 Ph *	N
pH (4)	3/21	4.16	4.00	21.23	3.99	24.33	± 0.3 Ph *	N
pH (10)	2/21	10.04	10.00	20.99	9.85	24.71	± 0.3 Ph *	N
ORP (240 mv)	10/19	235.1	240.0	21.53	231.5	24.80	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 8/28/19

KGS

Field Instrument Calibration Log

Date: 8/29/19 **Weather:** 70'-80's Sunny

Project/Site Name: Devens MA PFAS RI Rig #1 **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 18B100186

Parameters	Solution Expiration Date	AM Calibration Time 0736		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	3/20	1427	1,413	20.75	1410	24.87	±10 µS/cm	N
pH (7)	2/21	6.98	7.00	21.00	6.98	24.83	± 0.3 Ph *	N
pH (4)	3/21	3.99	4.00	20.89	3.90	24.79	± 0.3 Ph *	N
pH (10)	2/21	9.89	10.00	21.05	9.89	24.95	± 0.3 Ph *	N
ORP (240 mv)	10/19	2475	240.0	21.10	235.3	25.00	±10 mv	N
Dissolved Oxygen (%)	—	100.8	100.0	20.50	101.0	22.57	-	N
Dissolved Oxygen (mg/L)	—	9.10	8.85	20.50	8.99	22.57	± 0.5 mg/L < 0.5 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: [signature] **Date:** 8/29/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Dorms PFAS ; Rig #2 **Instrument:** LaMotte 1020 WE

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	
8/26/19	0.02	0.00	9.85	10.00	0.02	9.95	N
CV 8/27/19	0.01	0.00	9.22	10.00	0.02	9.77	N
→ 8/28/19	0.01	0.00	9.10	10.00	0.08	9.62	N
MM 8/29/19	0.01	0.00	9.50	10.0	0.05	9.79	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 8/28/19

[signature] 8/29/19

KGS

Field Instrument Calibration Log

Date: 9/3/19 **Weather:** 70's - 80's Sunny (°F)

Project/Site Name: Dorms PFAS RI Rig 2 **Instrument:** YSI PRO DSS

Calibrated By: CV **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0845		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience 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	8.98	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 Variences on Field Forms)

Signature: [signature] **Date:** 9/3/19

KGS

Field Instrument Calibration Log

Date: 9/4/19 **Weather:** Sunny 70's - 80's (°F)

Project/Site Name: Dorms PFAS RI Rd 2 **Instrument:** YSI Pro DSS

Calibrated By: CV **Serial Number:** 18L100148

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	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 Variences on Field Forms)

Signature: [signature] **Date:** 9/4/19

KGS

Field Instrument Calibration Log

Date: 9/5/19 **Weather:** Sunny 70's - 80's (°F)

Project/Site Name: Downs PFAS RI; Rd 2 **Instrument:** YSI Pro DSS

Calibrated By: CV **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,410	1,413	20.2	1,422	19.9	±10 µS/cm	N
pH (7)	10/2020	6.98	7.00	21.3	7.08	20.2	± 0.3 Ph *	N
pH (4)	02/2020	4.03	4.00	21.1	4.12	20.1	± 0.3 Ph *	N
pH (10)	07/2020	10.06	10.00	20.7	10.06	20.0	± 0.3 Ph *	N
ORP (240 mv)	01/2023	240.0	240.0	20.6	241.3	20.2	±10 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	± 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 9/5/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Downs PPAS RI RJ 2 **Instrument:** LaMotte

Calibrated By: CV **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	
9/3/19	0.03	0.00	8.21	10.00	0.00	10.21	N
9/4/19	0.01	0.00	9.20	10.00	0.04	9.73	N
9/5/19	0.01	0.00	10.36	10.00	0.01	9.80	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: CV **Date:** 9/5/19

KGS

Field Instrument Calibration Log

Date: 9/3/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: MM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.429	1.413	21.60°	1.409	22.16°	±10 µS/cm	N
pH (7)	2/21	7.31	7.00	21.57°	7.01	22.21°	± 0.3 Ph *	N
pH (4)	3/21	4.50	4.00	21.74°	4.03	22.40°	± 0.3 Ph *	N
pH (10)	2/21	9.39	10.00	21.39°	10.01	22.30°	± 0.3 Ph *	N
ORP (240 mv)	10/19	251.7	240.0	21.68°	237.9	22.29°	±10 mv	N
Dissolved Oxygen (%)	N/A	127.1%	100.0%	21.69°	96.7%	22.40°	-	N
Dissolved Oxygen (mg/L)	N/A	10.73	10.00	21.30°	9.91	22.37	± 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:** 9/3/19

KGS

Field Instrument Calibration Log

Date: 9/4/19 **Weather:** 70's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1340	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.439	1.413	22.49°	1.408	20.06°	±10 µS/cm	N
pH (7)	2/21	7.27	7.00	22.57°	7.07	20.11°	± 0.3 Ph *	N
pH (4)	3/21	3.80	4.00	22.59°	4.00	20.19°	± 0.3 Ph *	N
pH (10)	2/21	10.13	10.00	22.78°	10.02	20.01°	± 0.3 Ph *	N
ORP (240 mv)	10/19	221.1	240.0	22.91°	236.6	20.50°	±10 mv	N
Dissolved Oxygen (%)	N/A	140.1%	100.0%	22.70°	101.1%	19.97°	-	N
Dissolved Oxygen (mg/L)	N/A	9.61	10.00	22.50°	9.97	19.87°	± 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:** 9/4/19

KGS

Field Instrument Calibration Log

Date: 9/5/19 **Weather:** 70's

Project/Site Name: Deers **Instrument:** YSI 650XL

Calibrated By: VBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1435	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.437	1.413	19.20°	1.420	19.50°	±10 µS/cm	N
pH (7)	2/21	7.26	7.00	19.40°	7.03	19.47°	± 0.3 Ph *	N
pH (4)	3/21	4.15	4.00	19.37°	4.09	19.68°	± 0.3 Ph *	N
pH (10)	2/21	9.62	10.00	19.31°	10.00	19.79°	± 0.3 Ph *	N
ORP (240 mv)	10/19	263.1	240.0	19.18°	247.1	19.39°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	19.07°	87.6%	19.21°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	19.14°	9.77	19.02°	± 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:** 9/5/19

KGS

Field Instrument Calibration Log

Date: 9/6/19 **Weather:** 60's

Project/Site Name: Dvers **Instrument:** YSI 650XL

Calibrated By: VA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.427	1.413	17.97°	1.410	18.11°	±10 µS/cm	N
pH (7)	2/21	7.19	7.00	17.86°	7.08	18.14°	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	17.93°	4.09	18.21°	± 0.3 Ph *	N
pH (10)	2/21	9.70	10.00	17.61°	9.97	18.09°	± 0.3 Ph *	N
ORP (240 mv)	10/19	259.7	240.0	17.69°	241.6	18.11°	±10 mv	N
Dissolved Oxygen (%)	N/A	81.6%	100.0%	17.30°	96.2%	18.00°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	17.01°	9.90	18.09	± 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:** 9/6/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: ~~LaMotte~~ YSI 650XL

Calibrated By: RBH

Serial Number: 18B100186

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	0.07	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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: RBH

Date: 9/6/19

KGS

Field Instrument Calibration Log

Date: ~~9/9~~ 9/10/19 **Weather:** 70's

Project/Site Name: Deas **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 625		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.382	1.413	17.99	1.420	16.92°	±10 µS/cm	N
pH (7)	2/21	7.26	7.00	18.32°	7.01	17.31°	± 0.3 Ph *	N
pH (4)	3/21	4.21	4.00	18.13°	4.03	17.40°	± 0.3 Ph *	N
pH (10)	2/21	9.70	10.00	18.26°	10.00	17.37°	± 0.3 Ph *	N
ORP (240 mv)	10/19	230.1	240.0	18.32°	240.0	17.56°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.6%	100.0%	18.21°	103.2%	17.29°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	18.00°	9.92	17.40°	± 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:** 9/10/19

KGS

Field Instrument Calibration Log

Date: 9/11/19 **Weather:** 80's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	3/20	1.472	1.413	18.47°	1.420	17.97°	±10 µS/cm	N
pH (7)	2/21	7.19	7.00	18.49°	7.11	18.09°	± 0.3 Ph *	N
pH (4)	3/21	4.19	4.00	18.56°	4.03	18.11°	± 0.3 Ph *	N
pH (10)	2/21	10.20	10.00	18.63°	10.02	18.21°	± 0.3 Ph *	N
ORP (240 mv)	10/19	227.1	240.0	18.51°	237.7	18.09°	±10 mv	N
Dissolved Oxygen (%)	N/A	82.6%	100.0%	18.20°	109.7%	18.01°	-	N
Dissolved Oxygen (mg/L)	N/A	9.42	10.00	18.11°	9.90	17.92°	± 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:** 9/11/19

KGS

Field Instrument Calibration Log

Date: 9/12/19 **Weather:** 70's Rain

Project/Site Name: Davis **Instrument:** YSI 650 XL

Calibrated By: VA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.429	1.413	19.03°	1.413	17.92°	±10 µS/cm	N
pH (7)	2/21	7.23	7.00	19.15°	7.02	17.81°	± 0.3 Ph *	N
pH (4)	3/21	4.18	4.00	19.01°	4.01	17.77°	± 0.3 Ph *	N
pH (10)	2/21	10.21	10.00	18.97°	10.09	17.83°	± 0.3 Ph *	N
ORP (240 mv)	10/19	253.7	240.0	18.91°	243.1	17.90°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	18.78°	96.7%	17.47°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	18.69°	9.90	17.20°	± 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:** 9/12/19

KGS

Field Instrument Calibration Log

Date: 9/13/19 **Weather:** 60's

Project/Site Name: Devers **Instrument:** YSI 650 XL

Calibrated By: KW **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.439	1.413	16.97°	1.403	17.92°	±10 µS/cm	N
pH (7)	2/21	7.37	7.09	16.82°	7.11	17.91°	± 0.3 Ph *	N
pH (4)	3/21	4.26	4.09	16.80°	4.02	18.10°	± 0.3 Ph *	N
pH (10)	2/21	10.15	10.09	16.92°	10.23	18.09°	± 0.3 Ph *	N
ORP (240 mv)	10/19	259.7	240.0	16.80°	231.9	18.21°	±10 mv	N
Dissolved Oxygen (%)	N/A	122.2%	100.0%	16.39°	91.60%	18.00°	-	N
Dissolved Oxygen (mg/L)	N/A	9.42	10.09	16.42°	9.80	18.03°	± 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:** 9/13/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020WE

Calibrated By: VGA

Serial Number: 15083-5014

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	
9/10/19	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

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 9/13/19

KGS

Field Instrument Calibration Log

Date: 9/16/19 **Weather:** 60's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.479	1.413	15.92°	1.407	17.22°	±10 µS/cm	N
pH (7)	2/21	7.23	7.00	16.21°	7.00	17.31°	± 0.3 Ph *	N
pH (4)	3/21	4.39	4.00	16.18°	4.07	17.46°	± 0.3 Ph *	N
pH (10)	2/21	10.27	10.00	16.09	10.02	17.38°	± 0.3 Ph *	N
ORP (240 mv)	10/19	227.6	240.0	16.23°	241.7	17.33°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	15.87°	91.6%	16.97°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	15.80°	9.81	16.81°	± 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: _____ **Date:** 9/16/19

KGS

Field Instrument Calibration Log

Date: 9/17/19 **Weather:** 70's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.437	1.413	16.03°	1.413	17.40°	±10 µS/cm	N
pH (7)	BH 2/21	7.20	7.00	16.11°	7.11	17.49°	± 0.3 Ph *	N
pH (4)	3/21	4.47	4.00	16.03°	4.11	17.61°	± 0.3 Ph *	N
pH (10)	2/21	10.19	10.00	16.27°	10.02	17.50°	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.1	240.0	16.18°	231.7	17.59°	±10 mv	N
Dissolved Oxygen (%)	N/A	129.7%	100.0%	15.97°	92.6%	17.40°	-	N
Dissolved Oxygen (mg/L)	N/A	10.40	10.00	15.41°	9.90	17.29°	± 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:** 9/17/19

KGS

Field Instrument Calibration Log

Date: 09/18/19 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 0725		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1421	1413	15.97	1410	17.47	±10 µS/cm	N
pH (7)	2/21	7.13	7.00	15.90	6.96	17.51	± 0.3 Ph *	N
pH (4)	3/21	4.05	4.00	15.93	3.99	17.32	± 0.3 Ph *	N
pH (10)	2/21	10.08	10.0	15.95	9.89	17.29	± 0.3 Ph *	N
ORP (240 mv)	10/19	232.7	240.0	15.89	235.3	17.20	±10 mv	N
Dissolved Oxygen (%)	NA	101%	100%	15.39	91.6	17.13	-	N
Dissolved Oxygen (mg/L)	NA	10.20	10.00	15.39	9.92	17.13	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: Melissa Miller **Date:** 09/19/19 MM

KGS

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 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1410	1413	15.90	1420	[redacted] 18.9	±10 µS/cm	N
pH (7)	2/21	6.98	7.0	15.84	6.83	19.13	± 0.3 Ph *	N
pH (4)	3/21	3.99	4.0	15.86	3.91	19.20	± 0.3 Ph *	N
pH (10)	2/21	10.02	10.0	15.80	9.87	19.27	± 0.3 Ph *	N
ORP (240 mv)	10/19	233.5	240.0	15.79	245	19.35	±10 mv	
Dissolved Oxygen (%)	NA	108.9	100%	15.30	92.5	20.15	-	Y
Dissolved Oxygen (mg/L)	NA	10.10	10.00	15.30	9.50	20.15	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	NA	—	760	15.30	760	[redacted] 20.15	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 09/20/19

Turbidity Instrument Calibration Log

Project/Site Name: Deers

Instrument: Hach 2100Q

Calibrated By: KA

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	
KA	9/16/19	0.27	0.00	9.73	10.00	0.02	10.11	N
	9/17/19	0.19	0.00	10.15	10.00	0.03	10.03	N
MM	9/18/19	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: [signature]

Date: 09/18/19 - 09/20/19

KGS

Field Instrument Calibration Log

Date: 9/24/19 **Weather:** 80's

Project/Site Name: Dams **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.459	1.413	23.70°	1.420	19.27°	±10 µS/cm	N
pH (7)	2/21	7.31	7.00	23.41°	7.00	20.11°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	23.69°	4.03	19.71°	± 0.3 Ph *	N
pH (10)	2/21	9.67	10.00	23.58°	9.90	19.68°	± 0.3 Ph *	N
ORP (240 mv)	10/19	221.7	240.0	23.59°	242.2	19.57°	±10 mv	N
Dissolved Oxygen (%)	N/A	83.7%	100.0%	23.20°	102.6%	19.70°	-	N
Dissolved Oxygen (mg/L)	N/A	9.90	10.00	23.17°	9.90	19.49°	± 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: _____ **Date:** 9/24/19

KGS

Field Instrument Calibration Log

Date: 9/25/19 **Weather:** 70's

Project/Site Name: Pevas **Instrument:** YSI 650XL

Calibrated By: KBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.471	1.413	21.70°	1.403	18.79°	±10 µS/cm	N
pH (7)	2/21	7.27	7.00	21.77°	7.11	18.69°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	21.69°	4.03	18.47°	± 0.3 Ph *	N
pH (10)	2/21	10.47	10.00	21.73°	10.00	18.61°	± 0.3 Ph *	N
ORP (240 mv)	10/19	238.6	240.0	21.68°	241.1	18.50°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	21.30°	102.2%	18.21°	-	N
Dissolved Oxygen (mg/L)	N/A	10.11	10.00	21.18°	10.30	18.40°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	769	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/25/19

KGS

Field Instrument Calibration Log

Date: 9/26/19 **Weather:** 70's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.380	1.413	22.60°	1.419	19.20°	±10 µS/cm	N
pH (7)	2/21	6.86	7.00	22.70°	7.11	19.38°	± 0.3 Ph *	N
pH (4)	3/21	3.72	4.00	22.50°	4.20	19.27°	± 0.3 Ph *	N
pH (10)	2/21	9.70	10.00	22.49°	10.03	19.09°	± 0.3 Ph *	N
ORP (240 mv)	10/19	229.7	240.0	22.47°	238.7	19.18°	±10 mv	N
Dissolved Oxygen (%)	N/A	131.6	100.0%	22.20°	111.1%	19.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.37	10.00	22.17°	9.90	19.03°	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: [signature] **Date:** 9/26/19

KGS

Field Instrument Calibration Log

Date: 9/27/19 **Weather:** 70's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: VA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.497	1.413	20.19°	1.420	18.60°	±10 µS/cm	N
pH (7)	2/21	7.30	7.00	20.39°	7.03	18.57°	± 0.3 Ph *	N
pH (4)	3/21	4.26	4.00	20.68°	4.01	18.59°	± 0.3 Ph *	N
pH (10)	2/21	9.78	10.00	20.57°	9.90	18.63°	± 0.3 Ph *	N
ORP (240 mv)	10/19	261.7	240.0	20.49°	247.7	18.70°	±10 mv	N
Dissolved Oxygen (%)	N/A	79.9%	90.0%	20.19°	91.6%	18.73°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.09	20.21°	9.91	18.39°	± 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:** 9/27/19

Turbidity Instrument Calibration Log

Project/Site Name: Davis

Instrument: LaMotte 2020we

Calibrated By: VBL

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	
9/24/19	0.13	0.00	10.27	10.00	0.02	9.70	N
9/25/19	0.11	0.00	9.70	10.00	0.03	10.11	N
9/26/19	0.20	0.00	10.15	10.00	0.09	10.00	N
9/27/19	0.39	0.00	9.79	10.00	0.20	10.18	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 9/27/19

KGS

Field Instrument Calibration Log

Date: 9/30/19 **Weather:** 60's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: MBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.437	1.413	22.20°	1.409	19.77°	±10 µS/cm	N
pH (7)	2/21	7.21	7.00	22.30°	7.11	18.69°	± 0.3 Ph *	N
pH (4)	3/21	4.23	4.00	22.18°	4.11	18.73°	± 0.3 Ph *	N
pH (10)	2/21	10.19	10.00	22.19°	10.01	18.69°	± 0.3 Ph *	N
ORP (240 mv)	10/19	231.7	240.0	22.36°	242.9	18.51°	±10 mv	N
Dissolved Oxygen (%)	N/A	111.1%	100.0%	21.97°	109.7%	18.30°	-	N
Dissolved Oxygen (mg/L)	N/A	10.27	10.00	21.93°	9.79	18.01°	± 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:** 9/30/19

KGS

Field Instrument Calibration Log

Date: 10/1/19 **Weather:** 70's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: KA **Serial Number:** 11B600186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.392	1.413	18.61°	1.406	19.60°	±10 µS/cm	N
pH (7)	2/21	6.72	7.00	18.87°	7.11	19.47°	± 0.3 Ph *	N
pH (4)	3/21	3.68	4.00	18.79°	4.02	19.53°	± 0.3 Ph *	N
pH (10)	2/21	9.77	10.00	18.83°	9.91	19.42°	± 0.3 Ph *	N
ORP (240 mv)	10/19	229.6	240.0	18.91°	232.6	19.60°	±10 mv	N
Dissolved Oxygen (%)	N/A	81.6%	100.0%	18.62°	91.1%	19.57°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	18.58°	9.89	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 Variences on Field Forms)

Signature: [signature] **Date:** 10/1/19

KGS

Field Instrument Calibration Log

Date: 10/2/19 **Weather:** 70's

Project/Site Name: Davis **Instrument:** YSI 650 MP

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.468	1.413	20.32°	1.410	21.70°	±10 µS/cm	N
pH (7)	2/21	6.80	7.00	20.47°	7.11	21.47°	± 0.3 Ph *	N
pH (4)	3/21	4.37	4.00	20.42°	4.01	21.60°	± 0.3 Ph *	N
pH (10)	2/21	10.50	10.00	20.38°	10.10	21.40°	± 0.3 Ph *	N
ORP (240 mv)	10/19	229.7	240.0	20.32°	240.7	21.38°	±10 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°	± 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:** 10/2/19

KGS

Field Instrument Calibration Log

Date: 10/3/19

Weather: 60's

Project/Site Name: Dewa'

Instrument: YSI 650XL

Calibrated By: VGR

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.493	1.413	20.15	1.419	18.79°	±10 µS/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	18.61°	± 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: Davis

Instrument: Hach 2020we

Calibrated By: MA

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~~ 10.00	0.17	10.11	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 10/3/19

KGS

Field Instrument Calibration Log

Date: 6/7/19 **Weather:** 70's

Project/Site Name: Devars **Instrument:** YSI 650 XL

Calibrated By: VBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.501	1.413	22.39°	1.412	21.60°	±10 µS/cm	N
pH (7)	2/21	7.39	7.00	22.46°	7.03	21.73°	± 0.3 Ph *	N
pH (4)	3/21	4.50	4.00	22.51°	4.06	21.89°	± 0.3 Ph *	N
pH (10)	2/21	10.19	10.00	22.39°	9.97	21.77°	± 0.3 Ph *	N
ORP (240 mv)	10/19	223.7	240.0	22.61°	241.7	21.60°	±10 mv	N
Dissolved Oxygen (%)	N/A	106.1%	100.0%	22.91°	96.1%	21.07°	-	N
Dissolved Oxygen (mg/L)	N/A	10.49	10.00	22.11°	9.97	21.30°	± 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:** 6/7/19

KGS

Field Instrument Calibration Log

Date: 10/8/19 **Weather:** 55°F Overcast

Project/Site Name: Devens, MA **Instrument:** YSI 650 XL

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm*)	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

KGS

Field Instrument Calibration Log

Date: 10/9/19 **Weather:** 50's

Project/Site Name: Dover **Instrument:** YSI 650 XL

Calibrated By: KKA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 650		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.503	1.413	19.71°	1.411	17.97°	±10 µS/cm	N
pH (7)	2/21	7.47	7.00	19.87°	7.27	17.83°	± 0.3 Ph *	N
pH (4)	3/21	4.60	4.00	19.97°	4.11	17.64°	± 0.3 Ph *	N
pH (10)	2/21	9.39	10.00	19.71°	9.92	17.70°	± 0.3 Ph *	N
ORP (240 mv)	10/19	263.1	240.0	19.61°	231.9	17.78°	±10 mv	N
Dissolved Oxygen (%)	N/A	132.1%	100.0%	19.50°	89.7%	17.46°	-	N
Dissolved Oxygen (mg/L)	N/A	10.49	10.00	19.57°	9.60	17.63°	± 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:** 10/9/19

KGS

Field Instrument Calibration Log

Date: 10/10/19 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 650x2

Calibrated By: LGA **Serial Number:** 17B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.378	1.413	17.21°	1.420	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)	2/21	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 (%)	N/A	97.6%	100.0%	17.02°	103.1%	16.97°	-	N
Dissolved Oxygen (mg/L)	N/A	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)	N/A	—	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: Davis

Instrument: Lamotte 2020we

Calibrated By: VLA / 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~~		VLA	

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] 10/8/19

Date: 10/10/19

KGS

Field Instrument Calibration Log

Date: 10/14/19 **Weather:** 50's

Project/Site Name: Dover 32 **Instrument:** YSI 650XL

Calibrated By: N/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.497	1.413	18.56	1.420	19.47	±10 µS/cm	N
pH (7)	2/21	6.69	7.00	18.48	7.03	19.37	± 0.3 Ph *	N
pH (4)	3/21	4.56	4.00	18.45	4.11	19.46	± 0.3 Ph *	N
pH (10)	2/21	9.70	10.00	18.55	9.79	19.49	± 0.3 Ph *	N
ORP (240 mv)	5/20	221.6	240.0	18.00	241.7	19.58	±10 mv	N
Dissolved Oxygen (%)	N/A	127.0	100.0%	17.00	91.6%	19.02	-	N
Dissolved Oxygen (mg/L)	N/A	9.11	10.00	16.74	9.79	18.99	± 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:** 10/14/19

KGS

Field Instrument Calibration Log

Date: 10/15/19

Weather: 50's

Project/Site Name: Dover

Instrument: YSI 650XL

Calibrated By: [illegible]

Serial Number: ~~[illegible]~~ 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 720		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.437	1.413	18.47°	1.413	17.91	±10 µS/cm	N
pH (7)	2/21	7.11	7.00	18.39°	7.07	17.67	± 0.3 Ph *	N
pH (4)	3/21	4.09	4.00	18.41°	4.11	17.69	± 0.3 Ph *	N
pH (10)	2/21	10.29	10.00	18.47°	10.09	17.80	± 0.3 Ph *	N
ORP (240 mv)	5/20	256.7	240.0	18.69°	231.1	17.77	±10 mv	N
Dissolved Oxygen (%)	N/A	121.1%	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	± 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: 10/15/19

KGS

Field Instrument Calibration Log

Date: 10/18/19 **Weather:** 50's

Project/Site Name: Davis **Instrument:** YSI 650 XL

Calibrated By: VW **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
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	16.39°	± 0.3 Ph *	N
pH (4)	3/21	4.36	4.00	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	230.1	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: A **Date:** 10/18/19

Turbidity Instrument Calibration Log

Project/Site Name: Delong **Instrument:** # LaMotte 2020WE

Calibrated By: VBA **Serial Number:** 5983-5014

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	
10/14/19	0.23	0.00	10.59	10.00	0.09	10.11	N
10/15/19	0.39	0.00	10.12	10.00	0.15	10.09	N
10/18/19	0.59	0.00	10.03	10.00	0.30	10.41	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 10/18/19

KGS

Field Instrument Calibration Log

Date: 10/21/19 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.439	1.413	19.70°	1.407	18.79°	±10 µS/cm	N
pH (7)	2/21	6.80	7.00	19.47°	7.19	18.72°	± 0.3 Ph *	N
pH (4)	3/21	3.72	4.00	19.42°	3.87	18.64°	± 0.3 Ph *	N
pH (10)	2/21	10.18	10.00	19.50°	10.11	18.73°	± 0.3 Ph *	N
ORP (240 mv)	5/20	230.2	240.0	19.40°	232.6	18.69°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	19.20°	91.7%	18.40°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	19.13°	9.80	18.31°	± 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:** 10/21/19

KGS

Field Instrument Calibration Log

Date: 10/23/19 **Weather:** 50's Rain

Project/Site Name: Devon **Instrument:** YSI 650xl

Calibrated By: KW **Serial Number:** 11B100986

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.452	1.413	18.79°	1.412	18.14°	±10 µS/cm	N
pH (7)	2/21	7.39	7.00	19.02°	7.11	17.97°	± 0.3 Ph *	N
pH (4)	3/21	3.92	4.00	19.15°	4.00	17.82°	± 0.3 Ph *	N
pH (10)	2/21	10.18	10.00	19.21°	10.11	18.00°	± 0.3 Ph *	N
ORP (240 mv)	5/20	247.6	240.0	19.19°	247.2	17.99°	±10 mv	N
Dissolved Oxygen (%)	— N/A	138.7%	100.0%	19.01°	87.1%	18.01°	-	N
Dissolved Oxygen (mg/L)	— N/A	9.62	10.09	18.88°	10.20	17.47°	± 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:** 10/23/19

KGS

Field Instrument Calibration Log

Date: 10/24/19 **Weather:** 50's

Project/Site Name: Devas **Instrument:** YSI 650XL

Calibrated By: VM **Serial Number:** 18B100186

Parameters	Solution Expiration Date	AM Calibration Time 650		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.371	1.413	19.18°	1.410	18.11°	±10 µS/cm	N
pH (7)	2/21	6.82	7.00	19.30°	7.11	18.27°	± 0.3 Ph *	N
pH (4)	3/21	4.02	4.00	19.27°	4.11	18.19°	± 0.3 Ph *	N
pH (10)	2/21	9.62	10.00	19.28°	10.01	18.31°	± 0.3 Ph *	N
ORP (240 mv)	5/20	247.1	240.0	19.40°	241.7	18.27°	±10 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°	± 0.5 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

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devas

Instrument: ~~AS~~ Lamotte 2020WE

Calibrated By: VM

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	
10/21/19	0.27	0.00	9.72	10.00	0.30	10.20	N
10/23/19	0.20	0.00	9.80	10.00	0.19	10.03	N
10/24/19	0.11	0.00	10.39	10.00	0.07	10.15	N
10/25/19	0.03	0.00	10.11	10.00	0.11	10.03	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 10/25/19

KGS

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 Esher **Serial Number:** 18L100445

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.433	1.413	19.5	1.390	18.9	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	7.14	7.00	18.8	6.80	18.3	± 0.3 Ph *	N
pH (4)	7/2020	4.86	4.00	19.3	4.21	18.5	± 0.3 Ph *	N
pH (10)	2/2020	9.81	10.00	18.9	10.04	18.5	± 0.3 Ph *	N
ORP (240 mv)	1/2023	244.4	240.0	19.4	231.3	18.8	±10 mv	N
Dissolved Oxygen (%)	—	98.5	98.5	19.5	99.6	18.2	-	—
Dissolved Oxygen (mg/L)	—	9.09	9.08	19.5	9.53	18.2	± 0.5 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	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/4/19

KGS

Field Instrument Calibration Log

Date: 8/26/19 **Weather:** Clear, cool, 75° F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esser **Serial Number:** 18G100145

Parameters	Solution Expiration Date	AM Calibration Time 0705		Cal. Temp. (°C)	PM Post Cal. Check Time 1436	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	~~0.77~~ 1.402 (KE)	~~7.04~~ 1.411 (KE)	~~16.6~~ 16.1 (KE)	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	~~22.3~~ ~~21.8~~ (KE)	± 0.3 Ph *	N
pH (10)	2/2021	10.07	10.08	16.6	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	13.6	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 Variences on Field Forms)

Signature: Kristen Esser **Date:** 8/26/19

KGS

Field Instrument Calibration Log

Date: 8/27/19 **Weather:** Partly Cloudy, 51-75°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Exner **Serial Number:** 18G100145

Parameters	Solution Expiration Date	AM Calibration Time 0715		Cal. Temp. (°C)	PM Post Cal. Check Time 1530	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.349	1.413	16.8	1.388	23.9	±10 µS/cm	N
pH (7)	10/2020	6.99	7.03	17.5	7.01	23.6	± 0.3 Ph *	N
pH (4)	3/2021	4.28	4.05	17.2	4.00	23.8	± 0.3 Ph *	N
pH (10)	2/2021	10.15	10.09	17.3	10.02	23.1	± 0.3 Ph *	N
ORP (240 mv)	10/2019	237.6	239.6	17.0	234.1	22.9	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: Kristen Exner **Date:** 8/27/19

KGS

Field Instrument Calibration Log

Date: 8/28/19 **Weather:** Partly cloudy, chance of PM showers 62-78°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Ecker **Serial Number:** 18G10G145

Parameters	Solution Expiration Date	AM Calibration Time 0716		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.374	1.413	20.8	1.867	22.3	±10 µS/cm	N
pH (7)	10/2020	6.82	7.00	20.8	7.01	22.9	± 0.3 Ph *	N
pH (4)	3/2021	4.20	4.00	20.7	4.00	23.0	± 0.3 Ph *	N
pH (10)	2/2021	9.97	10.00	20.8	10.02	23.1	± 0.3 Ph *	N
ORP (240 mv)	10/2019	235.2	240.1	20.8	239.7	22.2	±10 mv	N
Dissolved Oxygen (%)	—	100	100	20.7	99.9	22.1	-	N
Dissolved Oxygen (mg/L)	—	8.93	8.92	20.7	8.74	22.2	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	755.7	755.7	20.7	757.6	757.6	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 8/28/19

KGS

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 Escher **Serial Number:** 18A100145

Parameters	Solution Expiration Date	AM Calibration Time 0730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])		1.589	1.413	20.1	1.434	25.9	±10 µS/cm	N
pH (7)		6.70	~~7.0~~ 7.00	20.2	7.00	26.2	± 0.3 Ph *	N
pH (4)		4.34	4.00	20.1	~~4~~ 4.01	~~25.0~~	± 0.3 Ph *	N
pH (10)		9.72	10.00	20.2	10.01	24.9	± 0.3 Ph *	N
ORP (240 mv)		242.4	240.0	20.1	234.4	25.0	±10 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	± 0.5 mg/L < 0.5 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 Exner **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	KE 8/26 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: [signature] **Date:** 8/29/19

KGS

Field Instrument Calibration Log

Date: 10/4/19

Project/Site Name: Devens PFAS RI

Calibrated By: Kristen Esher

Weather: Cloudy slight prec. 49-59°F

Instrument: YSI Pro DSS

Serial Number: 18L100445

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.433	1.413	19.5	1.390	18.9	±10 µS/cm	N
pH (7)	10/2020	7.14	7.00	18.8	6.90	18.3	± 0.3 Ph *	N
pH (4)	7/2020	4.86	4.00	19.3	4.21	18.5	± 0.3 Ph *	N
pH (10)	2/2020	9.81	10.00	18.9	10.04	18.5	± 0.3 Ph *	N
ORP (240 mv)	1/2023	244.4	240.0	19.4	231.3	18.8	±10 mv	N
Dissolved Oxygen (%)	—	98.5	98.5	19.5	99.6	18.2	-	—
Dissolved Oxygen (mg/L)	—	9.09	9.08	19.5	9.53	18.2	± 0.5 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	-	—

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences 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 Escher

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 Variences on Field Forms

Signature: Kristen Escher

Date:

APPENDIX D SOIL BORING LOGS

AOC 20

KOMAN Government Solutions, LLC
SOIL BORING LOG

QC'd 4/7/2020 LBW

Project: Devens PFAS Soil Borings	Boring No.: 205B-19-01
Project No.: 10820011-533	Drilling Co.: TDS
Address: AOC-20 -21	Driller: Jay Jimenville
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"	NA SW	dry, dark brown, fine to medium SAND, some coarse Gravel, trace Organics	Soil sample @ 0-0.5' collected 0855
		9-36"	NA SW	dry, light brown, medium to coarse SAND, some fine to coarse Gravel	Soil sample @ 0.5-3' collected 0900
5-10'	38"	0-9"	NA SP	dry, light grayish brown, fine to medium SAND, trace fine Gravel	Soil sample @ 3-7' collected 0905
		9-38"	NA SW	dry, light brown, medium to coarse SAND, some fine to coarse Gravel	
5-15'	32"	0-12"	NA SP	dry, light ~~grayish~~ brown (LBW), fine to medium SAND, trace fine Gravel	Soil sample @ 7-15' collected 0910
		12-17"	SP NA	dry, light grayish brown, fine SAND, trace Silt	
		17-32"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 205B-19-02 Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC 20	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/22/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 60ft. bgs	Static Water: 54 ft. bgs

QCd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	2.4/5.0	0-0.5'	SP	Dry, brown, poorly graded, fine SAND, trace rounded gravel	205B-19-02-0-0.5 (DK) @ 1115
		0.5-4'	SW	Dry, tan, well graded, coarse SAND, ~~some~~ (DK) little subangular gravel	205B-19-02-0.5-4 @ 1120
		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	205B-19-02-4-7 @1125 205B-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:

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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 20SB-19-02	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
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	

QC'd 4/7/2020 [signature]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~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	
Address:	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	

QCid 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
40-45'	3.1/5.0	40-45'	SP	Dry, tan, poorly graded, fine SAND, trace silt	
45-50'	4.2/5.0 (LBW)	45-48'	SM	Dry, tan, fine silty SAND	
		~~45-50'~~ (DF)			
		48-50'	SP	Dry, tan, poorly graded, fine SAND	
50-55'	3.1/5.0	50-54' (LBW)	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:

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SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 20 SB - 19-03
Project No.: 108200 11-533	Drilling Co.: TDS
Address: AOC-20, 21	Driller: Jay Jumonville
Logger: Don Melcher	Drilling Method: Direct Push
Date: 10/18/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 15'	Static Water: NA

QC'd 4/7/2020 LW

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	32"	0-7"	NA SW	dry, dark brown, fine to medium SAND, some fine gravel, trace Organics	Sampled @ 1015 (0-0.5')
		7-32"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	Sample @ 1020 (0.5-3')
5-10'	36"	0-36"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	Sampled @ ~~1020~~ 1025 (5-7')
10-15'	44"	0-12"	NA SP	dry, ~~light~~ grayish brown, fine to medium SAND, trace silt	Sampled @ 1030 (10-15')
		12-44"	NA SW	dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel	

Notes:

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SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 2058-19-04
Project No.: 108200 11-5-33	Drilling Co.: TDS
Address: AOC-20, 21	Driller: Jay Jumonville
Logger: Don Melcher	Drilling Method: Direct Push
Date: 10/18/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 15'	Static Water: NA

QC 4/7/2020 LCW

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	32"	0-6"	NA SW	dry, dark brown, fine to medium SAND, some fine to coarse Gravel, trace organics	
		6-32"	NA SW	dry, light grayish brown, medium to coarse SAND, some fine to coarse Gravel	
5-10'	44"	0-12"	NA SP	dry, grayish brown, medium SAND, trace fine Gravel	
		12-24"	NA SW	dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel	
10-15'	40"	0-12"	NA SP	dry, grayish brown, fine SAND, trace silt, trace fine Gravel	
		12-40"	NA SW	dry, light grayish brown, medium to coarse SAND and fine to coarse Gravel	

Notes:
Samples collected @ 0-0.5' interval (1135), 0.5-3.0' (1140), 3-7' (1145), 7-15' (1150), & 4-5' Duplicate (1155)

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SOIL BORING LOG

Project: Devens PFAS Soil Boring	Boring No.: 20SB-19-05
Project No.: 10820011-533	Drilling Co.: TDS
Address: AOC-20, 21	Driller: Jay Jumenville
Logger: Don Melcher	Drilling Method: Direct Push
Date: 10/18/19	Drilling Equip: Geoprobe 6.712 DT
Total Boring Depth: 15'	Static Water: NA

QC 18 4/7/2020 LBW

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 Organics	
		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 ~~Grave~~ 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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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 20SB-19-06 Page 1 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC 20	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

QC'd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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:

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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: ~~205~~ B-19-06	Page 2 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 20	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	

QC'd 4/7/2020 [signature]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~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:

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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 205B-19-06 Page 3 of 3
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC 20	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/21/19 (OK)	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: ~~54' bgs~~ 60' bgs	Static Water: 54' bgs

QC'd 4/7/2020 LW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
40-45'	3.2/5.0	40-45'	SW GW	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.: 205B-19-07 Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services
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:

QCd 4/7/2020 GW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	2.7/5.0	0-1'	SP	Dry, brown, poorly graded, medium SAND, few rounded gravel	
		1-5'	SP	Dry, brown to tan, poorly graded, medium SAND, few subangular gravel, trace coarse sand	205B-19-07-0-0.5 @920 205B-19-07-0.5-3 @925
5-10'	3.0/5.0	5-6'	SP	Dry, brown, poorly graded, fine to medium SAND, little subangular gravel	
		6-10'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	205B-19-07-3-7 @930 A3-SB-DUP01-102219 @935
10-15'	4.1/5.0	10-12'	SP	Dry, tan, poorly graded, medium SAND, trace subrounded gravel	205B-19-07-7-15 @940
		12-15'	SW GW	Dry, tan, well graded, coarse SAND, ~~trace~~ some (PB) subrounded gravel	

Notes:

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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
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/21/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 64' bgs

QC'd 4/7/2020 GW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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-DUP01-102119 @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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 205B-19-08	Page 2 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 LGW
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 ~~PID (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	
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	

QC'd 4/7/2020 (BW)

Core Section	Recovery (ft)	Interval (ft)	~~USCS~~ ~~PID (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.: 205B-19-08 Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC 20	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/21/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 65' bgs	Static Water: 64' bgs

QC'd 4/7/2020 LMW

Core Section	Recovery (ft)	Interval (ft)	~~USCS PID (ppm)~~	GEOLOGIC LOG	REMARKS
60-65'	3.1/5.0	60-62 (W)	SP	Dry, tan to brown, poorly graded, medium SAND, trace subrounded gravel	205B-19-08-62-64 @1020
		(W) 62-64'	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:

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AOC 21

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 215B-19-01 Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services
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: 12 ft. bgs

QC'd 4/9/2020 SW

Core Section	Recovery (ft)	Interval (ft)	~~USCS PID (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 surface	215B-19-01-0-0.5 @1050
		2-5'	SP	Dry, tan, poorly graded, fine SAND, trace subangular gravel	215B-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	215B-19-01-3-7 @1100 A3-SB-DUP01-111419 @1105 215B-19-01-7-10 @1110 MS/MSD
10-15'	3.8/5.0	10-12'	SP	Moist, ~~fe~~ brown, poorly graded, medium SAND, little subrounded gravel	
		12-15'	SP	wet, brown, poorly graded, medium SAND	215B-19-01-10-12 @1115

Notes: Drilled through plastic liner in ~~sludge~~ beds (~~liner~~ approx. 2 ft bgs)

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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
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

QCid 4/9/2020 [illegible]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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 co~~ (DB) 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 (DB) ~~liner~~ liner in bed ≈ 2 ft. bgs

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 21SB-19-03 — Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC21	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

QC'd 4/9/2020 [illegible]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	~~0-2~~ [illegible] 3.5/5.0	0-1' ~~0-2'~~ [illegible]	SP	Dry, brown, poorly graded, fine SAND, organics/roots at surface	21SB-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	21SB-19-03-0.5-3 @1405
5-10'	2.3/5.0	5-7	SM	Same as 3-5' bgs	21SB-19-03-3-7 @1410
		7-10	SW	Dry, tan, well graded, medium SAND, little subrounded gravel	21SB-19-03-7-11 @~~1420~~ [illegible] 1415
10-15'	3.3/5.0	10-13'	SP	Moist, brown, poorly graded, fine SAND, few subrounded gravel	A3-SB-DUP02-111419 @1420
		13-15'	SP	Wet, tan, poorly graded, fine and Medium SAND.	

Notes: Drilled through Plastic ~~Linner~~ [illegible] liner at 2 ft. bgs

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AOC 30

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

QC'd 4/7/2020 LCW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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 (LS)
5-10'	2.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine ~~SA~~ (SX) to medium SAND, trace subangular gravel, trace silt	305B-19-01-3-7 @~~1210~~ 1215 (DK)
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:

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KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 30SB-19-01
Project No.: 1082	Drilling Co.: TOS
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

QC'd 4/2/2020 CSW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 30SB-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 65' bgs	Static Water: 60' bgs

QC'd 4/2/2020 JM

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 30SB-19-02
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 feet bgs	Static Water:

QC'd 4/7/2020 SW

Core Section	Recovery (ft)	Interval (ft)	~~PID~~ ~~(ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5'	4.3/5.0	0-0.5'		Asphalt	30SB-19-02-0-0.5 @1035
		0.5-1.5'	SP	Dry, gray to tan, poorly graded, fine SAND, some subangular gravel	30SB-19-02-0.5-3 @1040
		1.5-5'	SP	Dry, brown, poorly graded, fine to medium SAND, ~~little~~ trace fine subrounded gravel.	
5-10'	4.5/5.0	5-10'	SP	Dry, tan, poorly graded, fine SAND, little subrounded gravel	30SB-19-02-3-7 @1045
10-15'	4.5/5.0	10-15'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	30SB-19-02-7-15 @1050 A3-SB-DUP-101419 @1055

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-19-03
Project No.: 1082	Drilling Co.: TDS
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 10/14/19	Drilling Equip: Geoprobe 6712DT,
Total Boring Depth: 15 ft. bgs	Static Water:

QC'd 4/7/2020 CW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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' ~~0-5~~ (DX)	SP	0.5-3' Dry, dark brown, poorly graded, fine SAND, trace subangular gravel	
		3-5'	SP	3-5' Dry, tan, poorly graded, fine to medium SAND, trace subangular gravel	305B-19-03-0.5-3 @ 940
5-10' ~~5~~ (DX)	4.2/5.0	5-10' ~~5-10~~ (DX)	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~~ (W) sand, trace subrounded gravel	

Notes:

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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: 6 ft. bgs	

QC'd 4/7/2020 GW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	4.1/5.0	0-0.5'	—	Concrete	
		0.5-3'	SW	Dry, tan, well graded, medium SAND, little coarse sand	~~305B~~ OK 305B-19-04-0-0.5 @910
		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	A3-SB-DUP01-101519 @920 305B-19-04-3-7 @925
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:

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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	QC'd 4/7/2020
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 ~~PID (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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-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

QC'd 4/7/2020 LBG

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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:

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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 305B-19-04	Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 LGW
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 ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
60-65'	3.1/5.0	60-65	SM	Dry ~~to Moist~~ OK, tan, poorly graded, fine silty SAND	
65-70'	3.3/5.0	65-67	SM	Dry, tan, poorly graded, fine silty SAND	305B-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 293 Boston Post Road, Marlborough, MA

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
Address: AOC 30	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/14/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 15 ft. bgs	Static Water:

QC'd 4/7/2020 JRW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	4.0/5.0	0-0.5'	—	Asphalt	
		0.5-5'	SP	Dry, brown to tan, poorly graded, fine to medium SAND, little subrounded gravel	305B-19-05-0-0.5 @ 1425 305B-19-05-0.5-3 @ 1430
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
		7-10'	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	305B-19-05-7-15 @1440
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:

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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	
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:	

QC'd 4/7/2020 CDW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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:

KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

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: 20 ft. bgs	Static Water: 6.7 ft. bgs	

QC'd 4/7/2020 LAW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID~~ (ppm)	GEOLOGIC LOG	REMARKS
		0-3" LAW	—	Concrete	
0-5'	3.0/5.0 LAW 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 ↳ MS/MSD
10-15'	3.1/5.0	10-11'	SP	Dry, dark brown, poorly graded, fine SAND	
		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:

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KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 315B-19-01	Page 2 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	

QC'd 4/7/2020 (SW)

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 (SP) 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:

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KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

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	
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	

QC'd 4/7/2020 [signature]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 315B-19-01	Page 4 of 4
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020 LBW
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	315B-19-01-65-67 @ 1240
		67-70'	SP	Wet, tan, poorly graded, fine to medium SAND	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 315B-19-02 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: 10/17/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 Ft. bgs	Static Water:

QC'd 4/7/2020

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	3.1/5.0	0-2"	—	Asphalt	315B-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	315B-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	315B-19-02-3-7 @830 ~~DUP~~ AS-SB-DUP01-101719 @835
10-15'	2.7/5.0	10-12'	SP	Dry, brown, poorly graded, fine SAND, trace subangular gravel	315B-19-02-7-15 @840
		12-15'	SP	Dry, tan, poorly graded, medium SAND, trace subrounded gravel	

Notes:

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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
Address: AOC 31	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/17/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 15 ft. bgs	Static Water:

QCd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5'	3.4/5.0	0-0.5'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel, little asphalt chuncks	
		0.5-5'	SP	Dry, brown, poorly graded, fine to medium SAND, little subangular gravel	315B-19-03-0-0.5 @930 315B-19-03-0.5-5 @935
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
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	

Notes:

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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	QC'd 4/7/2020 [illegible]
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 ~~PID (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:

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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
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:

QCd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	~~0-1~~ DK ~~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~~ DK 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	

Notes:

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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
Logger: Dave Kortjohn	Drilling Method: Direct Push
Date: 10/16/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 10 ft. bgs	Static Water:

QC'd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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-19-06-0-5 @ 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-19-06-5-7 @ 1330

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 31SB-19-07 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: 10 Ft. bgs	Static Water:

QC'd 4/7/2020 (DW)

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	3.3/4.0	0-0.5'	—	Concrete	31-concrete-OCT19 @840
		0.5-5'	SP	Dry, brown, poorly graded, medium SAND, trace subangular gravel	31SB-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	31SB-19-07-5-7 @850 A3-SB-DUP01-101619 @855

Notes:

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AOC 50

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SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 505B-19-01 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: 10/24/19	Drilling Equip: Vac Master 4000 to 10' bgs / Geoprobe 6712DT after
Total Boring Depth: 50 ft. bgs	Static Water: 46 ft. bgs

QC'd 4/7/2020 CSW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-19-01 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: 10/24/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 50 ft. bgs	Static Water: 46 ft. bgs

QC'd 4/7/2020 [signature]

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (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	Dry, tan, poorly graded, 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' (DE) ~~38-39'~~	ML	Dry, ~~tan~~ brown, SILT, little fine sand	
		39-40'	SP	Dry, tan, poorly graded, fine sand	

Notes:

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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	QC'd 4/7/2020
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)	~~PID (ppm)~~ USCS	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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-19-02 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: 10/24/19	Drilling Equip: Vac Master 4000 to 10' bgs Geoprobe 6712DT after
Total Boring Depth: 15 ft. bgs	Static Water:

QC 9/7/2020

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
~~0-0~~ 0-5'	N/A	0-0.5'	SP	Dry, dark brown, poorly graded, fine sand, some organics/roots, trace subangular gravel	SOSB-19-02-0-0.5 @930
		0.5-5'	SP	Dry, tan, poorly graded, fine SAND, little medium sand	SOSB-19-02-0.5-5 @935
5-10'	N/A	5-10'	SP	Dry, tan, poorly graded, fine SAND	SOSB-19-02-5-7 @940
					SOSB-19-02-7-15 @~~915~~ DK 1340
10-15'	2.5/5.0	10-15'	SP	Dry, tan to ~~brown~~ brown, poorly graded fine SAND, few coarse sand	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-19-03	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	
Address: AOC 50	Driller: Jay Jumonville	QC'd 4/7/2020 SAG
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	SOSB-19-03-0-0.5 @910
		0.5-3'	SP	Dry, tan, poorly graded, fine SAND, trace subrounded gravel, little coarse sand	SOSB-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	SOSB-19-03-3-7 @920
		6-9'	SW	Dry, tan, well graded, coarse SAND, little medium sand, trace subrounded gravel	SOSB-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-DUP01-102319 @930

Notes:

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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. bgs	Static Water:

QC'd 4/2/20 DK

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	3.2/5.0	0-0.5'	—	Asphalt/concrete	505B-19-04-0-0.5 @1100
		0.5-3'	SP	Dry, tan, poorly graded, fine SAND, few subrounded gravel	505B-19-04-0.5-3 @1105
		3-5'	SP	Dry, dark brown to brown, poorly graded, fine SAND	
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, (UNW) 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	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI		Boring No.: 505B-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 6712DT	
Total Boring Depth: 60 ft. bgs		Static Water: 53 ft. bgs	

QC'd 4/2/2020

Core Section	Recovery (ft)	Interval (ft)	VSCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	3.6/5.0	0-0.5'	–	Asphalt	505B-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	505B-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	505B-19-05-3-7 @1240
		9-10'	SP	Dry, tan, poorly graded, fine SAND	A3-SB-DVP02-102519 @ ~~1245~~ 1250 (DUP) ↓ 505B-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	

Notes:

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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 ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
20-25'	3.4/5.0	20-25'	SP	Dry, tan, poorly graded, fine SAND, ~~little~~ 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 293 Boston Post Road. Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-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 ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
40-45'	4.0/5.0	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'	SM	Moist, brown, poorly graded, fine silty SAND	SOSB-19-05-51-53 @1350
		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	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Downs PFAS SB, Area 3	Boring No.: SOSB-19-06
Project No.: 01082-0011-533	Drilling Co.: TNS
Address: AOC 50	Driller: Jay Jumonville
Logger: Chris Vignola	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 65'	Static Water: N/A

QC'd 4/7/2020 LBW

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~ Symbol	GEOLOGIC LOG	REMARKS
0-5'	39"	0-7"	SP	Dry, dark brown, fine to medium sand, (poorly graded) trace organics	0-0.5 ~ 0820
		7-39"	SP	Dry, tan, poorly graded fine to medium sand, trace sub-angular, fine gravel	0.5-3 ~ 0825
5-10'	37"	0-13"	SP	Dry, brown, poorly graded fine to medium sand	3-7 ~ 0830
		13-37"	SP	Dry, tan, poorly graded medium to coarse sand, trace sub-rounded fine gravel	7-15 ~ 0835
10-15'	37"	0-13"	SP	Dry, brown, poorly graded, fine to medium sand	
		13-31"	SP	Dry, tan, poorly graded medium to coarse sand with few sub angular fine gravel	
		31-37"	SP SW	Dry, tan, well graded coarse sand with some sub-angular fine gravel	
15-20'	46"	0-26"	SP	Dry, brown, poorly graded, fine to medium sand with few, sub-rounded fine gravel.	
		26-46"	SP	Dry, tan, poorly graded, medium to coarse sand with little, sub-angular fine gravel	
20-25'	27"	0-27"	SP	Dry, tan, poorly graded, medium to coarse sand with trace, sub rounded fine gravel	

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS SB, Area 3	Boring No.: SOSB-19-06
Project No.: 0082-0011-533	Drilling Co.: TAS
Address: Area 50	Driller: Jay Jamville
Logger: Chris Vigneault	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 65'	Static Water: N/A

QC'd 4/21/2020

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS symbols	GEOLOGIC LOG	REMARKS
25-30'	31"	0-31"	SP	Dry, tan, poorly graded, medium to coarse sand with trace, sub rounded, 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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Deans PFAS SB, Area 3	Boring No.: SOSB-19-06
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: AOC 50	Driller: Jay Jumonville
Logger: Chris Vigneau	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 65'	Static Water: N/A

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~ 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"	SM	Moist, poorly graded, fine sand with few silt	Water table @ 62'
		62' ~ water table			60-62' ~ 1125

Notes:

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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:

QCd 4/7/2020 GWF

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5'	2.7/5.0 (GW)	0-1'	SP	Dry, dark brown, ~~f~~ poorly graded, fine SAND, few organics/roots (GW)	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 (GW) @ 850
		8-10'	SW	Dry, tan, well graded, coarse SAND, little subangular gravel	505B-19-07-7-15 @ 855 A3-SB-DUP01-102519 @ 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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-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 DT
Total Boring Depth: 15 ft. bgs	Static Water:

4/7/2020

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	SOSB-19-08-0-0.5 @1015
		1-2'	SP	Dry, tan, poorly graded fine SAND, trace subangular gravel	
		2-5'	SW	Dry, tan, well graded, coarse SAND, little medium sand, little subrounded gravel	SOSB-19-08-0.5-3 @1020
5-10'	4.0/5.0	5-8'	SW	Dry, tan, well graded, medium SAND, trace subangular gravel	SOSB-19-08-3-7 @1025 → MS/MSD
		8-10'	SW	Dry, tan, well graded, coarse SAND, some subrounded gravel	SOSB-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:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 50SB-19-09
Project No.: 02082-0011-5333	Drilling Co.: TDS
Address: AOC 50 -	Driller: Jay Jumonville
Logger: Kristen Esser	Drilling Method: DPT
Date: 10/31/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 10'	Static Water: NA

QC'd 4/7/2020 KSW

Core Section	Recovery ~~(ft)~~ in	Interval ~~(ft)~~ in	USCS ~~PID (ppm)~~ sym	GEOLOGIC LOG	REMARKS
0-5'	32	0-18	SM-~~SW~~	0-18': Dark brown to black poorly graded fine-med SAND with some SILT and some organics	
		18-28	SM-~~SW~~	18-28': Dark brown to black poorly graded med. SAND, dry, few SILT, some organics	
		28-32	SW	28-32': light brown well graded med-coarse SAND, dry	
5-10'	26	0-5	SW	0-5': light brown well graded med-coarse SAND, dry	
		5-26	SW	5-26': ~~Red~~ 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'

PID 0.5-3 misplaced @ 5-7'

KGS
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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Queens PFAS Soil Borings	Boring No.: SOSB-19-10
Project No.: 02082-0011-533	Drilling Co.: TDS
Address: AOC 50-	Driller: Jay Jumonville
Logger: Kristen Euler	Drilling Method: DPT
Date: 10/31/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 10'	Static Water: NA

QCd 4/7/2020 [initials]

Core Section	Recovery (ft) in	Interval (ft) in	USCS ~~PID~~ (ppm) Sym.	GEOLOGIC LOG	REMARKS
0-5'	32	0-26	SM	0-26: dark brown - black poorly graded dry fine-med SAND with little SILT	
		26-32	SP	26-32: Brown poorly graded med. SAND dry with some organics	
5'-10'	29	0-5	SP	0-5: tan-brown poorly graded med. SAND dry	(E)
		5-19	SP	5-19: tan-grey poorly graded med SAND dry	
		19-29	SW	19-29: tan-grey well graded med-coarse SAND saturated/moist trace Sub angular gravel (GW)	

Notes: Water @ 7' bgs, intervals for sampling 0-0.5, 0.5-3, 3-5, 5-7

Field dup @ 3-5

KGS

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: SOSB-19-11 Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services
Address: AOC 50	Driller: Jay Jumonville
Logger: ~~Dave Kortjohn~~ Kristen Estee	Drilling Method: Direct Push
Date: 11/25/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15'	Static Water: NA

QC'd 4/7/2020 GMS

Core Section	Recovery ~~(ft)~~ in	Interval ~~(ft)~~ in	USCS ~~PID~~ (ppm) Sym.	GEOLOGIC LOG	REMARKS
0-5	37	0-11	SM	0-11: Top soil - dry dark brown fine sand	SILT, some
		11-24	SP	11-24: dry poorly graded tan fine-med. SAND fine cobble @ 24"	
		24-37	SW-GW	24-37: well graded tan med-coarse SAND dry some GRAVEL sub-angular	
5-10	46	0-23	SW	0-23: well graded light tan med-coarse SAND dry with few gravel	
		23-46	SP	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

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 505B-19-~~12~~ 12	Page 1 of 1
Project No.: 1082	Drilling Co.: Technical Drilling Services	QC'd 4/7/2020
Address: AOC 50	Driller: Jay Jumonville	
Logger: ~~Dave Kortjohn~~ Kristen Esser	Drilling Method: Direct Push	
Date: 11/18/19	Drilling Equip: Geoprobe 6712DT	
Total Boring Depth: 15'	Static Water: 52'	

Core Section	Recovery ~~(ft)~~ in	Interval ~~(ft)~~ in	VOCs ~~PID~~ (ppm)	GEOLOGIC LOG	REMARKS
0-5	~~40~~ 46	0-5.5 ~~5-25~~ 5.5-25 25-~~40~~ 46	SM-0 SP SW	0-5.5: topsoil, ~~SILT~~ with some fine ~~SAND~~ SAND dry dark brown 5.5-25: dry tan fine-med. SAND, poorly graded 25-~~40~~ 46: dry well graded light tan med-coarse SAND with trace SUB round 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:

KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

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

KGS

Surface Water/Leachate Seep Information

Shorline

Type of SW: ( ) Stream ( ) River ( ) Seep x Pond

Water Depth: 6"	Dissolved Oxygen (mg/L): 9.22
Velocity of Water: Standing H_2O	ORP (mV): 131.4
Temperature (C): 10.75	Specific Conductance (µS/cm): —
pH (STD): 6.84	Turbidity (NTU): 7.13

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other
Sample Direct Dip

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938 AB
Lamotte	2020WE	1828-0412

Sediment/Leachate Seep Sediment Information

Sample Depth = 6" bgs

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor slight smell
( ) Color Grey
( ) Other
Sample collected via Stainless steel Hand Cover & Homoginized

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
UP-19-01-SW-OCT19	UP-19-01	1145	SW	2	none	PFAS
UP-19-01-SE-OCT19	|	1145	SE	1	|	PFAS
UP-19-01-SE-OCT19	|	1145	SE	1	|	TOC
UP-19-01-SE-OCT19	X	1145	SE	1	X	Grain Size

Comments: SE = Sediment SW = Surface H_2O
Sample location 12 ft North from ID Stake

Enco: Small & Large trees line the shore of the Pond
lily Pads & a Beaver Dam Present
42.5695913, -71.6140248 gmap.

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 + Hazebrouck

Surface Water/Leachate Seep Information → no SW sample collected

Type of SW: ( ) Stream ( ) River ( ) Seep

Water Depth:	Dissolved Oxygen (mg/L):
Velocity of Water:	ORP (mV):
Temperature (C):	Specific Conductance (µS/cm):
pH (STD):	Turbidity (NTU):

Sample Observations:

( ) Odor
( ) Color
( ) Other

Field Testing Equipment:

Make	Model	Serial #
NA		
NA		

Sediment/Leachate Seep Sediment Information

Sample Depth 0-6"

Sediment Type: (X) Organic ( ) Gravel ( ) Clay (X) Silt ( ) Sand (X) Other fine sand

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color brown/dark brown
( ) Other

Sample collected with decon. stainless steel spoon

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
US-19-01_SE-Oct19	US-19-01	1145	Sed.	1	none	PFAS
US-19-01_SE-Oct19	US-19-01	1145	Sed.	1	none	TOC
US-19-01_SE-Oct 19	US-19-01	1145	Sed.	1	none	Grain Size

Comments: Stake is 10' S of sampling location
Creek bed was dry at time of sampling, only Sediment was collected on 10/18

42.5671102 x -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: Seiler + Hazebrouck

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
( ) Color gray
( ) Other
Direct dip sample

Field Testing Equipment:

	Make	Model	Serial #
	YSI	560 MDS	0J1938AB
	Lamotte	2020 we	1828-0412

Sediment/Leachate Seep Sediment Information

Sample Depth: 0-6"

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand (X) Other Pine 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
AFW-19-01_SW-Oct19	AFW-19-01	1000	SW	2	none	PFAS
AFW-19-01_SE-Oct19	AFW-19-01	1000	Sed.	1	none	PFAS
AFW-19-01_SE-Oct19	AFW-19-01	1000	Sed.	1	none	TOC
AFW-19-01_SE-Oct19	AFW-19-01	1000	Sed.	1	none	Grain Size

Comments: Stake is 20' NW of sample location
Trees along shoreline, woody brush within water

42.570138 x -71.6065536

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 + Hazebrouck

Surface Water/Leachate Seep Information

Type of SW: ( ) Stream ( ) River ( ) Seep (X) wetland

Water Depth: 3-4 inches	Dissolved Oxygen (mg/L): 3.54
Velocity of Water: stagnant	ORP (mV): 185.3
Temperature (C): 8.91	Specific Conductance (µS/cm): 143
pH (STD): 3.57	Turbidity (NTU): 10.94

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other
Direct Dip Sample

Field Testing Equipment:

	Make	Model	Serial #
( ) Odor none	YSI	560MDS	0J1938AB
( ) Color clear	LaMotte	2020we	1828-0412
( ) Other			

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
AFW-19-02_SW-Oct19	AFW-19-02	0900	SW	2	none	PFAS
AFW-19-02_SE-Oct19	AFW-19-02	0900	Sed.	1	none	PFAS
AFW-19-02_SE-Oct19	AFW-19-02	0900	Sed.	1	none	TOC
AFW-19-02_SE-Oct19	AFW-19-02	0900	Sed.	1	none	Grain Size

Comments: * readjusted points due to access
stake is 10' NW of sample location
Trees along shoreline, woody brush within water

42.571408 x -71.0084668

Nashua River

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS 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: 8"	Dissolved Oxygen (mg/L): 9.37
Velocity of Water: Steady/Slow	ORP (mV): 159.1
Temperature (C): 10.79	Specific Conductance (µS/cm): 337
pH (STD): 6.0	Turbidity (NTU): 10.33

Sample Observations:
( ) Odor None
( ) Color Clear
( ) Other
Sample by Direct DIP

Field Testing Equipment:

	Make	Model	Serial #
	YSI	650 MDS	06J1938AB
	Lamotte	2020we	1328-0412

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 No
( ) Color Grey/Brown
( ) Other

Sample collected via Stainless Steel Hand Corer & Homogenized

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		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 stake.
ECO: Small trees & shrubs & cattails line the West Bank of the Nashua River

42.552234, -71.6197537 (google MAPS)

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

PFAS RI

Project: Devens, 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 (X) 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 #
YSI	650 MDS	06J1938 AB

Sediment/Leachate Seep Sediment Information Sample Depth 6" BGS

Sediment Type: (X) Organic ( ) Gravel ( ) Clay (X) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) 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-101619		1250	SW	2		PFAS
AB-SE-DUP-101619		1250	SE	1		PFAS
AB-SE-DUP-101619		1250	SE	1		TOC
AB-SE-DUP-101619	✓	1250	SE	1	✓	Grain Size

Comments: SE = Sediment SW = Surface H_2O
Sample Location 8ft towards East bank of ID staff

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 RI
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 (X) 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
Sample Direct DIP

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938AB

Sediment/Leachate Seep Sediment Information Sample Depth: 6" bgs

Sediment Type: (X) Organic ( ) Gravel ( ) Clay (X) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) 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	X	1130	SE	1	X	Grain Size

Comments: SE=Sediment, SW=surface H_2O
Sample Location. 12FT SE of ID stake

ECO: Large & small trees line the shore

42.56387 79, -71.609 2686 gmaps

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 3
Sample Location ID: NR-19-04

Date/Time: 10/16/19 1030
Sampler: Melissa Miller

Surface Water/Leachate Seep Information West bank

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: 8"	Dissolved Oxygen (mg/L): 9.98
Velocity of Water: Steady Flow	ORP (mV): 108.1
Temperature (C): 10.70	Specific Conductance (µS/cm): 479
pH (STD): 6.47	Turbidity (NTU): 2.2

Sample Observations:
( ) Odor None
( ) Color Clear
( ) Other
Sample Direct Dip

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MPS	06J1938AB

Sediment/Leachate Seep Sediment Information Sample Depth 6" bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____
Type of Sample Collected: ( ) Discrete ( ) Composite
Sample Observations:
( ) Odor none
( ) Color Grey/Black
( ) Other
Sample collected via stainless steel Hand Dover & Homogenize

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-04-SW-OCT19	NR-19-04	1030	SW	2	None	PFAS
NR-19-04-SE-OCT19	↓	1030	SE	1	↓	PFAS
NR-19-04-SE-OCT19	↓	1030	SE	1	↓	TOC
NR-19-04-SE-OCT19	X	1030	SE	1	X	Grain Size

Comments:
Sample location 8ft towards the bank.
SE=Sediment
SW=Surface H2O

Eco: Small trees/shrubs, Plants & Large trees line the Shoreline

42.5654225, -71.6086473

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI ⊙
Location: Area 3
Sample Location ID: NR-19-05

Date/Time: 10/16/19 0930
Sampler: Melissa Miller

Surface Water/Leachate Seep Information West Bank

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: 7.5 FT	Dissolved Oxygen (mg/L): 9.72
Velocity of Water: Steady Flow	ORP (mV): 147.2
Temperature (C): 10.16	Specific Conductance (µS/cm): 494
pH (STD): 6.03	Turbidity (NTU): 1.3

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938 AB

Sample collected by Direct Dip

Sediment/Leachate Seep Sediment Information Sample Depth 6" bgs

Sediment Type: (X) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Grey/Black
( ) Other

Sample Collected by Stainless Steel Hand Corer & Homoginized

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

PFAS RT

Project: Devens, MA
Location: Area 3
Sample Location ID: NR-19-06

Date/Time: 10/15/19 1300
Sampler: Melissa Miller

KGS

Surface Water/Leachate Seep Information (West Bank)

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: 8"	Dissolved Oxygen (mg/L): 9.35
Velocity of Water: Steady flow / slow	ORP (mV): 128.1
Temperature (C): 11.71	Specific Conductance (µS/cm): 609
pH (STD): 6.83	Turbidity (NTU): 1.2

Sample Observations:

( ) Odor none
( ) Color clear
( ) Other
Direct DIO Sample.

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938 AB

Sediment/Leachate Seep Sediment Information 6" bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Brown / Black
( ) Other
sample w/ a stainless steel Hand Cover & Homogenized

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 H_2O

ECO: Trees & Shrubs line the west bank

42.5685740, -71.6115984 (Gmaps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens, MA PFAS RI
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 (X) River ( ) Seep

Water Depth: 8"	Dissolved Oxygen (mg/L): 9.84
Velocity of Water: Steady flow	ORP (mV): 102.9
Temperature (C): 11.70	Specific Conductance (µS/cm): 494
pH (STD): 6.94	Turbidity (NTU): 1.5

Sample Observations:
( ) Odor None
( ) Color Clear
( ) Other
Direct DIP

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938AB

Sediment/Leachate Seep Sediment Information 0.5' bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____
Type of Sample Collected: (X) Discrete ( ) Composite
Sample Observations:
( ) Odor None
( ) Color Dark Grey
( ) Other
Stainless steel Hand corer & Homogenized

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 RT from ED state (East)
SW = Surface H_2O
ECO: Trees and shrubs line the River Bank

42.5698960, -71.6120098 (Gmaps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI, 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 Eastburn

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: .61 ft	Dissolved Oxygen (mg/L): 9.22
Velocity of Water: Steady flow	ORP (mV): 87.6
Temperature (C): 10.42	Specific Conductance (µS/cm): 440
pH (STD): 6.95	Turbidity (NTU): 1.0

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938AB

Sediment/Leachate Seep Sediment Information Sample Depth, 6" bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Grey
( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-08-SW-OCT19	NR-19-08	1010	SW	2	none	PFAS
NR-19-08-SE-OCT19		1010	SE	1		PFAS
NR-19-08-SE-OCT19		1010	SE	1		TOC
NR-19-08-SE-OCT19		1010	SE	1	X	Grain size

Comments: SE= Sample Collected via Hand Corer Stainless Steel & Homogenized
SW= Sample Collected by Direct Dip
SE=Sediment
SW=Surface H2O
Sample collected 8 ft from ID STAKE

ECO. Trees & Small Shrubs line the east Bank

42.5719878, -71.6125164 (gmaps)

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

PFAS RI

Project: Devens, 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 (X) River ( ) Seep

Water Depth: .6' ft	Dissolved Oxygen (mg/L): 8.26
Velocity of Water: Steady Flow	ORP (mV): 83.0
Temperature (C): 10.02	Specific Conductance (µS/cm): 439
pH (STD): 6.73	Turbidity (NTU): 1 NTU

Sample Observations:

( ) Odor none

( ) Color Clear

( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650MDS	06J1938 AB

Sediment/Leachate Seep Sediment Information Sample Depth: 0.5' bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete (X) Composite

Sample Observations:

( ) Odor none

( ) Color Grey / Black

( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-09-SW-0919	0920	NR-19-09	SW	2	none	PFAS
NR-19-09-SE-0919	0920	"	SE	1	"	PFAS
NR-19-09-SE-0919	0920	"	SE	1	"	TOC
NR-19-09-SE-0919	0920	"	SE	1	"	Grain Size

Comments: SE = Sampled via stainless steel Hand Cover & Homogenized
SW = Sample Direct Dip.
Sample Location 5ft from ID stake.

ECO: Trees & shrubs line the east bank

42.5729238, -71.6143028 - (gmaps)

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

PFAS RI
Project: Devens, MA
Location: ~~NR-19~~ Area 3
Sample Location ID: NR-19-10

Date/Time: 10/15/19 0825
Sampler: Melissa Miller

KGS

Surface Water/Leachate Seep Information East Bank

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: .6' Approx	Dissolved Oxygen (mg/L): 9.64
Velocity of Water: Steady flow	ORP (mV): 149.1
Temperature (C): 10.91	Specific Conductance (µS/cm): 436
pH (STD): 5.79	Turbidity (NTU): 5.0

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938AB

Sediment/Leachate Seep Sediment Information Sample Depth .5' bgs

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete (X) Composite

Sample Observations:
( ) Odor n
( ) Color Grey/Brown
( ) 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 Corer & Homoginized
SW = Sample collected by Direct Dip SE = Sediment
Eco: Trees & Ferns line the East Bank, Beaver marks on trees. SW = Surface H_2O

42.5750183, -71.6140366 gmaps
mple location 8 ft from ID Stake (West)

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: Devens, MA PFAS RI **Date/Time:** 10/14/19 1244

Location: Area 3 **Sampler:** Melissa Miller

Sample Location ID: NR-19-11

Surface Water/Leachate Seep Information

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: 1ft Approx	Dissolved Oxygen (mg/L): 9.61
Velocity of Water: Steady flow	ORP (mV): 106.0
Temperature (C): 11.91	Specific Conductance (µS/cm): 407.0
pH (STD): 6.53	Turbidity (NTU): 0.5

Sample Observations:

( ) Odor none

( ) Color clear

( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MPS	06J198AB

Sediment/Leachate Seep Sediment Information Depth .6'

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____

Type of Sample Collected: ( ) Discrete (X) Composite

Sample Observations:

( ) Odor

( ) Color Grey / Brown

( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-11-SW-OCT19	NR-19-11	1245	SW	2	none	PFAS
NR-19-11-SE-OCT19		1245	SE	1		PFAS
NR-19-11-SE-Oct19		1245	SE	1		TOC
NR-19-11-SE-OCT19		1245	SE	1		Grain Size
A3-SW-Dup-101419		1250	SW	2		PFAS
A3-SE-Dup-101419		1250	SE	1		PFAS
A3-SE-Dup-101419		1250	SE	1		TOC
A3-SE-Dup-101419	X	1250	SE	1	X	Grain Size

Comments: Sample grabbed - stainless steel Hand corer & Homogenized

Direct Dip = SW

Sample Location - 10 ft N of ID stake.

SW = Surface H_2O

SE = Sediment

Eco: Trees, shrubs along the Bank

42.5570480, -71.6125932

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens 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 (X) River ( ) Seep

Water Depth: 3 ft ~	Dissolved Oxygen (mg/L): 9.92
Velocity of Water: Steady flow	ORP (mV): 100.5
Temperature (C): 11.22	Specific Conductance (µS/cm): 414
pH (STD): 6.62	Turbidity (NTU): 0.6

Sample Observations: SW
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MPS	06J1938AB

Sediment/Leachate Seep Sediment Information Sampling Depth 6"

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: ( ) Discrete (X) Composite

Sample Observations:
( ) Odor none
( ) Color Black
( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-12-SW-OCT19	NR-19-12	1100	SW	2	none	PFAS
NR-19-12-SE-OCT19	"	1100	SE	1	"	PFAS
NR-19-12-SE-OCT19	"	1100	SE	1	"	TOC
NR-19-12-SE-OCT19	"	1100	SE	1	"	Grain Size

Comments: Sample collected 5ft North of ID Stake. East Bank, trees and grass present.

Samples collected by Stainless Steel Hand Auger & Homogenize

42.577748, -71.609839

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens, MA PFAS RI **Date/Time:** 10/14/19 0930
Location: Area 3 **Sampler:** [redacted] Melissa Miller
Sample Location ID: NR-19-13

Surface Water/Leachate Seep Information

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth: 1.5 ft ≈	Dissolved Oxygen (mg/L): 9.74
Velocity of Water: Steady flow	ORP (mV): 117.9
Temperature (C): 11.03	Specific Conductance (µS/cm): 432
pH (STD): 5.80	Turbidity (NTU): 4.9

Sample Observations: SW
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	06J1938AB

Sediment/Leachate Seep Sediment Information

sample depth = 6"

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other ____

Type of Sample Collected: ( ) Discrete (X) Composite

Sample Observations:
( ) Odor no.
( ) Color Black
( ) Other
Homoginized Sample

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-19-13-SW-OCT19	NR-19-13	0930	SW	2	none	PFAS
NR-19-13-SE-OCT19	"	0930	SE	1	none	PFAS
NR-19-13-SE-OCT19	"	0930	SE	1	none	TOC
NR-19-13-SE-OCT19	"	0930	SE	1	none	Grain Size

Comments: by a culvert, 4 feet NE of EP stake SW = Surface Water
River, East Bank, trees & shrubs line the banks SE = Sediment

42.5784140, -71.6093709

Sample collected w/ Stainless steel Hand cover & Homoginized

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens PFAS RI
Location: ~~NR 19-14 Background~~ (DF)
Area 3
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: ≈3 ft.	Dissolved Oxygen (mg/L): 12.22
Velocity of Water: N/A	ORP (mV): 188.8
Temperature (C): 0.80°C	Specific Conductance (µS/cm): 0.256
pH (STD): 6.31	Turbidity (NTU): 13.2

Sample Observations:
( ) Odor None
( ) Color ~~Brown~~ (DK) Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650 MDS	16100387
LaMotte	2020we	3590-3513

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 None
( ) Color Brown
( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NR-SW-19-14-DEC19	NR-19-14	1030	SW	2	none	PFAS 537
NR-SED-19-14-DEC19	NR-19-14	1105	SED	2	none	PFAS/TOC
NR-SED-19-14-DEC19	NR-19-14	1300	SED	1 bag	none	Grainsize

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: ( ) Stream (X) River ( ) Seep

Water Depth: ≈ 3.5ft	Dissolved Oxygen (mg/L): 12.85
Velocity of Water: N/A	ORP (mV): 171.0
Temperature (C): 0.59	Specific Conductance (µS/cm): 0.125
pH (STD): 5.92	Turbidity (NTU): 2.72

Sample Observations:

( ) Odor None
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI 650 MDS		11G100387
La Motte	2020we	3590-3513

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 None
( ) Color Brown
( ) 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: Devens 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: (X) Stream ( ) River ( ) Seep

Water Depth: ~18-24"	Dissolved Oxygen (mg/L): 4.78
Velocity of Water: ~0 m/s	ORP (mV): 91.4
Temperature (C): 13.47	Specific Conductance (µS/cm): 299
pH (STD): 7.00	Turbidity (NTU): 6.27

Sample Observations:
(X) Odor Light brown tint (no odor)
(X) Color
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	556MPS	05619411AD

Sediment/Leachate Seep Sediment Information

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____
Type of Sample Collected: (X) Discrete ( ) Composite
Sample Observations:
(X) Odor Organic decomposition odor
(X) Color Brown - dark brown
(X) Other Heavy organic concentration

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
~~BB-20-01~~	—	—	—	—	—	—
BB-SW-20-01-MAY20	BB-20-01	0820	SW	6	NA	PFAS M537
BB-SED-20-01-MAY20	BB-20-01	0825	SED	6	NA	PFAS M537
BB-SED-20-01-MAY20	BB-20-01	0825	SED	3	NA	TOC
BB-SED-20-01-MAY20	BB-20-01	0825	SED	1 (bag)	NA	Grain Size

Comments: MS/MSD collected at location for PFAS (SW), PFAS (SED), TOC (SED)

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 (X) Seep (Lake)

Water Depth: ~30"	Dissolved Oxygen (mg/L): 7.48
Velocity of Water: 0 ft/s	ORP (mV): -13.9
Temperature (C): 19.41	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 #
YSI	556 MPS	05G1941AD

Sediment/Leachate Seep Sediment Information

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

(X) Odor Strong organic decomposition
(X) Color Dark brown
(X) Other Heavy organic concentration, little sand

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
FP-SW-20-01-May20	FP-20-01	1100	SW	2	—	PFAS M537
FP-SED-20-01-May20	FP-20-01	1110	SED	2	—	PFAS M537
FP-SED-20-01-May20	FP-20-01	1110	SED	1	—	TOC
FP-SED-20-01-May20	FP-20-01	1110	SED	1 bag	—	Grain Size

Comments:

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: Devens 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 (X) 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
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	556 MPS	05619414D

Sediment/Leachate Seep Sediment Information

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) 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 (bag)	—	Grain Size

Comments: FD collected for PFAS(SW), PFAS(SED), TOC(SED)

Nashua River

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: Devens PFAS RI

Location: NRBK-19-01

Sample Location ID: ~~NRBK-19-01-DEC19~~ NRBK-SW-19-01-DEC19

Date/Time: 12/20/19 / 1100

Sampler: Dave Kostyohn

NRBK-SED-19-01-DEC19

Surface Water/Leachate Seep Information

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth:	Dissolved Oxygen (mg/L): 18.77
Velocity of Water:	ORP (mV): 147.8
Temperature (C): -0.10°	Specific Conductance (µS/cm): 0.290
pH (STD): 5.77	Turbidity (NTU): 3.68

Sample Observations:

(X) Odor None

(X) Color Clear

( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	6050MDS	11G100387

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:

(X) Odor None

(X) Color dark brown

( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NRBK-SW-19-01-DEC19		1100	SW	2	none	PFAS M537
NRBK-SED-19-01-DEC19		1110	SED	1	none	PFAS M537
NRBK-SED-19-01-DEC19		1110	SED	1	none	TOC
NRBK-SED-19-01-DEC19		1110	SED	1	none	Grain Size

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 Kristjann

Surface Water/Leachate Seep Information

Type of SW: ( ) Stream (X) River ( ) Seep

Water Depth:	Dissolved Oxygen (mg/L): 18.19
Velocity of Water:	ORP (mV): 195.3
Temperature (C): −0.02°	Specific Conductance (µS/cm): 0.295
pH (STD): 5.660	Turbidity (NTU): 2.23

Sample Observations:
(X) Odor None
(X) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
YSI	650MDS	11G100387

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
NRBK-SW-19-02-DEC19		0930	SW	~~2~~ 10	none	PFAS M537 MS/MSD
NRBK-SED-19-02-DEC19		0945	SED	1	none	PFAS M537
NRBK-SED-19-02-DEC19		0945	SED	1	none	TOC
NRBK-SED-19-02-DEC19		0945	SED	1	none	Grain size

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: (X) Stream ( ) River ( ) Seep

Water Depth: ≈ 1.5 FT	Dissolved Oxygen (mg/L): 11.47
Velocity of Water: N/A	ORP (mV): 156.2
Temperature (C): 0.71	Specific Conductance (µS/cm): 0.260
pH (STD): 5.94	Turbidity (NTU): 2.95

Sample Observations:
( ) Odor None
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	YSI	650 MDS	11G100387
	LaMotte	2020we	3590-3513

Sediment/Leachate Seep Sediment Information

Sediment Type: ( ) Organic (X) Gravel ( ) Clay (X) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor None
( ) Color Brown
( ) Other

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WAB-SW-19-01-DEC19	WAB-19-01	1310	SW	2	None	PFAS
WAB-SED-19-01-DEC19	WAB-19-01	1350	SED	4 (MS/MSD)	None	PFAS/TOC
WAB-SED-19-01-DEC19	WAB-19-01	1130	SED	1 ziplock	None	Grain Size

Comments:
→ Collected on 12/20/19 by DK

Calibration Field Sheets

KGS

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 725		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1347	1413	16.60	1410	19.79	±10 µS/cm	N
pH (7)	2/2021	7.10	7.00	17.30	6.98	19.85	± 0.3 Ph *	N
pH (4)	3/21	3.83	4.00	17.40	3.89	19.82	± 0.3 Ph *	N
pH (10)	12/31/19	9.93	10.00	16.61	9.92	19.69	± 0.3 Ph *	N
ORP (240 mv)	5/2020	240.8	240.0	17.11	235.1	19.78	±10 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	± 0.5 mg/L < 0.5 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 0635		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1409	1413	18.31	1410	17.36	±10 µS/cm	N
pH (7)	2/21	6.92	7.00	18.26	7.06	17.42	± 0.3 Ph *	N
pH (4)	3/21	4.09	4.00	18.33	3.98	17.39	± 0.3 Ph *	N
pH (10)	12/31/19	9.97	10.0	18.41	10.05	17.47	± 0.3 Ph *	N
ORP (240 mv)	5/20	232.1	240.0	18.50	233.1	17.50	±10 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	± 0.5 mg/L < 0.5 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 Variences on Field Forms)

Signature: Melissa A. Miller **Date:** 10/15/19

KGS

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 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1363	1413	16.48	1407	16.22	±10 µS/cm	N
pH (7)	2/21	7.06	7.00	16.32	6.98	16.27	± 0.3 Ph *	N
pH (4)	3/21	4.09	4.00	16.29	3.94	16.30	± 0.3 Ph *	N
pH (10)	12/19	9.99	10.0	16.41	9.89	16.34	± 0.3 Ph *	N
ORP (240 mv)	5/20	242.1	240.0	16.55	237.9	16.38	±10 mv	N
Dissolved Oxygen (%)	NA	100.0	100.0	17.28	102.1	14.47	-	N
Dissolved Oxygen (mg/L)	NA	9.61	9.61	17.28	10.0	14.47	± 0.5 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 Variences on Field Forms)

Signature: Melissa Miller **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 Lamotte						

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 12.6

Signature: Melissa Miller **Date:** 10/17/19

KGS

Field Instrument Calibration Log

Date: 10/17/19 **Weather:** 58°F Windy/Cool

Project/Site Name: PFAS RI - Devens, MA **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time 0720		Cal. Temp. (°C)	PM Post Cal. Check Time 1525	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1,405	1413	17.78	1420	16.50	±10 µS/cm	N
pH (7)	2/21	6.93	7.00	17.70	6.91	16.43	± 0.3 Ph *	N
pH (4)	3/21	~~4.05~~ 4.00	~~4.00~~ 4.00	17.77	3.97	16.41	± 0.3 Ph *	N
pH (10)	12/19	9.99	10.00	17.53	9.89	16.38	± 0.3 Ph *	N
ORP (240 mv)	5/20	~~235.1~~ 235	~~240~~ 240	~~17.79~~ 17.79	247	16.48	±10 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	± 0.5 mg/L < 0.5 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

KGS

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: Seiler **Serial Number:** 06J1938 AB

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1250	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1432	1413	16.70	1393 → 1413 ~~10.10 → 10.02~~	17.06	±10 µS/cm	Yes ~~no~~
pH (7)	2/2021	7.04	7.00	16.67	6.96 → 7.00	16.83	± 0.3 Ph *	no
pH (4)	3/2021	4.01	4.00	16.87	3.99 → 4.00	16.53	± 0.3 Ph *	no
pH (10)	12/31/2019	10.11	10.02	16.69	10.10 → 10.02	16.87	± 0.3 Ph *	no
ORP (240 mv)	5/2020	239.5	239.9	16.56	240.9 → 240.0	17.11	±10 mv	no
Dissolved Oxygen (%)	—	112.5	100.0	14.52	97.1% → 100.0%	17.52	-	—
Dissolved Oxygen (mg/L)	—	11.45	10.19	14.52	9.28 → 9.56	17.52	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	yes
Barometric Pressure (mmHg)	760	—	—	—	760	—	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Brad Seiler **Date:** 10/18/2019

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI – Devens, MA

Instrument: Lamotte 2020we

Calibrated By: Melissa Miller

Serial Number: 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	Variance Noted
MM 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: [signature]
Erich Silva

Date: 10/17/19
10/18/2019

KGS

Field Instrument Calibration Log

Date: 12/18/19 **Weather:** 30°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 16100387

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.458	1.413	15.89	1.420	16.10	±10 µS/cm	N
pH (7)	2/2021	7.69	7.00	15.72	7.12	15.95	± 0.3 Ph *	N
pH (4)	2/2021	4.05	3.99	15.87	4.02	15.99	± 0.3 Ph *	N
pH (10)	2/2021	10.51	10.07	15.71	10.21	16.03	± 0.3 Ph *	N
ORP (240 mv)	5/2020	214.4 ~~2.14~~ OK	240.0	15.91	241.2	16.13	±10 mv	N
Dissolved Oxygen (%)	—	89.7	100.0	14.16	OK ~~99.3~~ 105.6	14.82	-	Y
Dissolved Oxygen (mg/L)	—	9.22	10.27	14.16	OK ~~10.~~ 12.89	14.82	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

nature: [signature] **Date:** 12/18/19

KGS

Field Instrument Calibration Log

Date: 12/20/19 **Weather:** Clear, 13-27°F

Project/Site Name: Devens PFAS RI **Instrument:** 1050 MDS

Calibrated By: Kristen Esser **Serial Number:** 116100387

Parameters	Solution Expiration Date	AM Calibration Time 0745		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.411	1.413	9.80	1.386	11.61	±10 µS/cm	N
pH (7)	2/2021	6.34	7.00	9.29	6.94	11.02	± 0.3 Ph *	N
pH (4)	3/2021	4.45	4.00	9.57	4.17	11.36	± 0.3 Ph *	N
pH (10)	2/2021	11.38	10.00	9.64	9.98	11.23	± 0.3 Ph *	N
ORP (240 mv)	5/2020	245.6	240.1	9.50	244.5	11.14	±10 mv	N
Dissolved Oxygen (%)	—	75.0	100.0	9.67	97.8	8.83	-	—
Dissolved Oxygen (mg/L)	—	11.45	9.56	9.67	11.34	8.83	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	9.70	760.0	8.83	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 12/20/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI **Instrument:** LaMotte 2020we

Calibrated By: Dave Kortjohn **Serial Number:** 3590 - 3513

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	
12/18/19	0.00	0.00	9.60	10.00	0.00	9.95	N
12/20/19	0.95	0.01	9.81	10.00	0.01	10.28	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____ **Date:** _____

KGS

Field Instrument Calibration Log

Date: 5/20/20 **Weather:** 50's

Project/Site Name: Dever **Instrument:** ~~05 6194 1AD~~ YSI 556MPS

Calibrated By: MM **Serial Number:** 05619411AD

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	10/20	1.372	1.413	18.30	1.420	18.97	±10 µS/cm	N
pH (7)	2/21	6.90	7.00	18.43	7.01	18.81	± 0.3 Ph *	N
pH (4)	10/21	3.77	4.00	18.40	4.00	18.77	± 0.3 Ph *	N
pH (10)	10/21	9.78	10.00	18.29	10.18	18.68	± 0.3 Ph *	N
ORP (240 mv)	5/20	257.9	240.0	17.89	246.1	18.59	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	17.11	94.1%	18.77	-	N
Dissolved Oxygen (mg/L)	N/A	9.77	10.00	17.03	9.89	18.54	± 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: (Mark Noted Variences on Field Forms)

* Ph Unit with Ph 7 Buffer

Signature: [signature] **Date:** 5/20/20

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020WE

Calibrated By: [illegible]

Serial Number: 5088-5014

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	
5/20/20	0.31	0.00	10.34	10.00	0.12	10.13	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 5/20/20

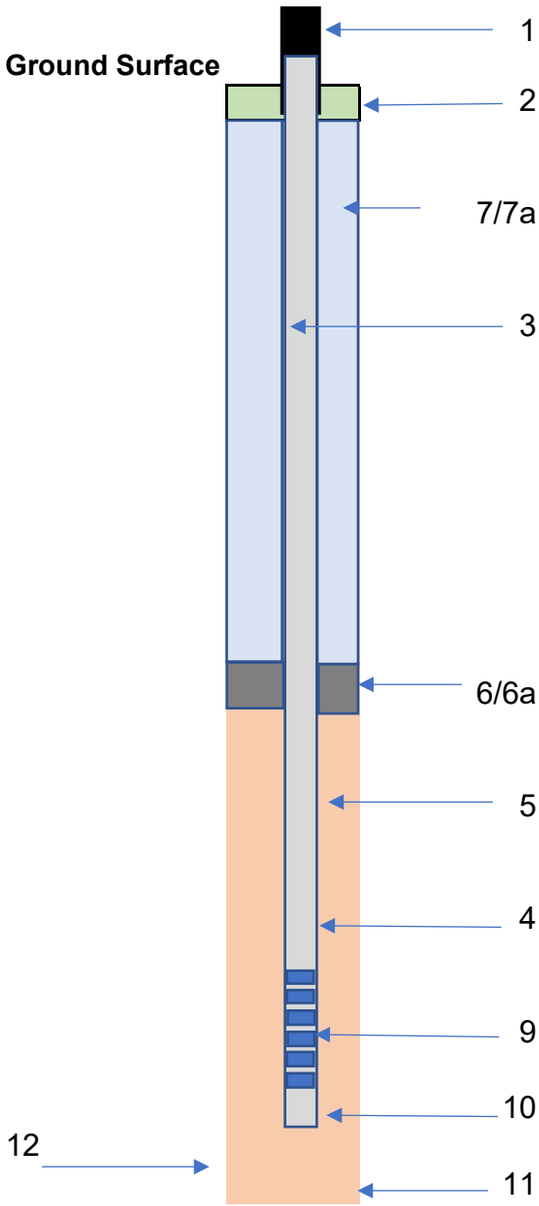
APPENDIX F PIEZOMETER CONSTRUCTION LOGS

AOC 30

KGS	Project: PFAS RI	Piezometer Identification: 30PZ-19-01
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In woods ~440 feet west of western edge of
Drilling Company: Technical Drilling Services	training parking lot/former Moore Army Airfield
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 shcedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quanity 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

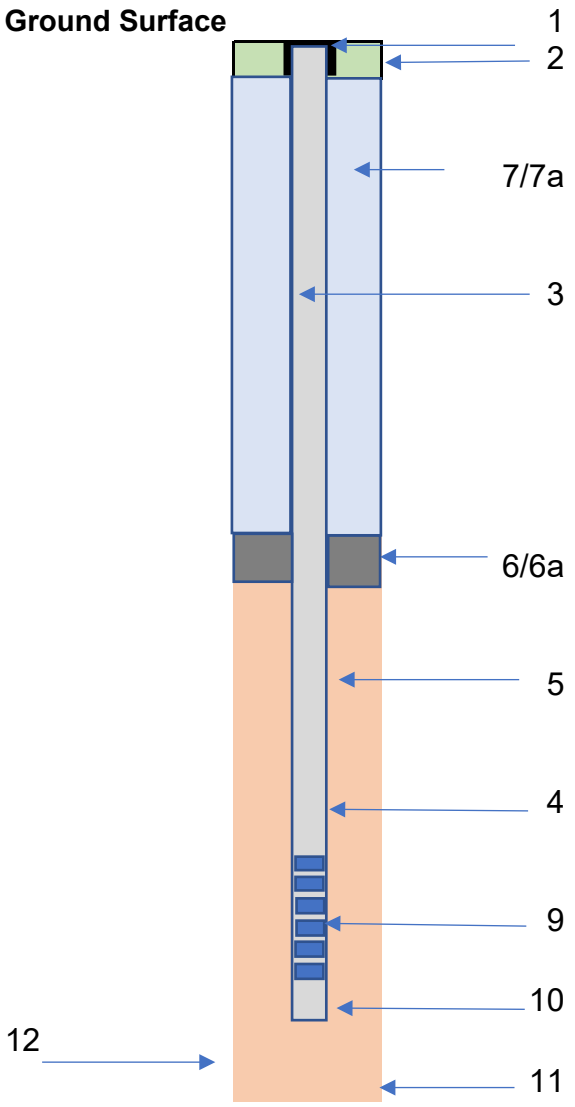
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 30PZ-19-02
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In open field, ~44 feet south of southeastern
Drilling Company: Technical Drilling Services	corner of radio tower fence. Former Moore Army Airfield.
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



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
Quanity 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

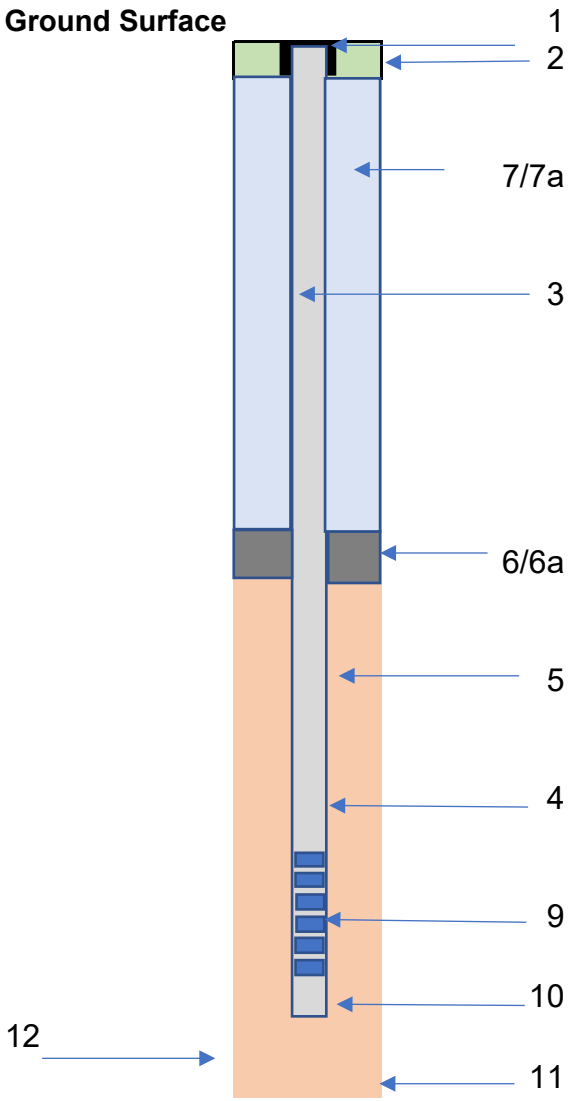
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 30PZ-19-03
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass ~ 6 feet north of former western drum
Drilling Company: Technical Drilling Services	storage pad, former Moore Army Airfield.
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



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 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
Quanity Used:	25-lbs
Top/Bottom of Pack:	67-80 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom of Seal:	1-67 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:	2 inches
11. Bottom of Boring:	80 feet bgs
12. Diameter of borehole:	3.75 inches

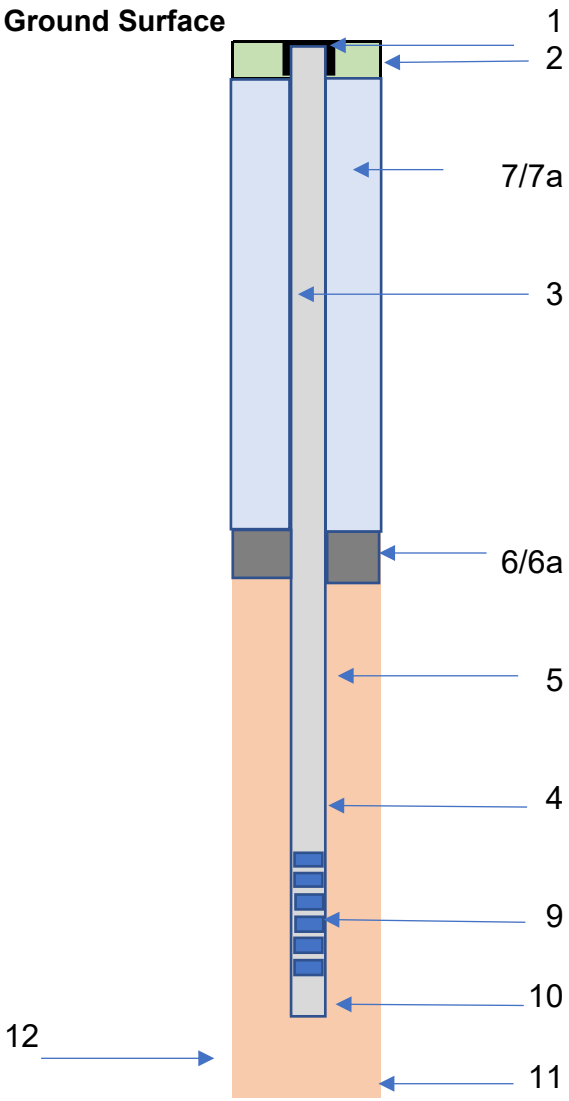
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 30PZ-19-04
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass ~3 feet west of northwestern
Drilling Company: Technical Drilling Services	taxiway turn, former Moore Army Airfield.
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



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
Quanity 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

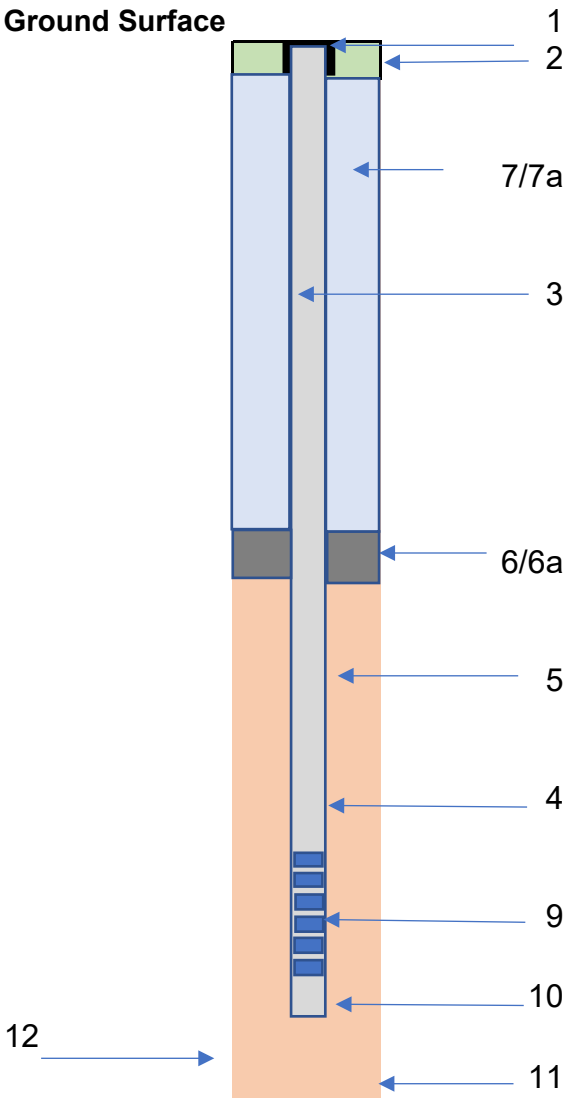
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 30PZ-19-05
	Project Number: 1082	

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



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
Quanity 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:

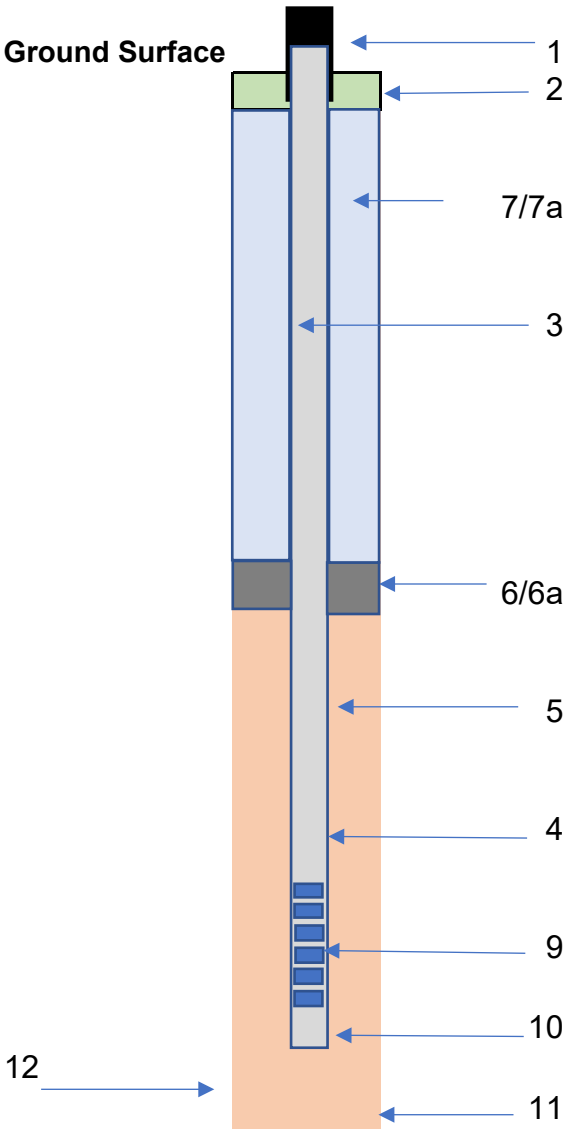
2' x 2' concrete pad

AOC 31

KGS	Project: PFAS RI	Piezometer Identification: 31PZ-19-01
	Project Number: 1082	

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



1. Well Protection Type:	Steel Stickup
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
Quanity Used:	50 lbs
Top/Bottom of Pack:	65-77 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom of Seal:	0-65 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:	N/A
11. Bottom of Boring:	77 feet bgs
12. Diameter of borehole:	2.25 inches

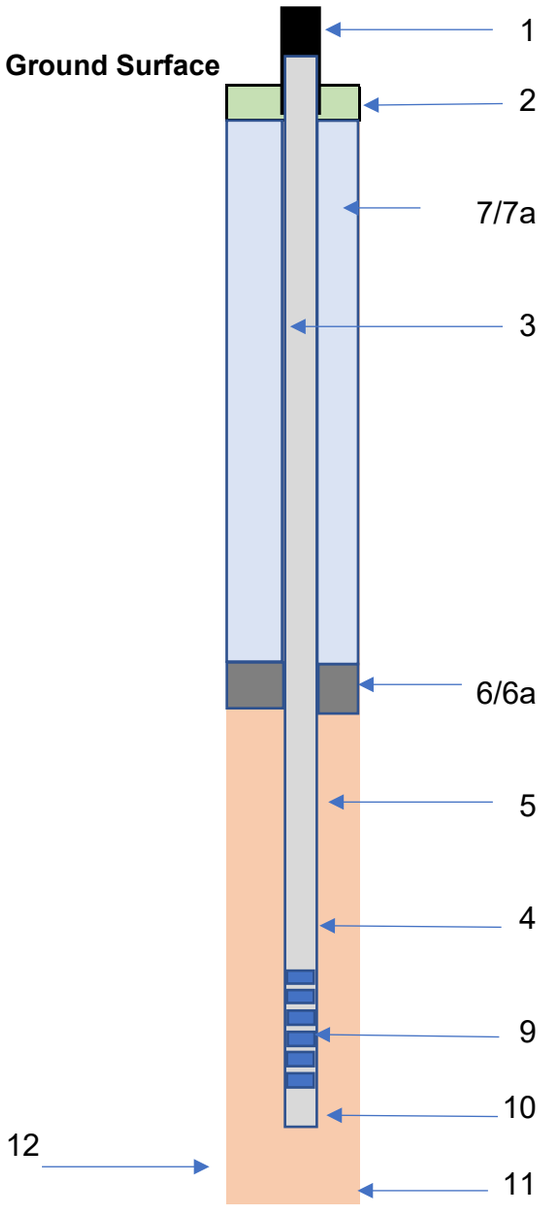
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 31PZ-19-02D
	Project Number: 1082	

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:	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
Quanity Used:	1 Bag
Top/Bottom of Pack:	63-70 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom of Seal:	0.5-63 feet bgs
7. Backfill Mixture Used:	Bentonite chips
7a. Placement Method:	Gravity
8. Screen length:	5 feet
9. Screen interval:	65-70 feet bgs
10. Sump Length:	N/A
11. Bottom of Boring:	70 feet bgs
12. Diameter of borehole:	4 inches

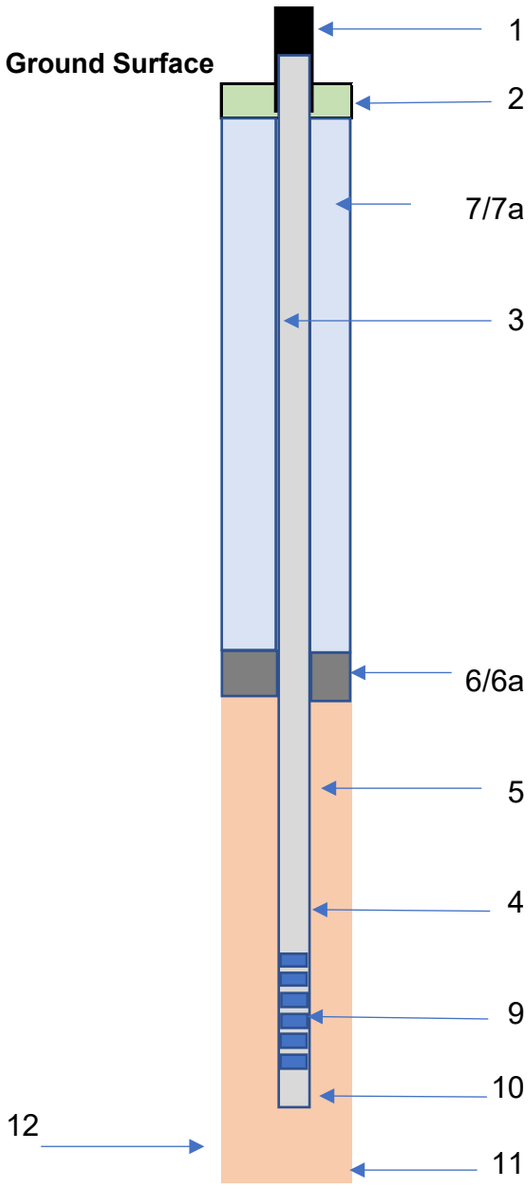
Comments:

concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 31PZ-19-02S
	Project Number: 1082	

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
Quanity 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:

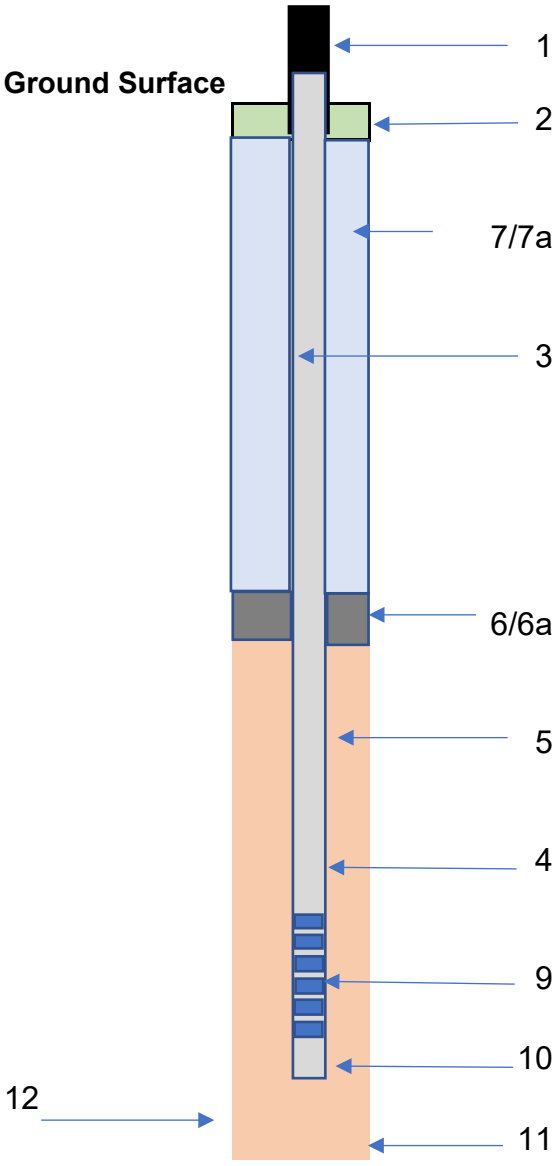
concrete pad

AOC 50

KGS	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



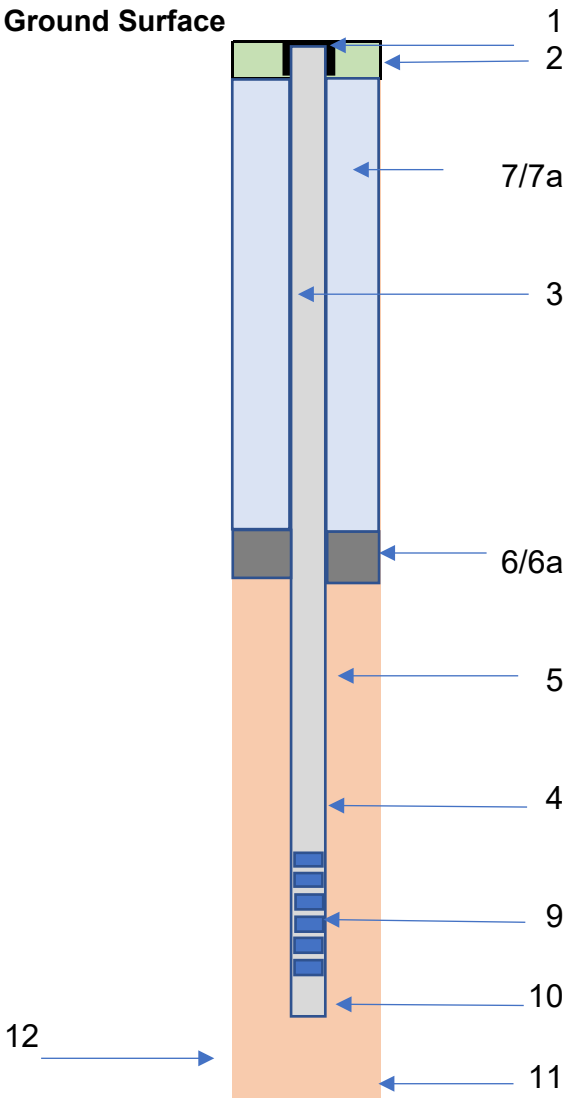
1. Well Protection Type:	Steel Stickup
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch PVC shcedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quanity Used:	50 lbs.
Top/Bottom of Pack:	41-53 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom 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**

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-02
	Project Number: 1082	

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



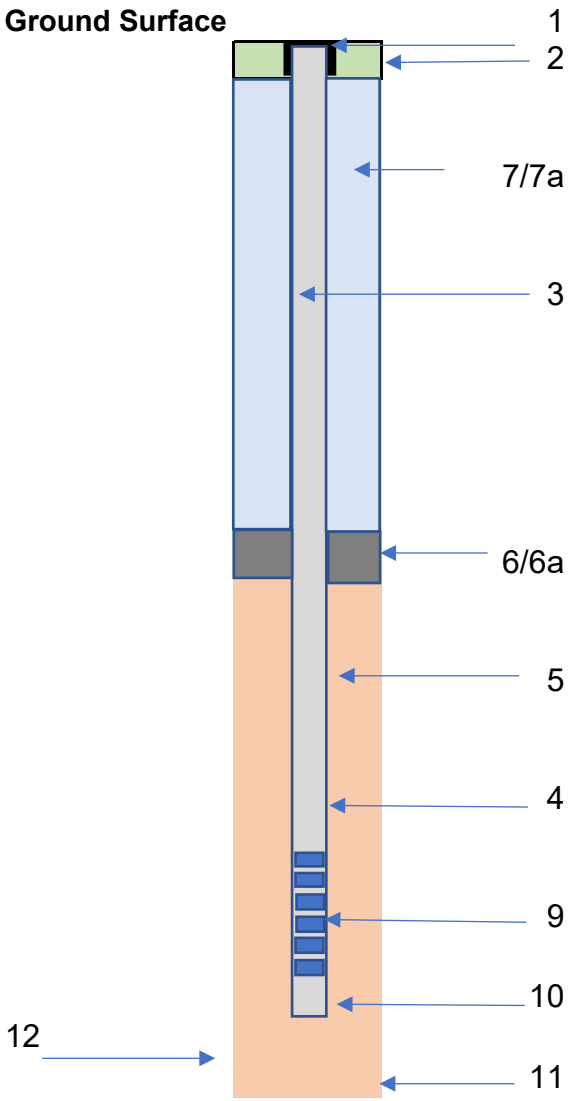
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	55-67 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom 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:

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-03
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area on the eastern edge of airfield, ~15 ft
Drilling Company: Technical Drilling Services	west of perimeter road, ~200 ft east of the eastern runway,
Drilling Method and Equipment: Direct Push	Former Moore Army Airfield.
Drilling Date(s): 8/23/2019	Well Construction Date: 8/23/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 50VP-19-09
Ground Elevation (ft NAVD88): 255.61	Top of PVC Elevation (ft NAVD88): 258.40
Easting (State Plane NAD83 [FT]): 628849.20	Northing (State Plane NAD83 [FT]): 3033897.40



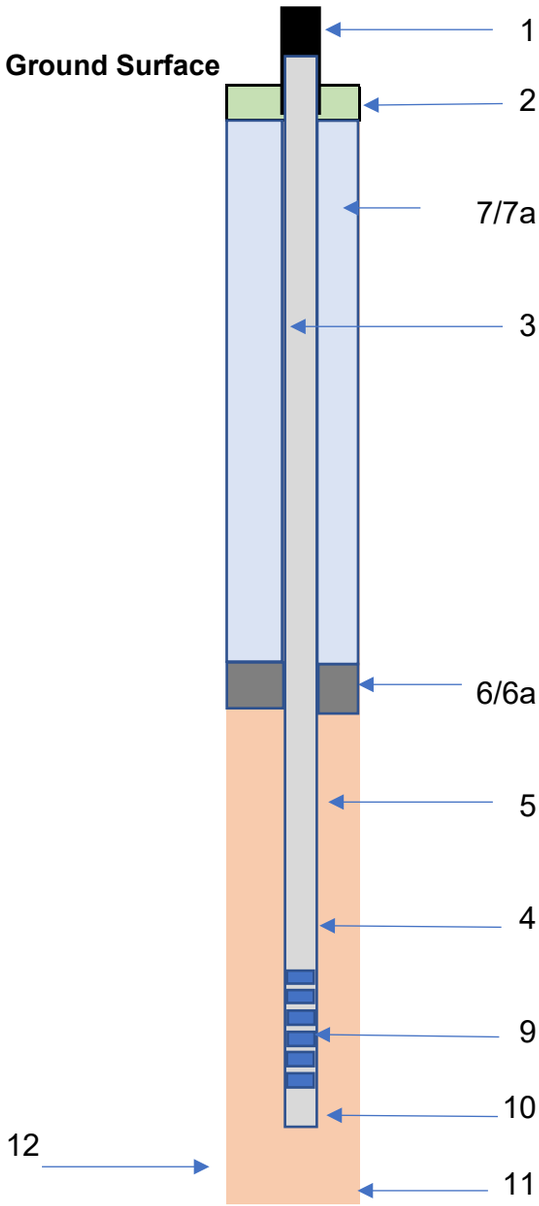
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	38-50 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom 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**

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-04
	Project Number: 1082	

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:	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
Quanity Used:	2 Bags
Top/Bottom of Pack:	43-53 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom of Seal:	0.5-43 feet bgs
7. Backfill Mixture Used:	Bentonite chips
7a. Placement Method:	Gravity
8. Screen length:	10 feet
9. Screen interval:	45-55 feet bgs
10. Sump Length:	N/A
11. Bottom of Boring:	55 feet bgs
12. Diameter of borehole:	4 inches

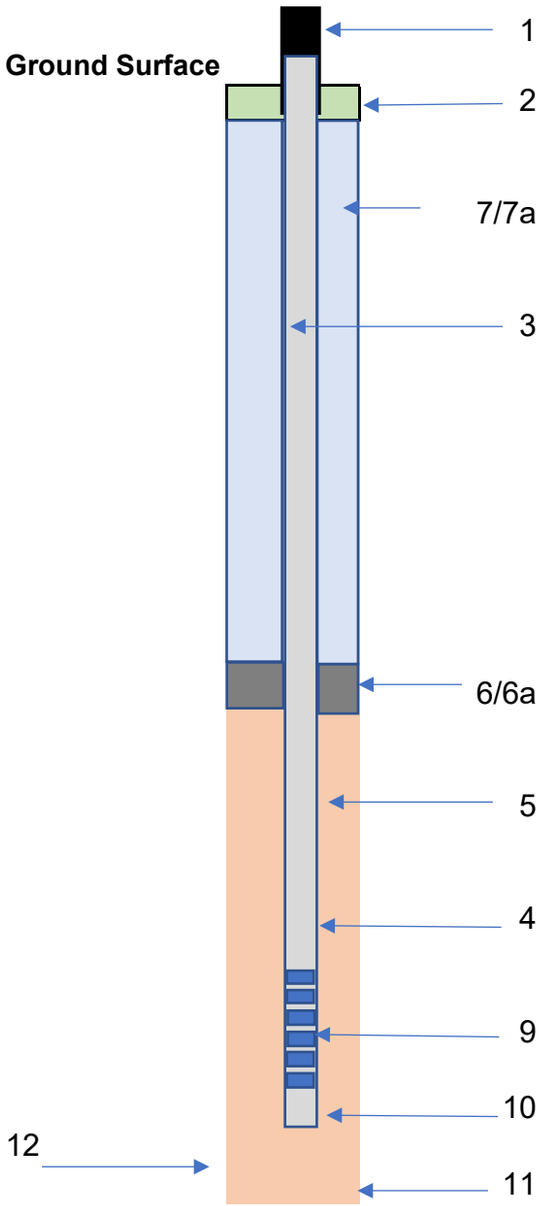
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-05
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In northern grass area of the auction yard,
Drilling Company: Technical Drilling Services	~75 ft southwest of perimeter fence.
Drilling Method and Equipment: Direct Push	Former Moore Army Airfield.
Drilling Date(s): 8/29/2019	Well Construction Date: 8/29/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Melissa Miller	Associated Vertical Profile: 50VP-19-11
Ground Elevation (ft NAVD88): 256.16	Top of PVC Elevation (ft NAVD88): 256.51
Easting (State Plane NAD83 [FT]): 629266.5	Northing (State Plane NAD83 [FT]): 3032501.4



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
Quanity 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

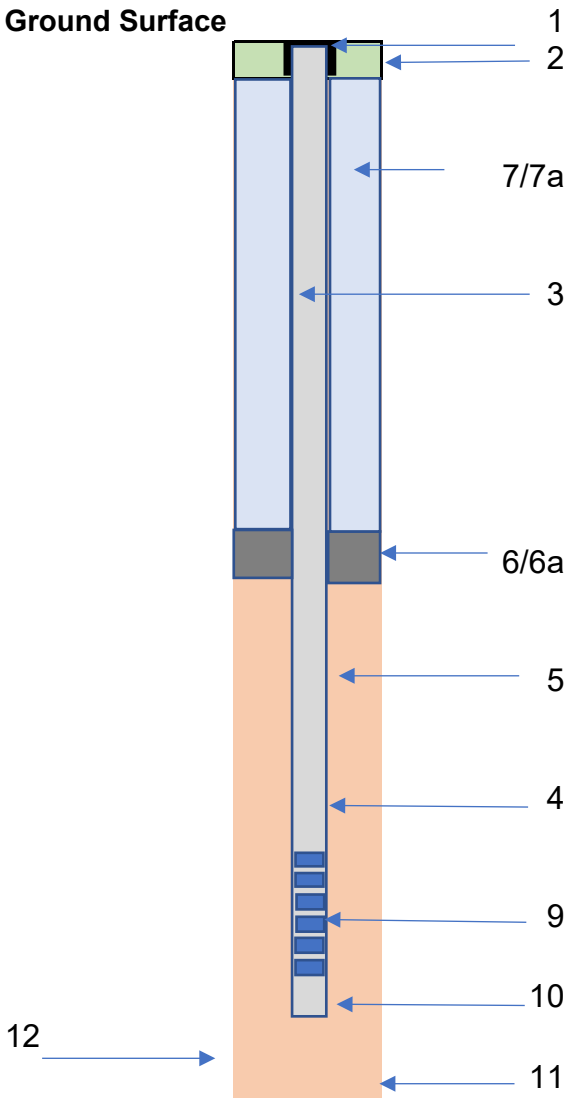
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-06
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area, ~101 ft southwest of the southeastern
Drilling Company: Technical Drilling Services	corner of the southern runway. Former Moore Army Airifeld.
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



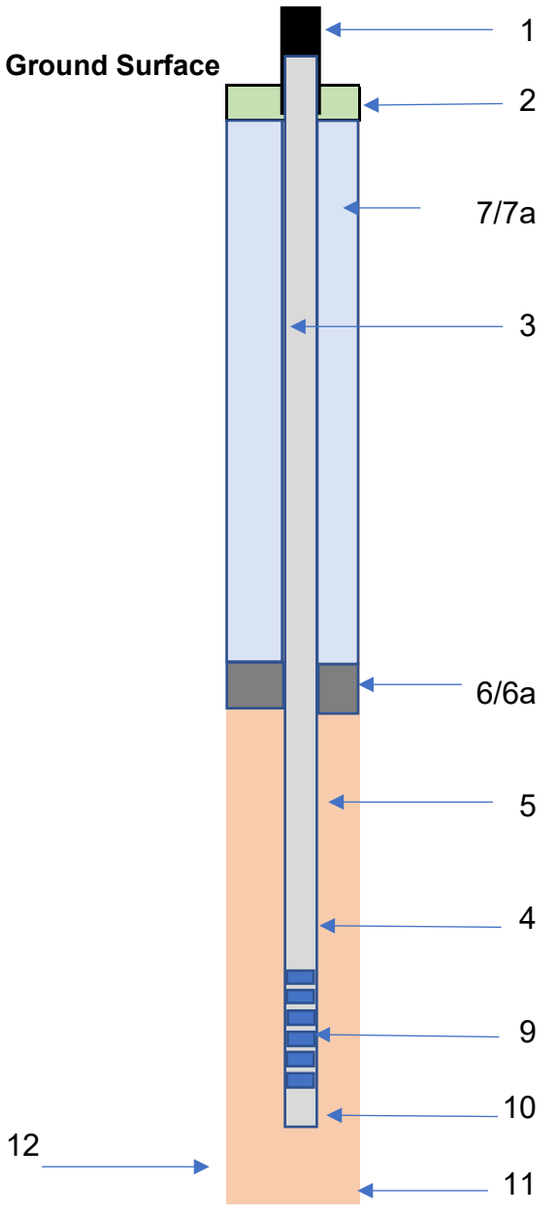
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	51-63 feet bgs
6. Type of Seal:	Bentonite chips
6a.Top/Bottom 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**

KGS	Project: PFAS RI	Piezometer Identification: 50PZ-19-07
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass area, ~227 ft SW of the NW corner
Drilling Company: Technical Drilling Services	of the main runway. Former Moore Army Airfield.
Drilling Method and Equipment: Direct Push	Former Moore Army Airfield.
Drilling Date(s): 8/22/2019	Well Construction Date: 8/22/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: David Kortjohn (Jacobs)	Associated Vertical Profile: 50VP-19-13
Ground Elevation (ft NAVD88): 267.03	Top of PVC Elevation (ft NAVD88): 270.11
Easting (State Plane NAD83 [FT]): 625891.4	Northing (State Plane NAD83 [FT]): 3034626.9



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
Quanity 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

APPENDIX G GRAIN SIZE RESULTS

AOC 20

Unnamed

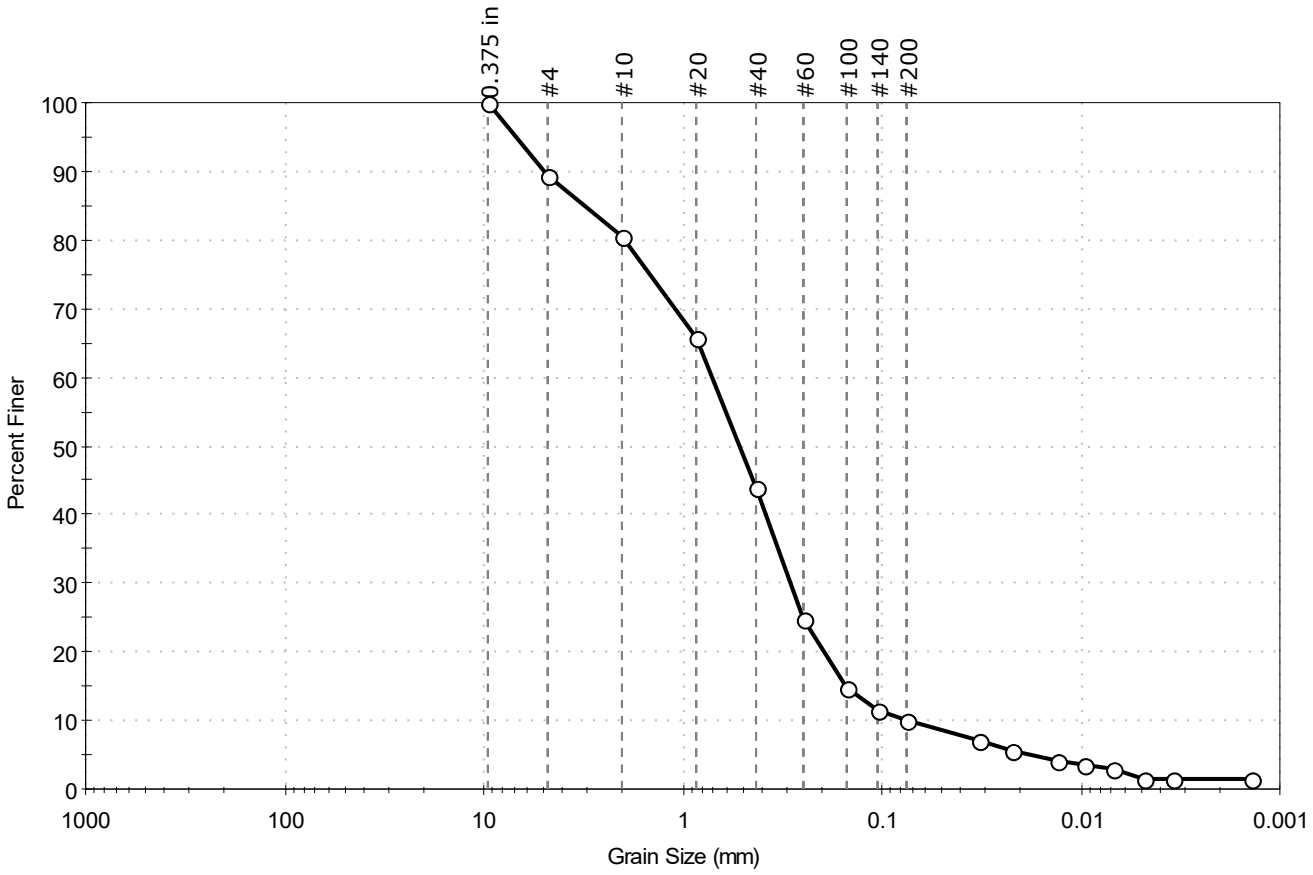
Wetland

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

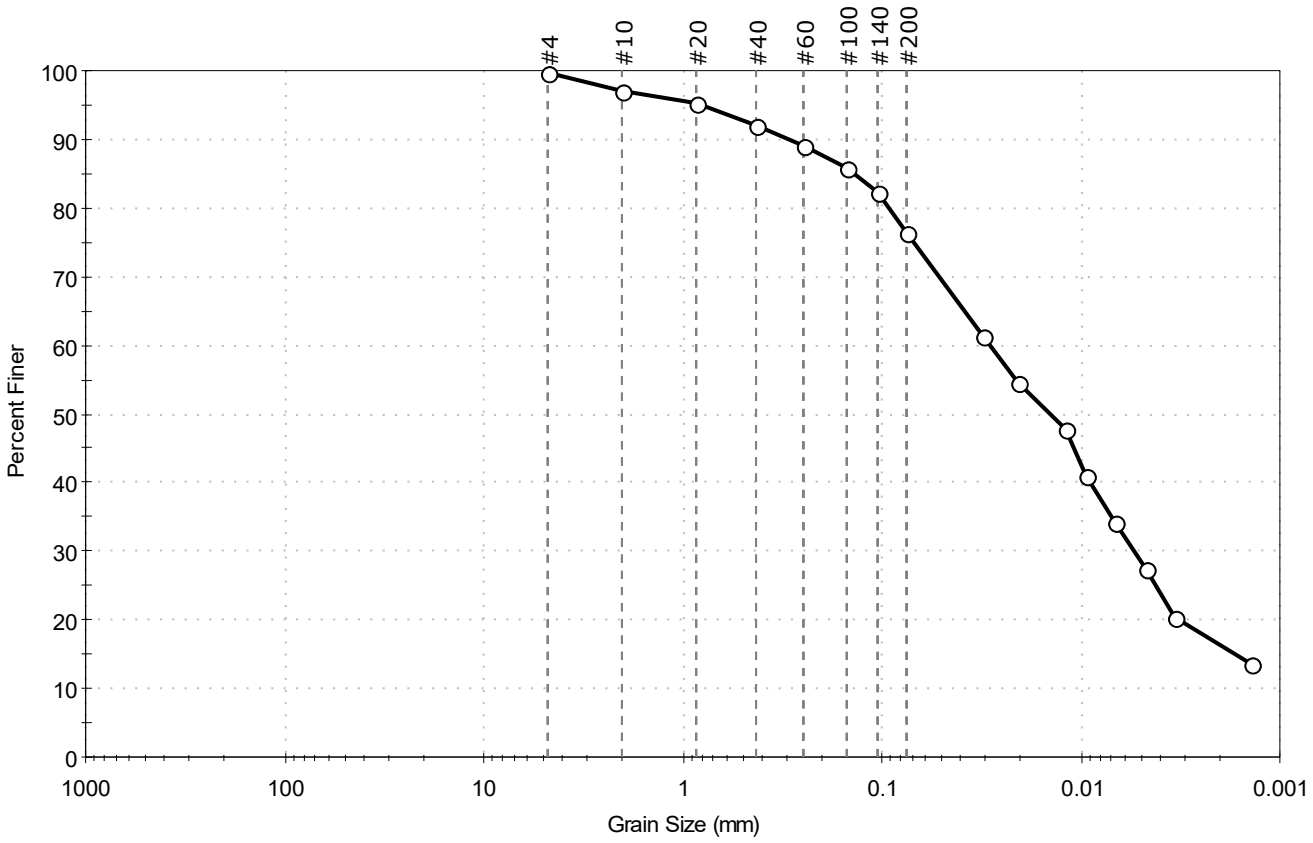
Stream

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		

Coefficients

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

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

Airfield

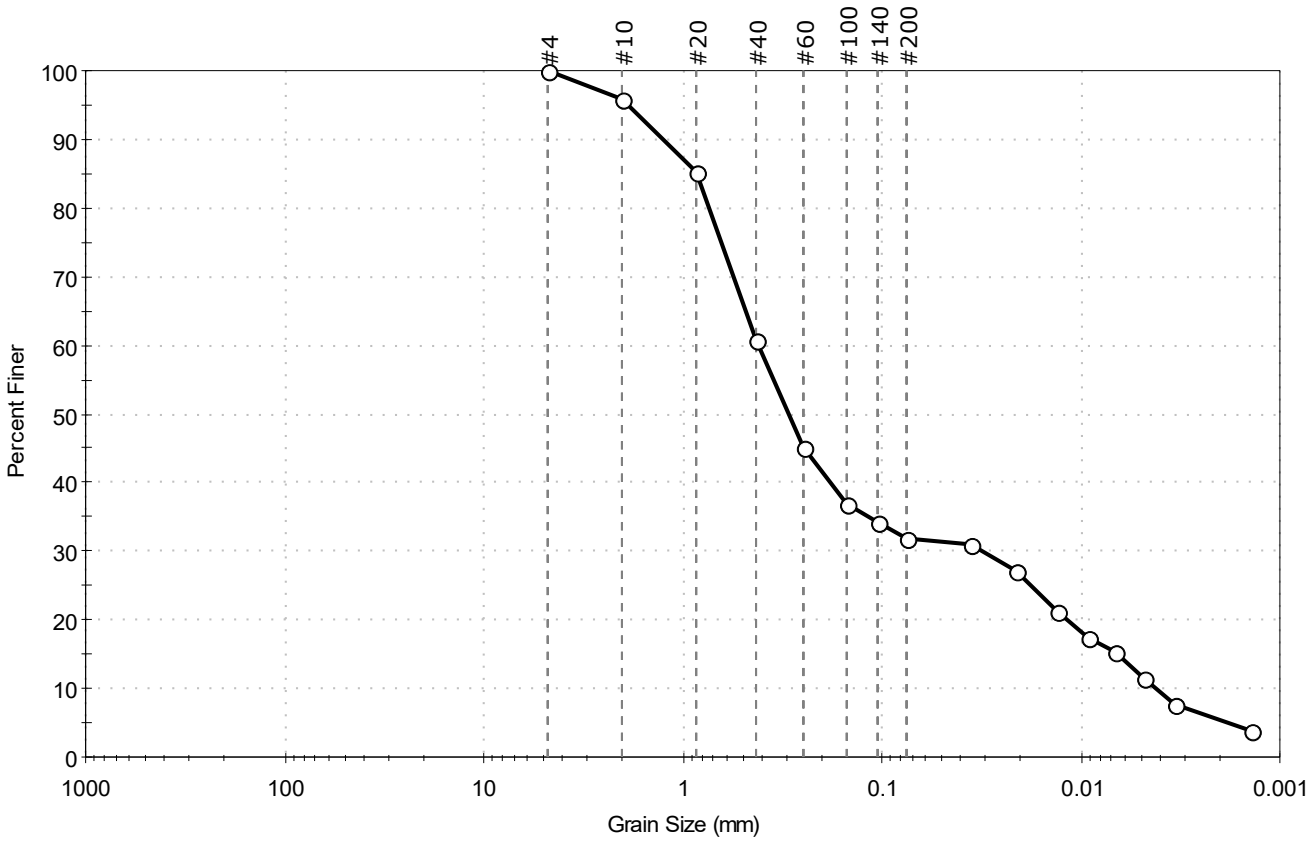
Wetland

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

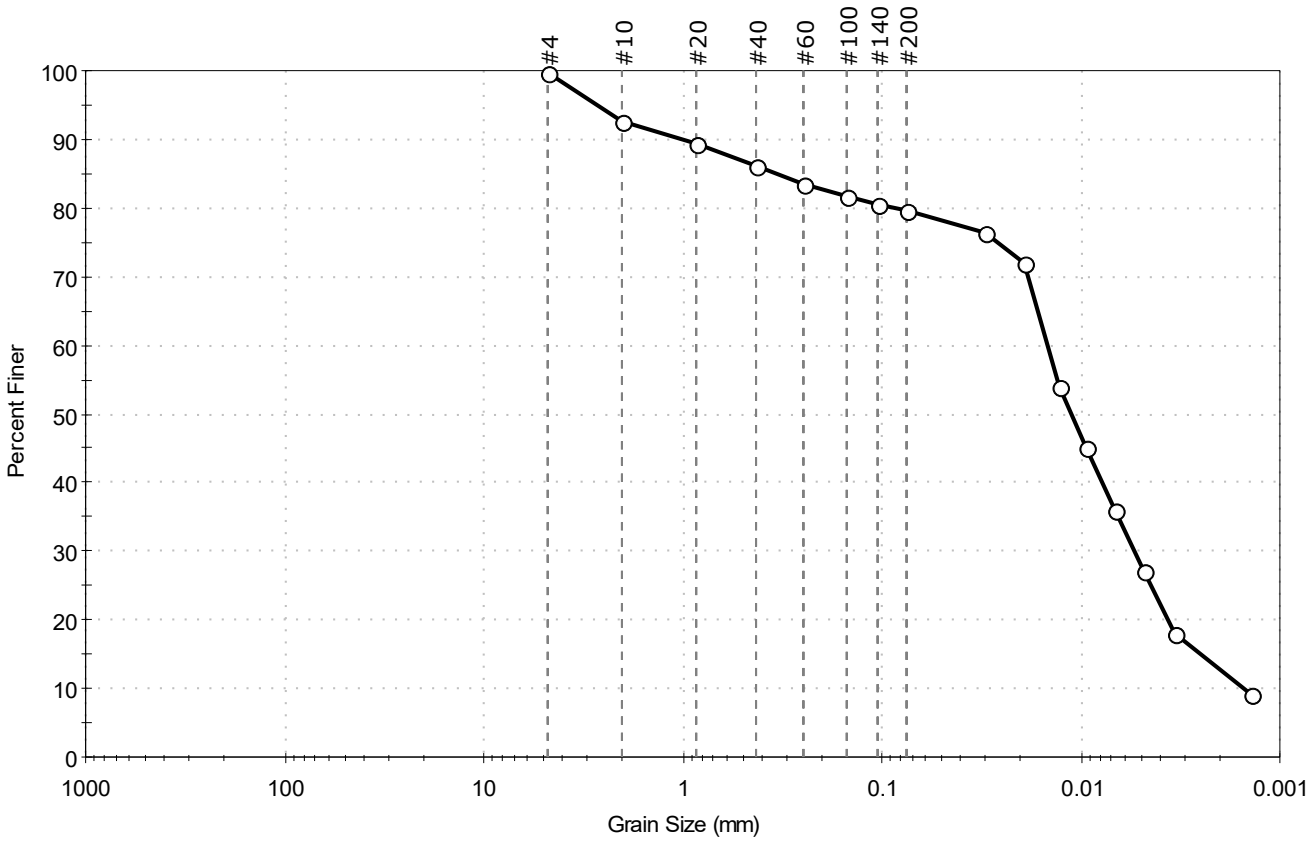
Dispersion Period : 1 minute

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	Tested By:	ckg
Sample ID:	AFW-19-02-SE_OCT19	Test Date:	11/27/19	Checked By:	bfs
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

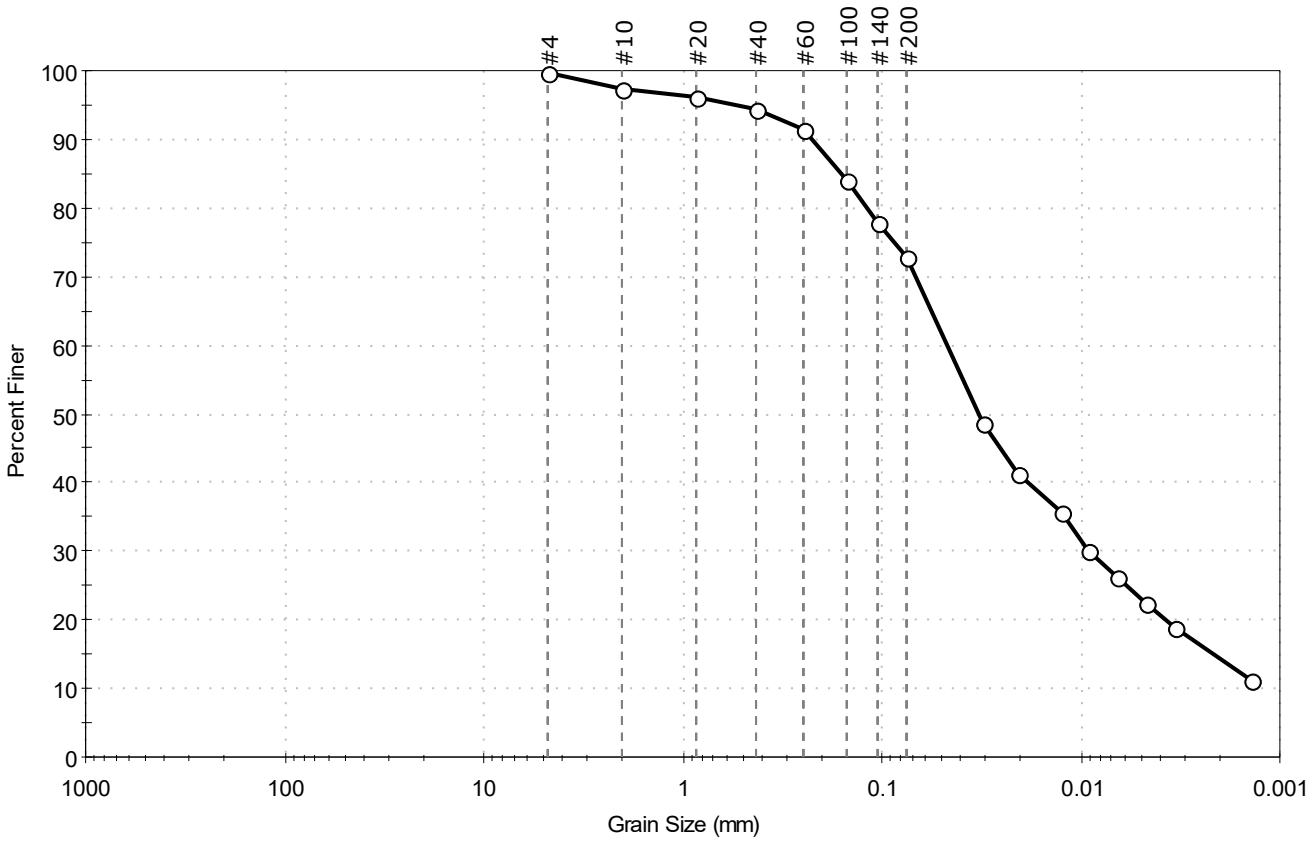
Est. Specific Gravity : 2.65

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

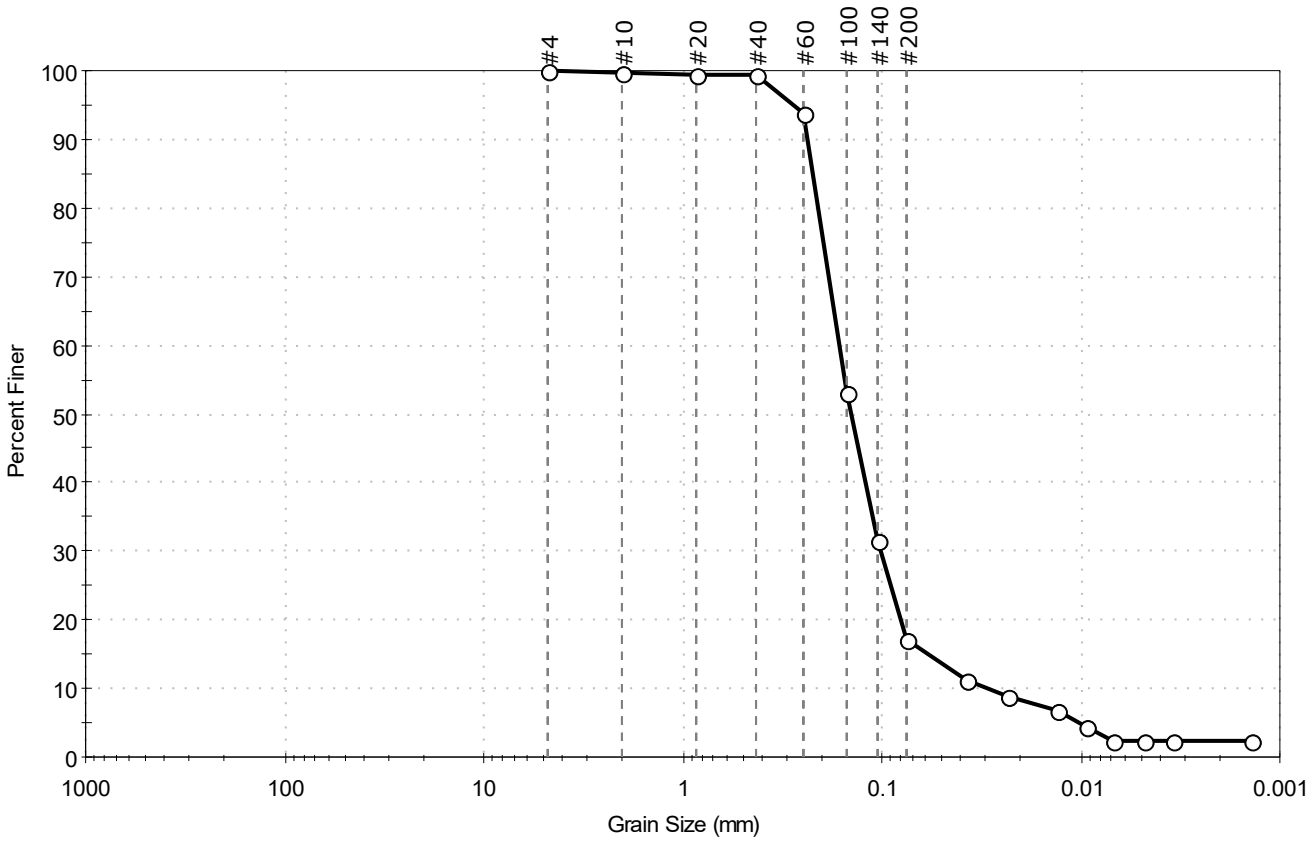
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

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

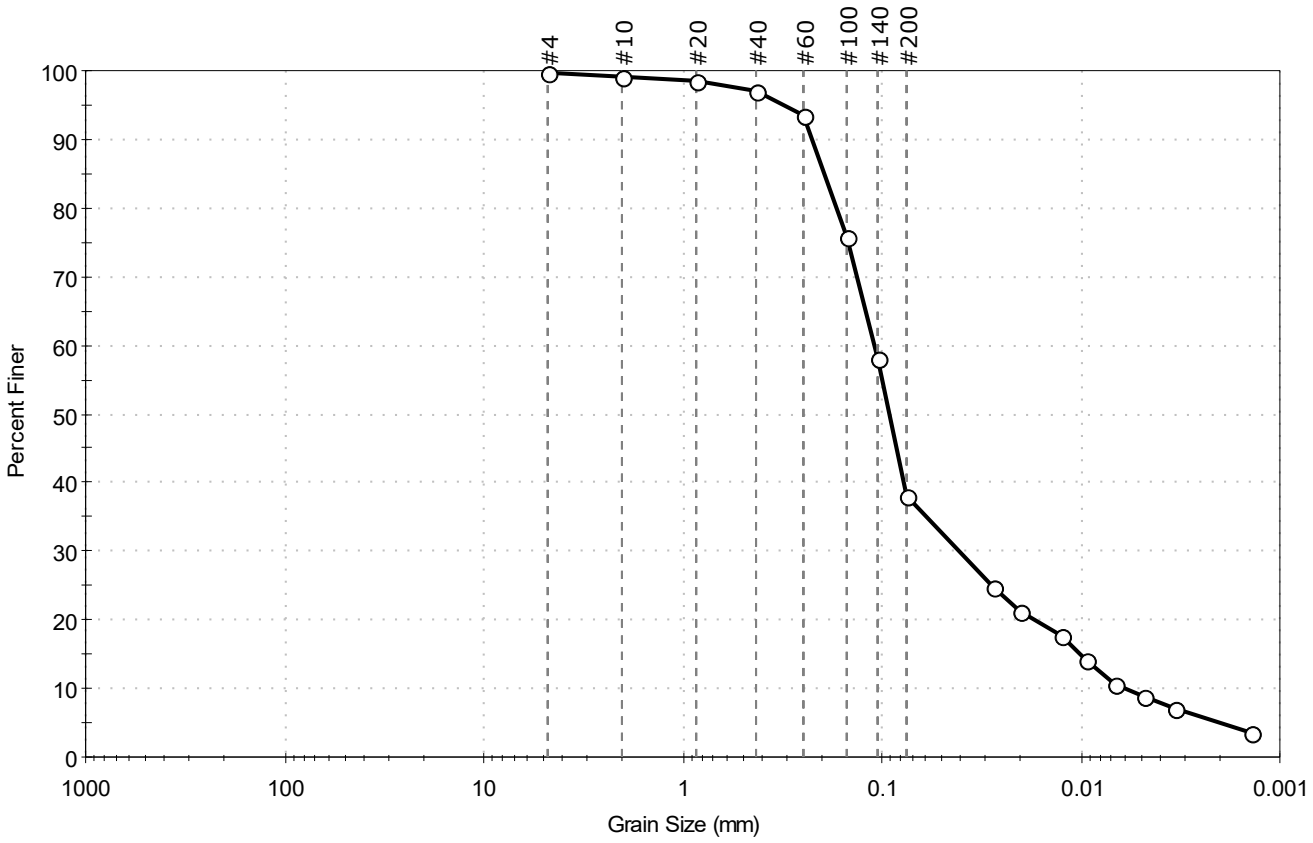
Dispersion Period : 1 minute

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

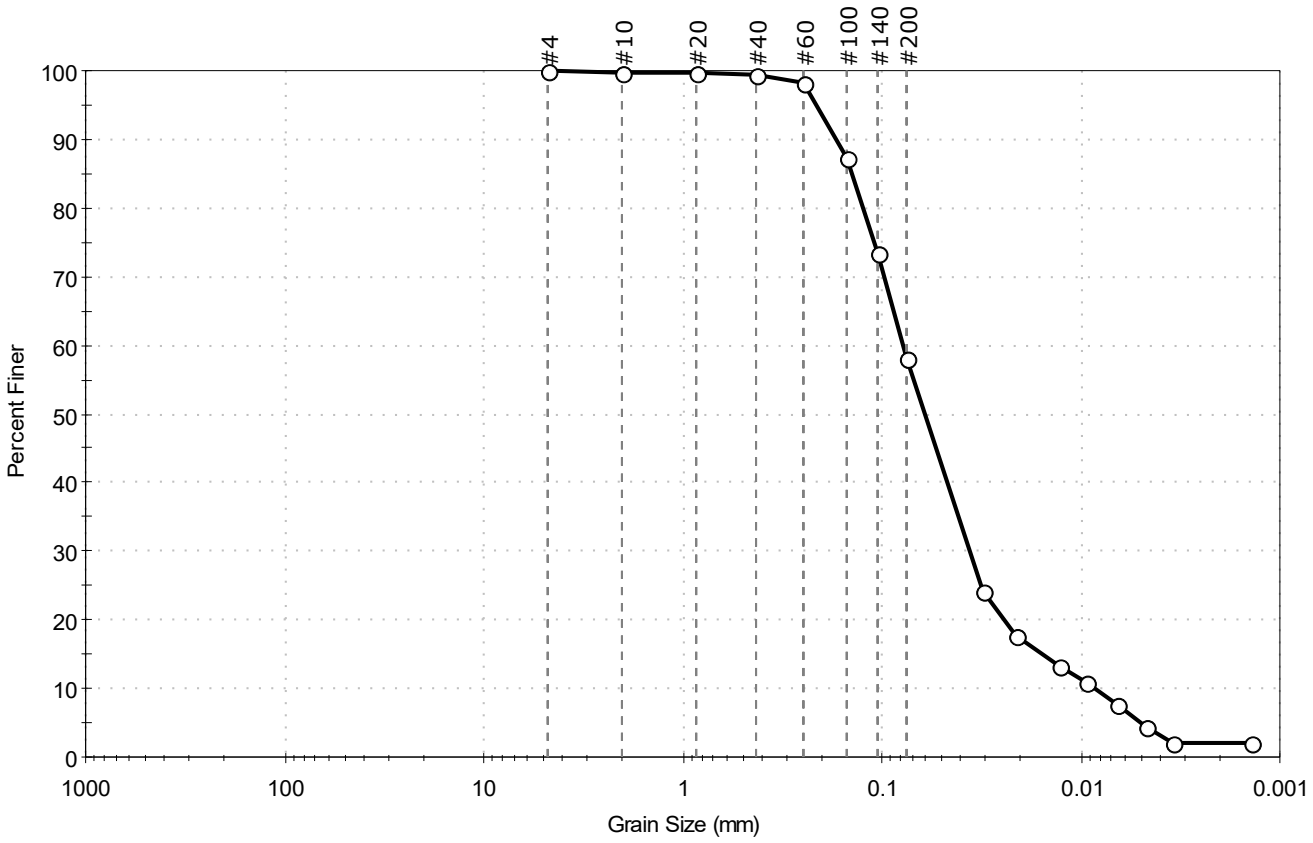
Dispersion Period : 1 minute

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

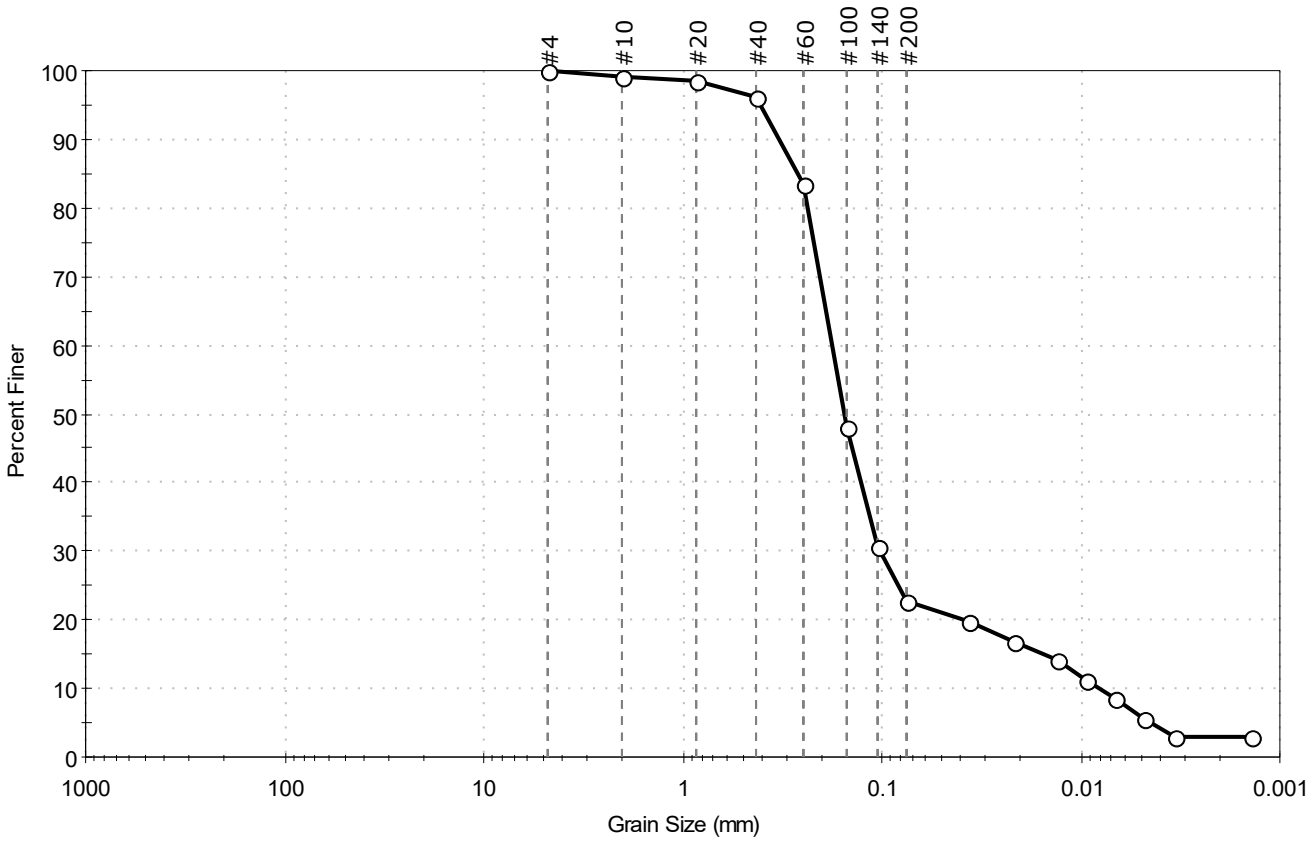
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

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

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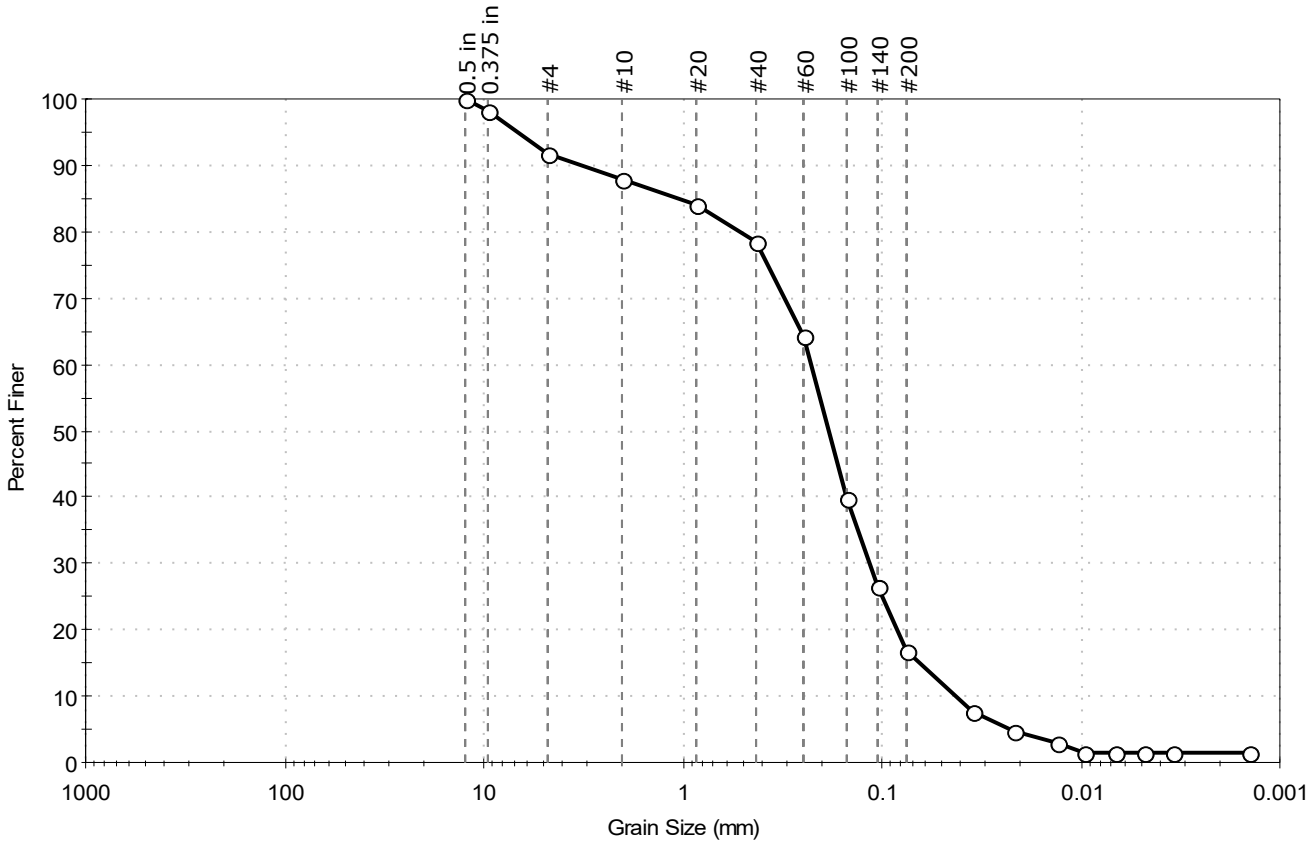
Client:	KOMAN Government Solutions, LLC				
Project:	PFAS Remedial Investigation				
Location:				Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NR-19-06-SE-OCT19	Test Date:	11/27/19	Checked By:	bfs
Depth :	0-0.5'	Test Id:	529913		
Test Comment:	---				
Visual Description:	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

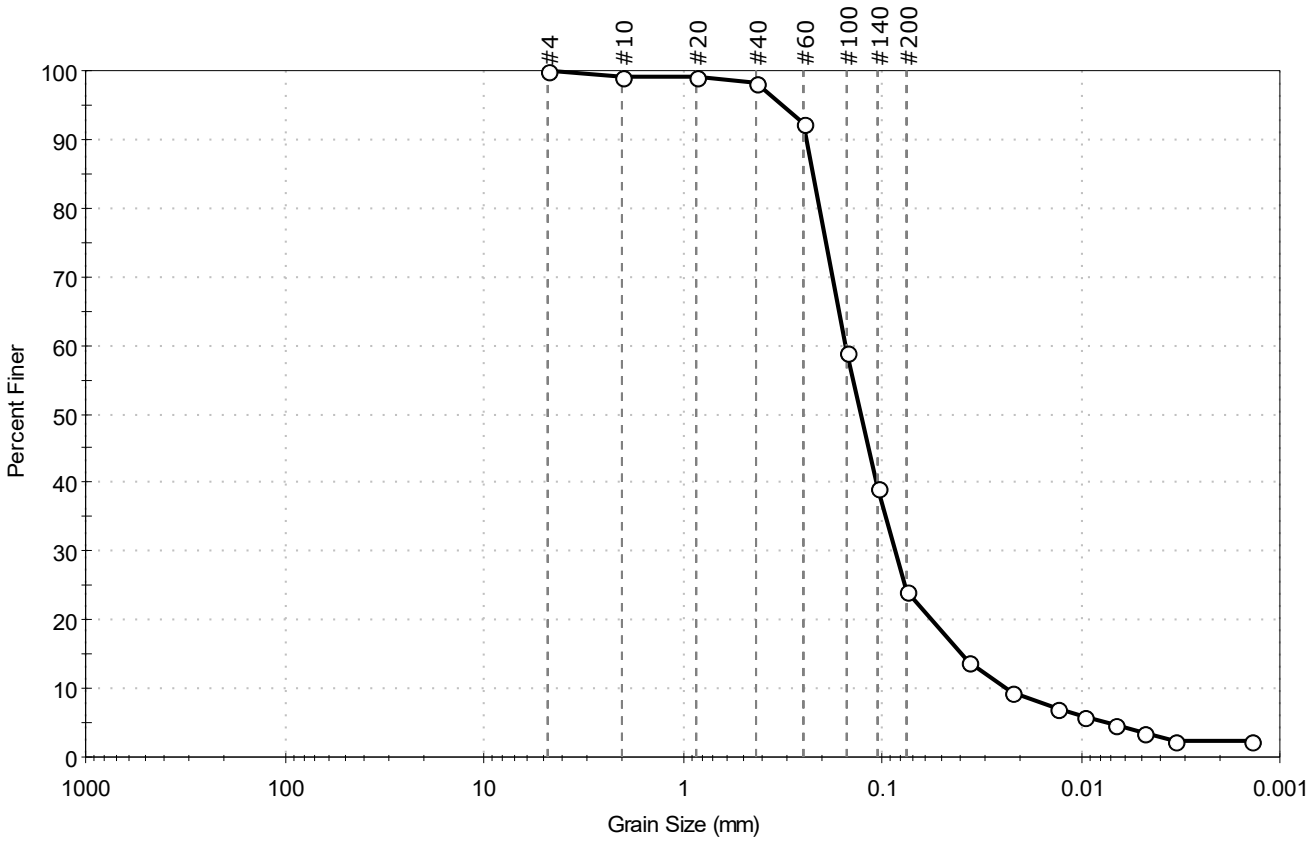
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	PFAS Remedial Investigation				
Location:				Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NR-19-07-SE-OCT19	Test Date:	11/27/19	Checked By:	bfs
Depth :	0-05'	Test Id:	529912		
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	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))

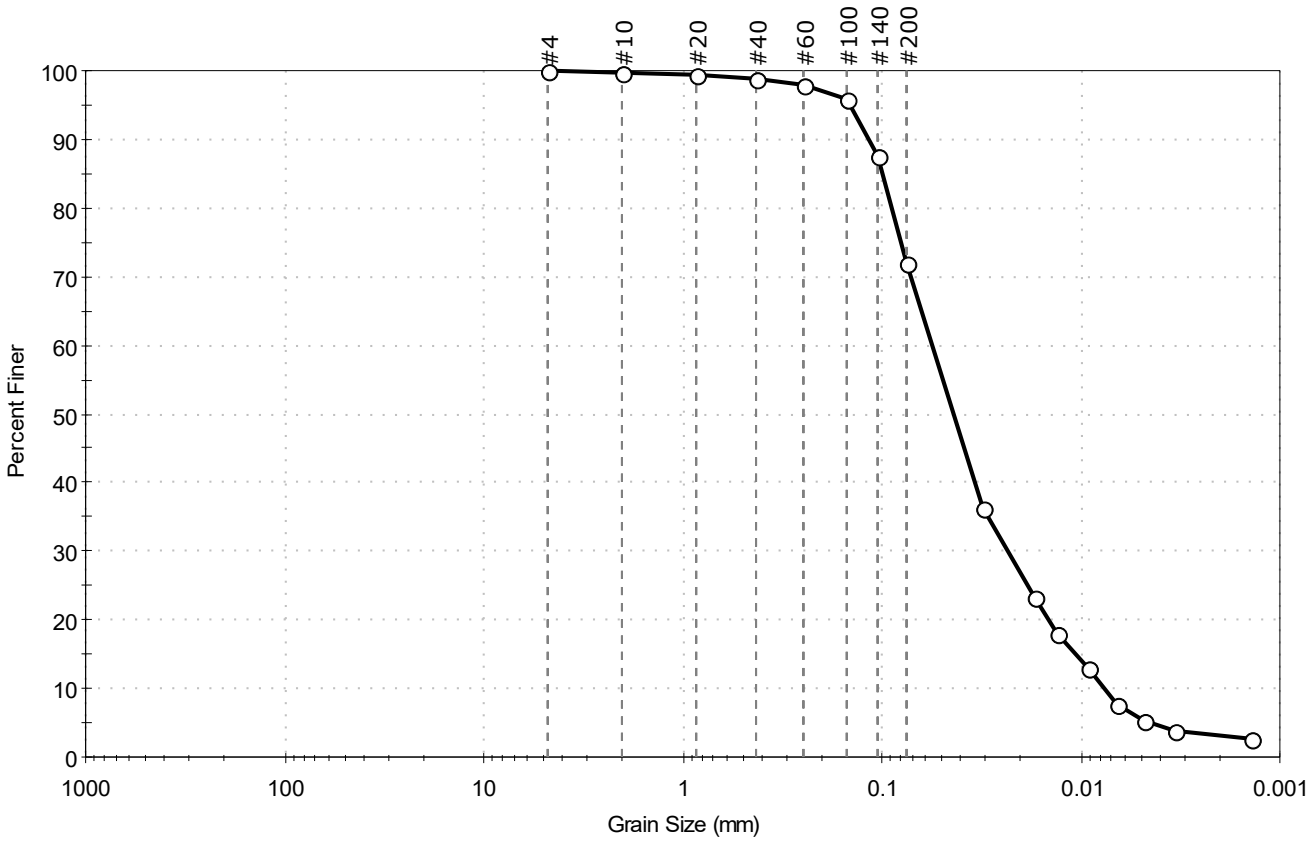
Sample/Test Description

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

GeoTesting EXPRESS

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))

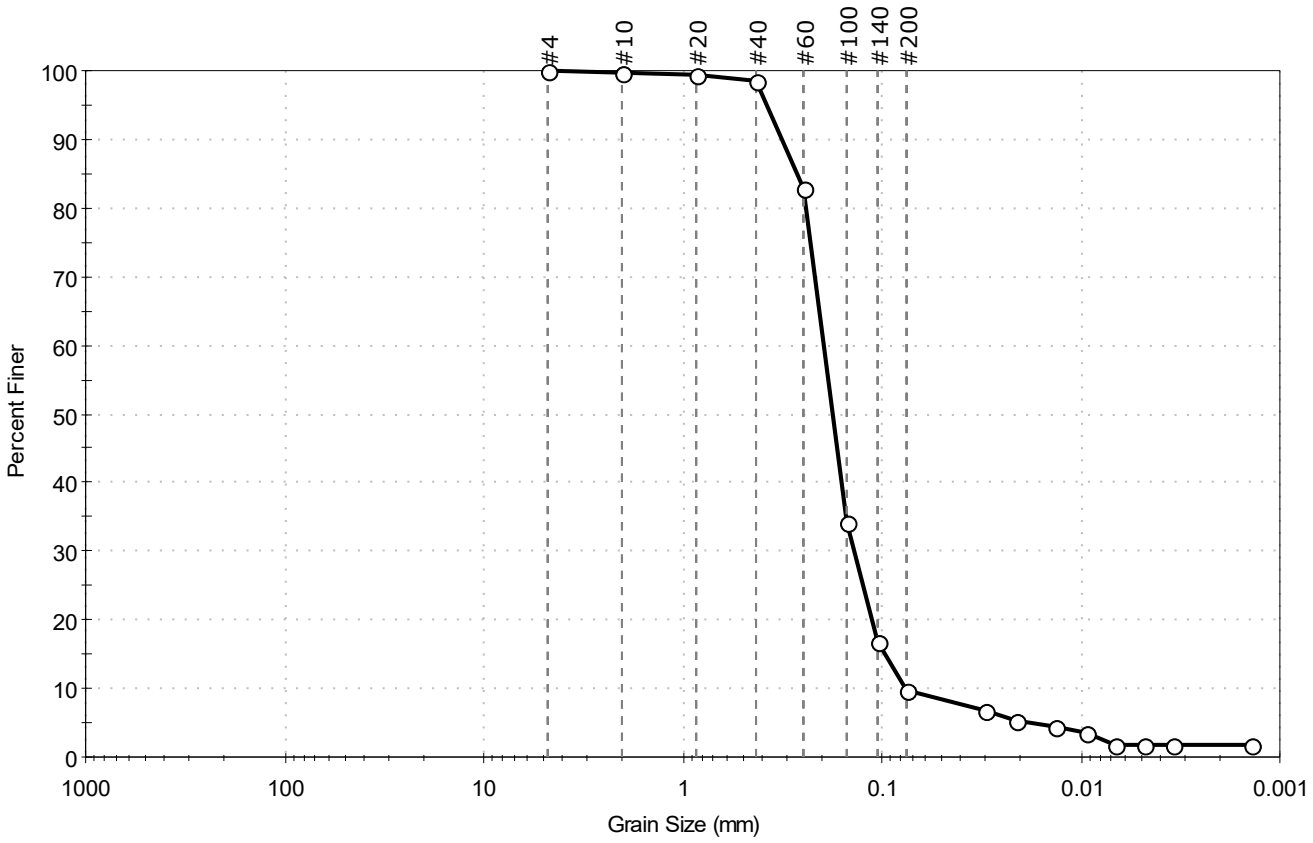
Sample/Test Description

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

GeoTesting EXPRESS

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

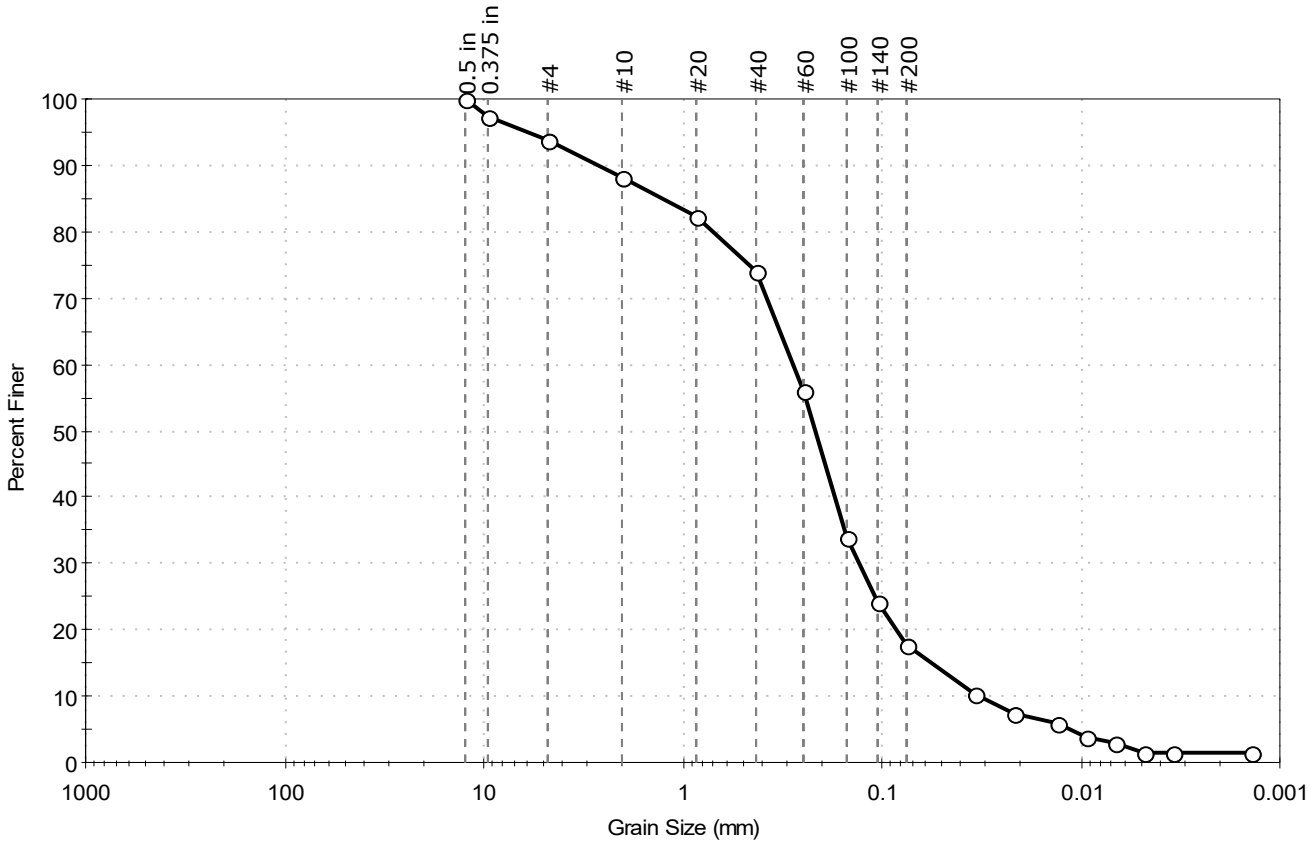
Dispersion Period : 1 minute

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

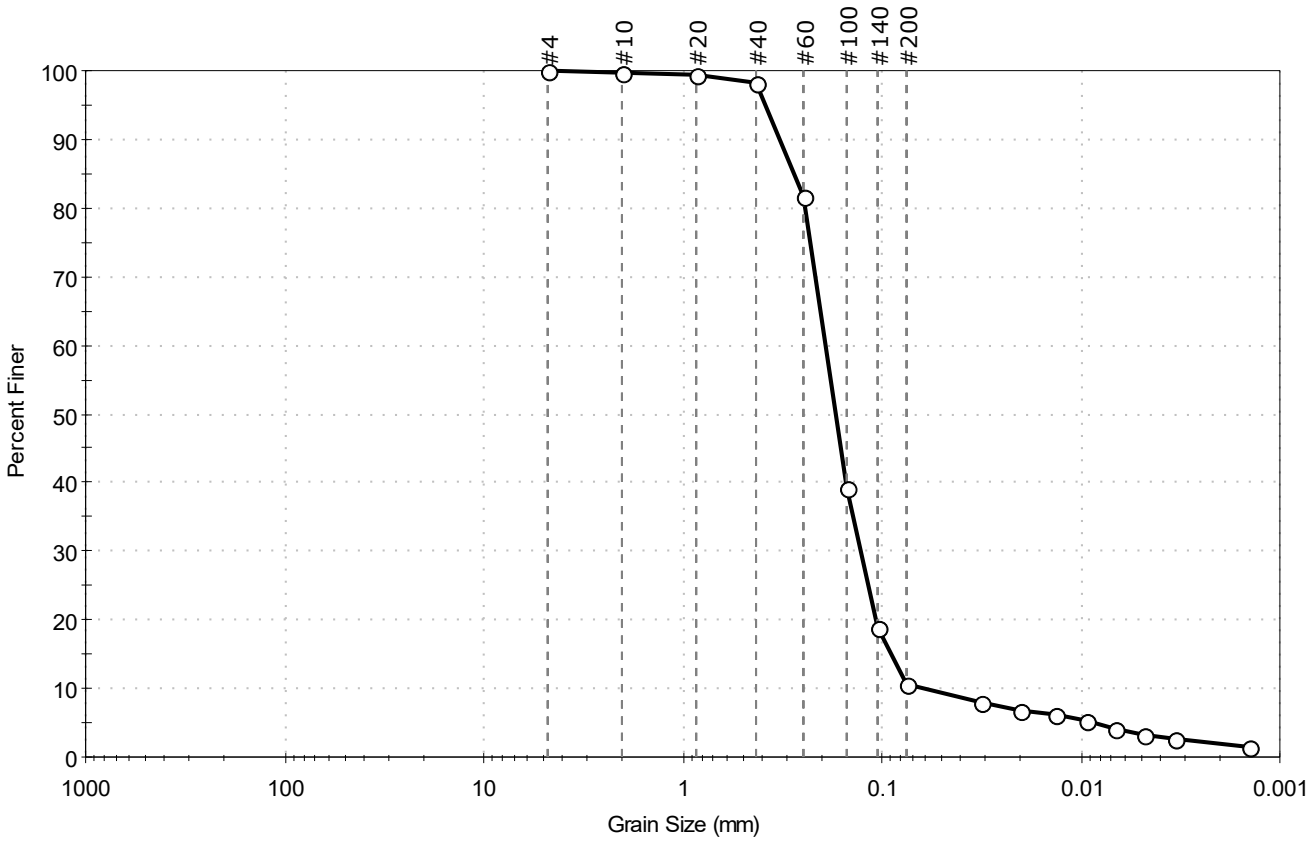
Dispersion Period : 1 minute

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		

Coefficients

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

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

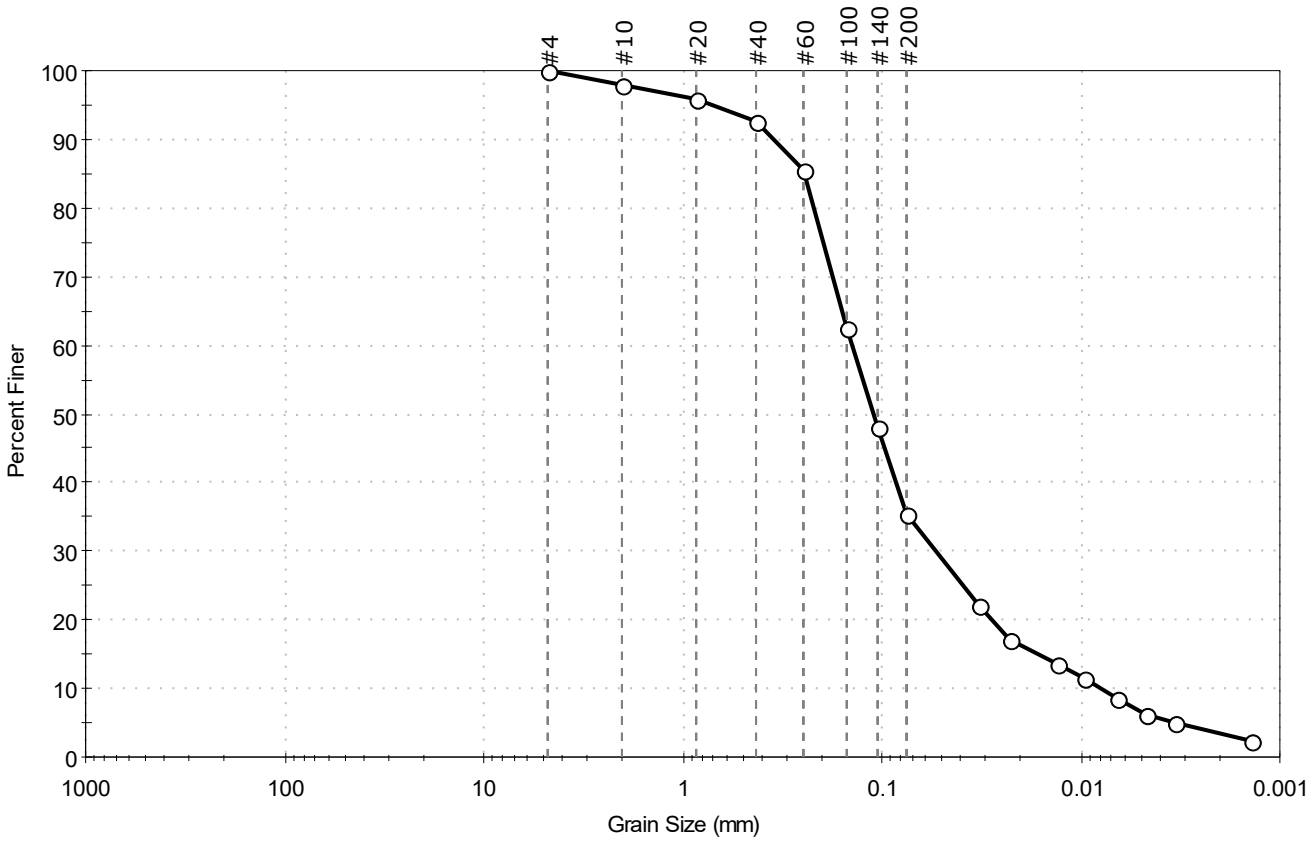
Dispersion Period : 1 minute

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-19-12-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

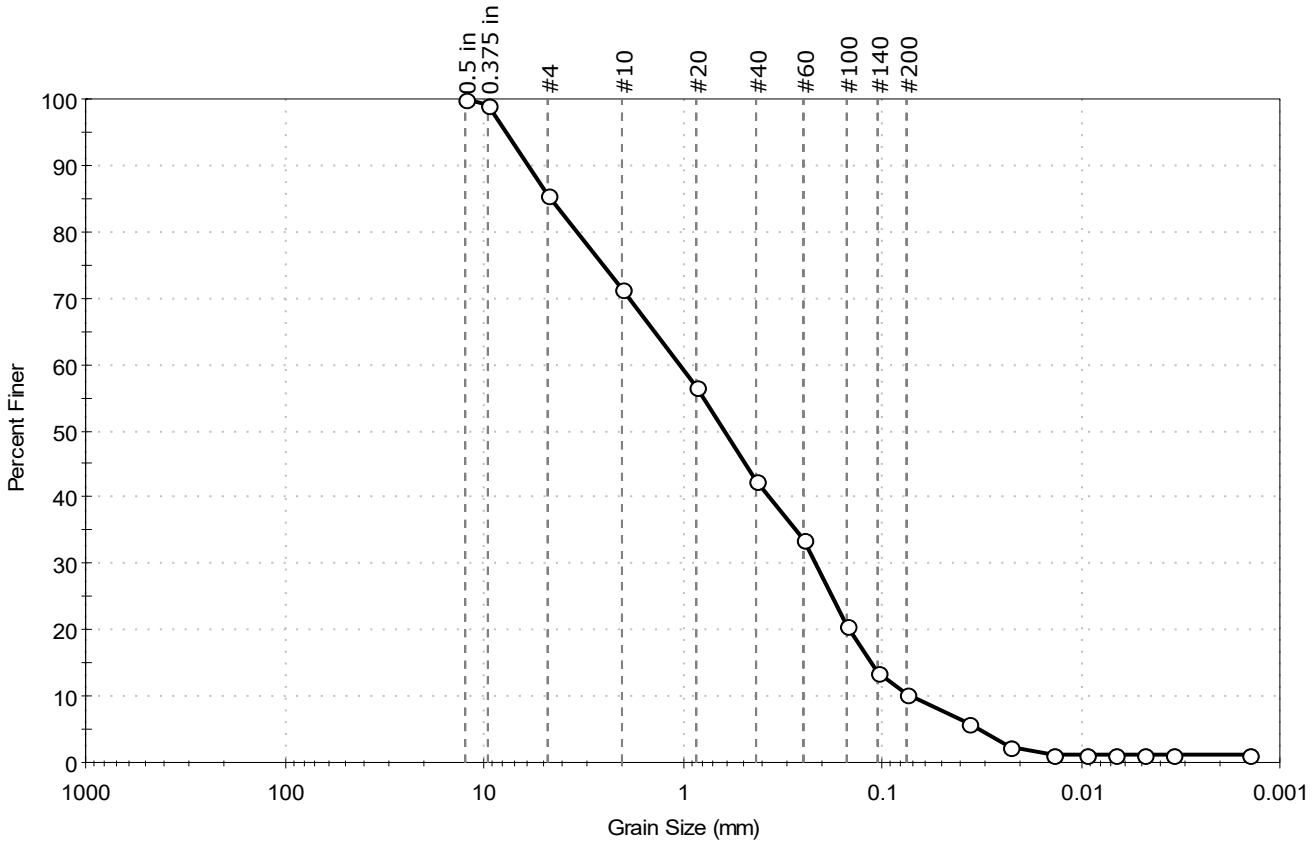
Dispersion Period : 1 minute

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	Tested By:	ckg
Sample ID:	NR-19-13-SE-OCT19	Test Date:	11/27/19	Checked By:	bfs
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

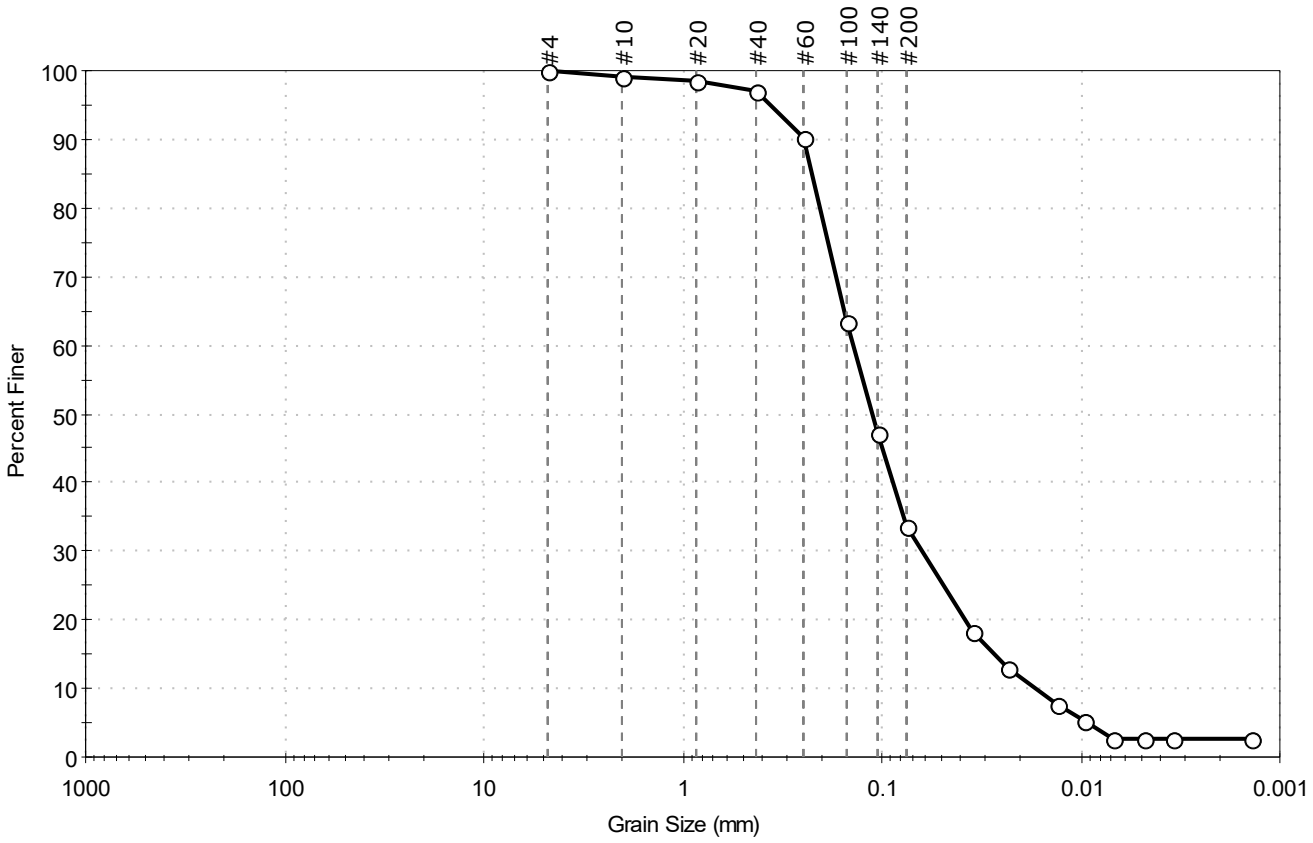
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

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

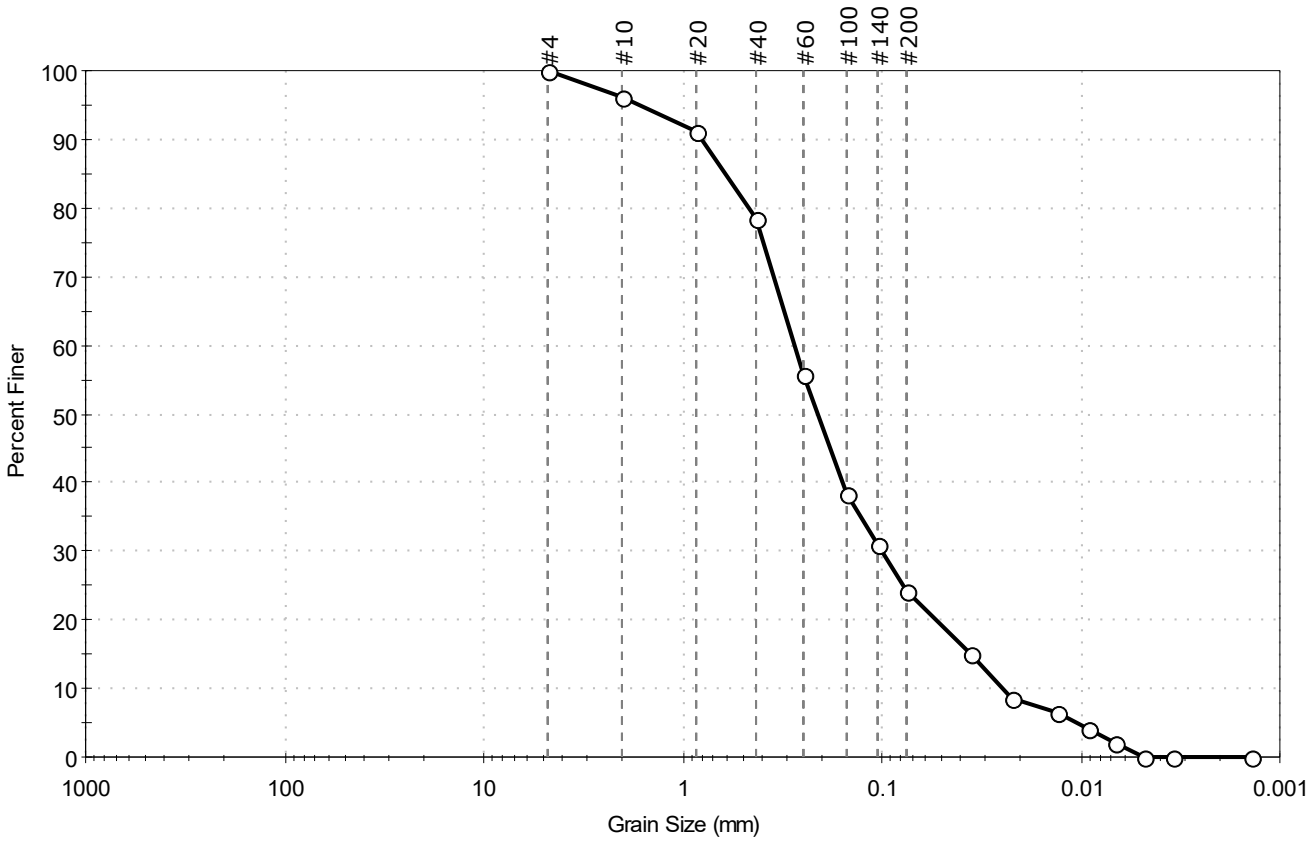
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

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-19-01-DEC19	Test Date:	03/04/20	Checked By:	jsc
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

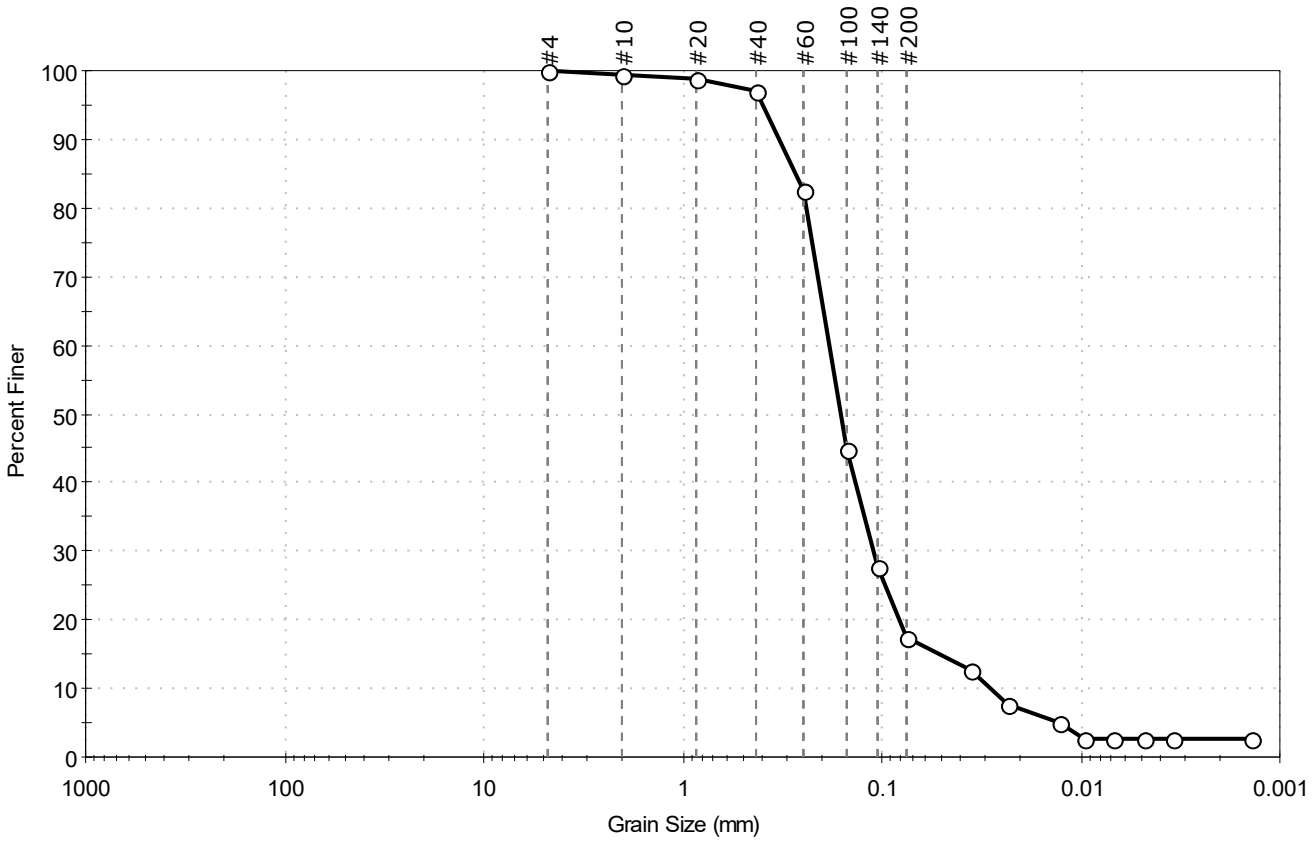
Dispersion Period : 1 minute

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

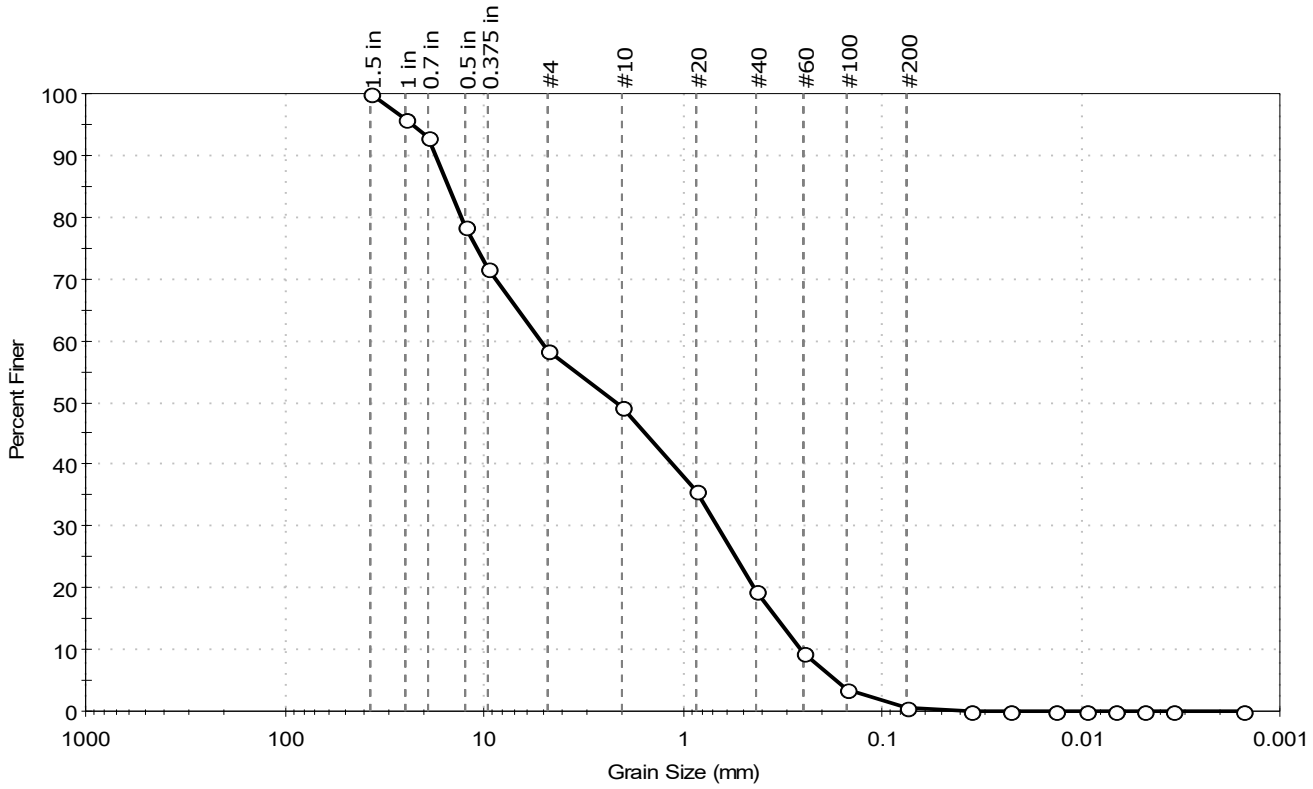
River Sediment

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

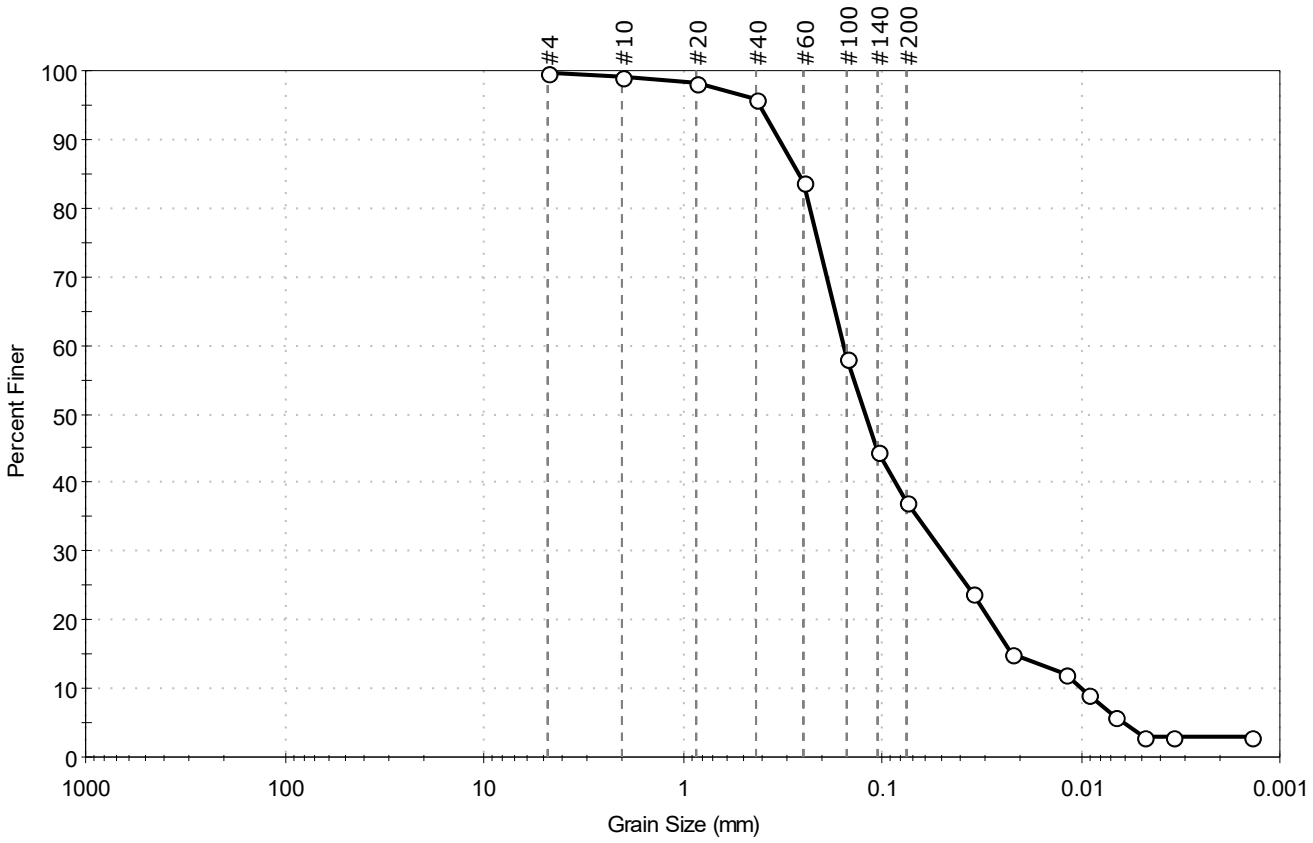
Grain Size

Graphs

GeoTesting EXPRESS

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

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Willow's

Brook

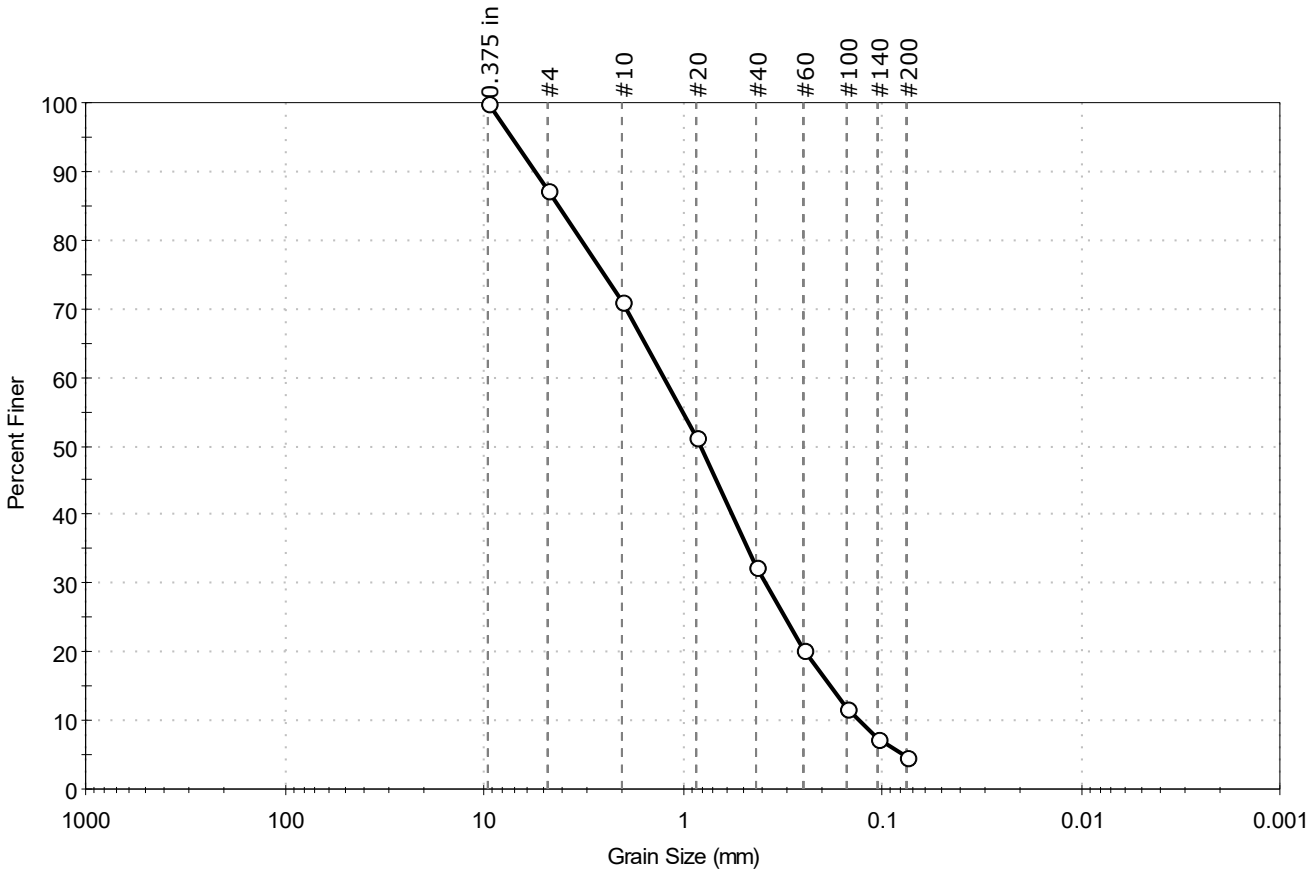
Sediment

Grain Size

Graphs

Client:	KOMAN Government Solutions, LLC				
Project:	PFAS Remedial Investigation				
Location:				Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WAB-SED-19-01-DEC19	Test Date:	03/04/20	Checked By:	jsc
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

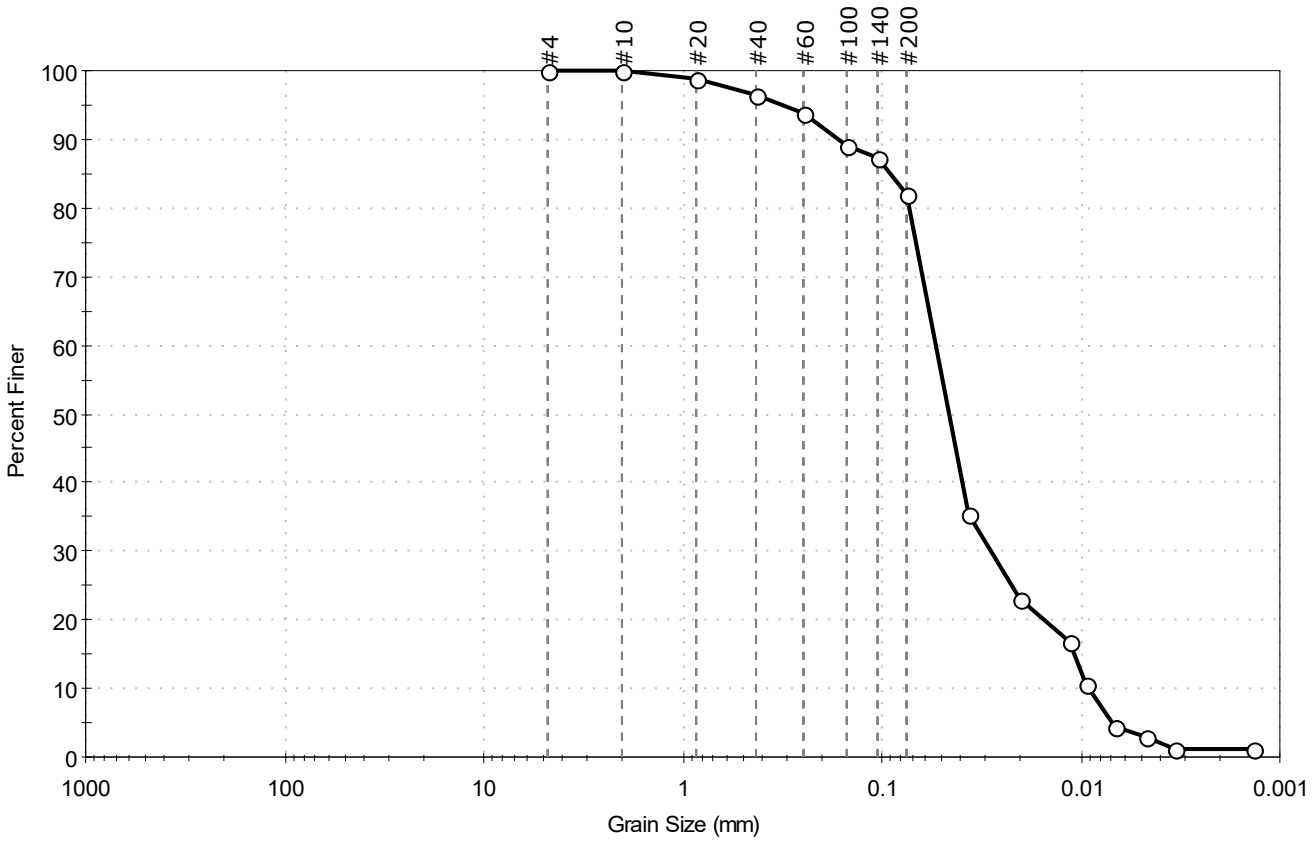
Sediment

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 unrepresentitive 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

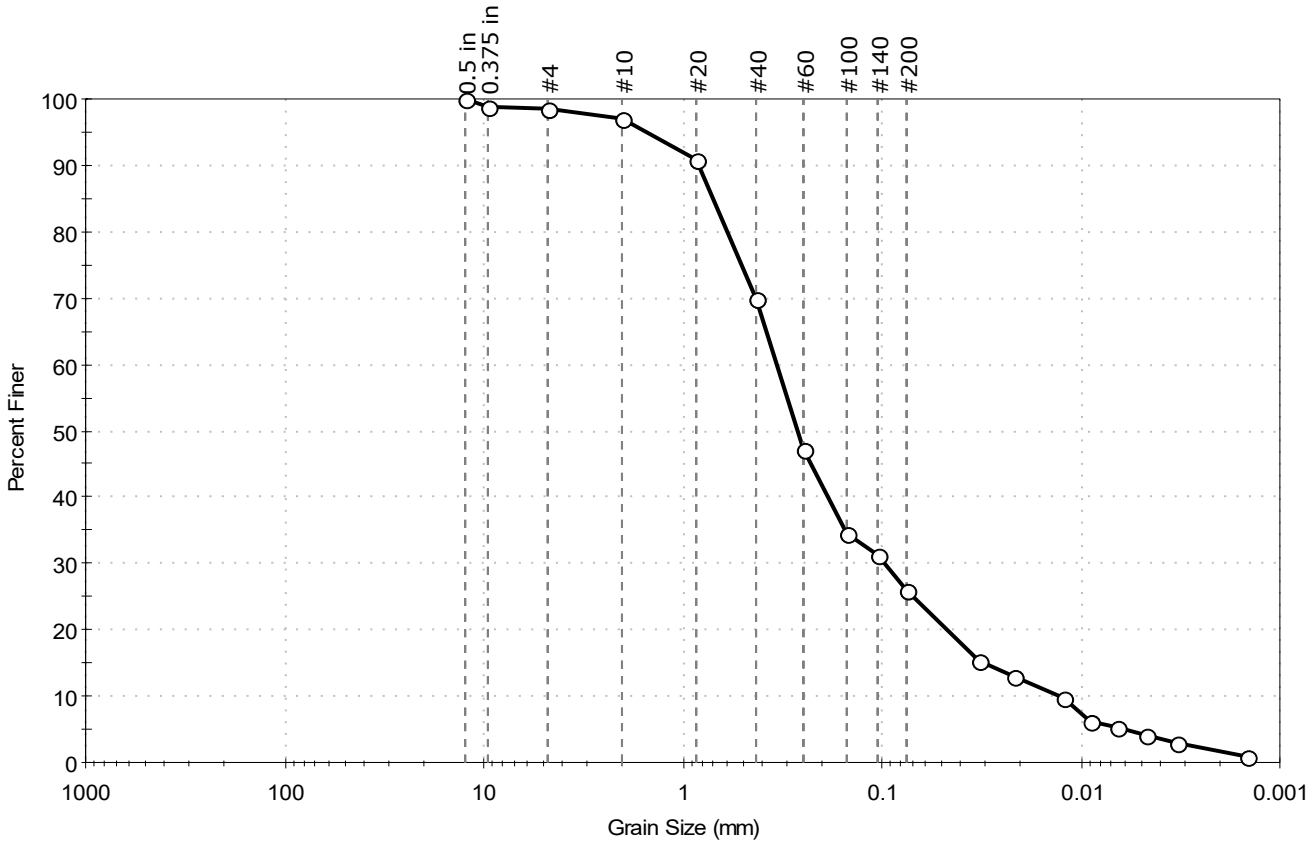
Est. Specific Gravity : 2.65

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	Tested By:	ckg
Sample ID:	FP-SED-20-01-MAY20	Test Date:	08/28/20	Checked By:	bfs
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		

Coefficients

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

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

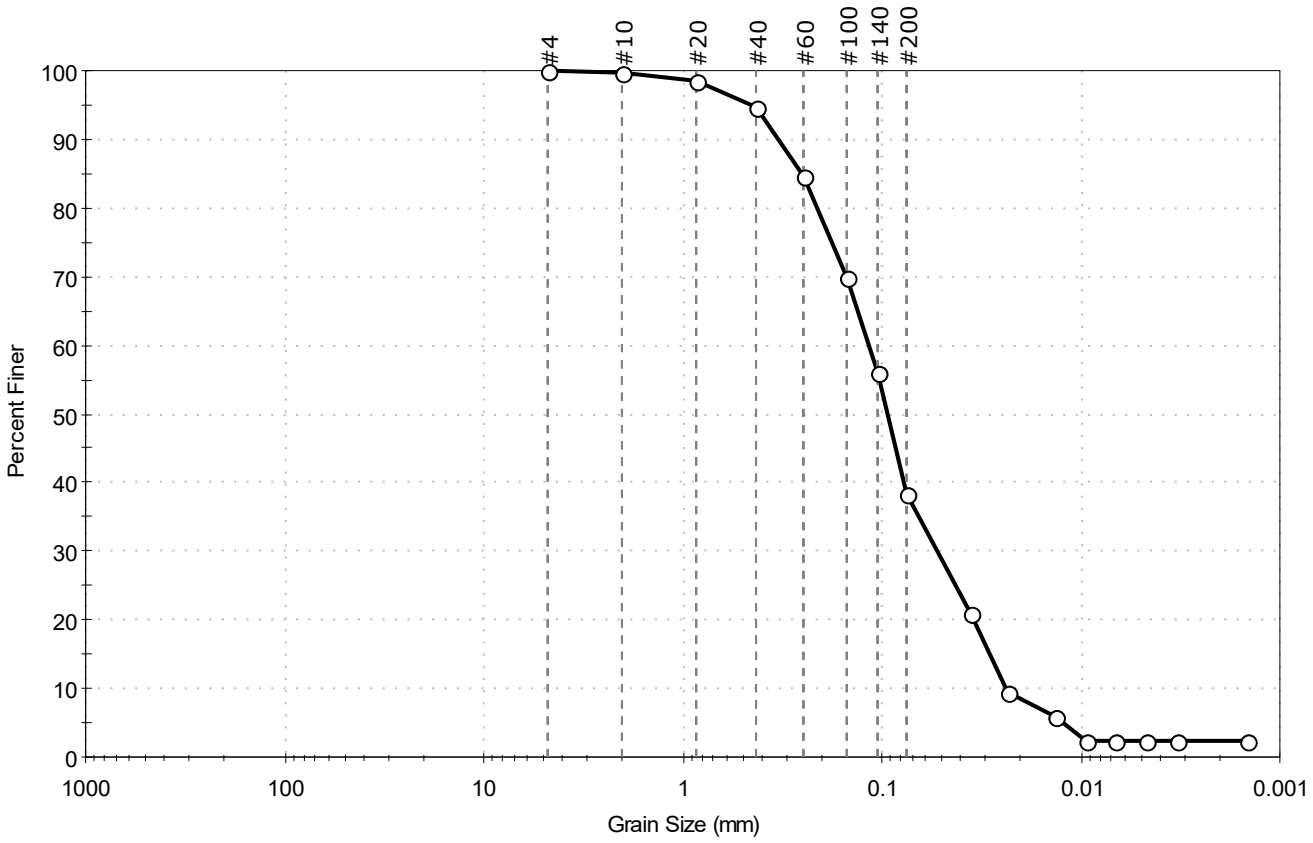
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	KOMAN Government Solutions, LLC				
Project:	PFAS Remedial Investigation				
Location:				Project No:	GTX-310909
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	FP-SED-20-02-MAY20	Test Date:	08/28/20	Checked By:	bfs
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.
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-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
	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
20VP-19-04	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
	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
20VP-19-05	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
20VP-19-06	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
	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
	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
20VP-19-07	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
	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
21VP-19-01	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
	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
21VP-19-02	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
	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	< 1.9
	83	87	211.99	126.99	7/26/2019	N	113	155	183	77	36	2.8	14	20	5.2	< 37	< 19	< 19	< 19	6.4	< 1.9	22	< 3.7	< 3.7	< 1.9
	93	97	211.99	116.99	7/26/2019	N	128	172	201	90	38	3.1	15	20	5.8	< 37	< 19	< 19	< 19	6.2	< 1.9	23	< 3.7	< 3.7	< 1.9

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
	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
30VP-19-04	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
	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
30VP-19-05	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
	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
30VP-19-06	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	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	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	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	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	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	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	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	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	77	39	2.5	14	27	6.5	< 37	< 18	3.8	< 18	5.7	< 1.8	23	< 3.7	< 3.7	< 1.8
	63	67	206.96	141.96	10/3/2019	N	125	172	207	85	40	2.8	16	21	7.6	< 37	< 18	4.4	< 18	7.1	< 1.8	23	< 3.7	< 3.7	< 1.8
	73	77	206.96	131.96	10/4/2019	N	125	172	204	83	42	3.2	16	20	7.9	< 37	< 19	4.3	< 19	4.9	< 1.9	23	< 3.7	< 3.7	< 1.9
	83	87	206.96	121.96	10/4/2019	N	128	178	210	88	40	3.2	16	24	7.1	< 37	< 19	3.6	< 19	5.2	< 1.9	23	< 3.7	< 3.7	< 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 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	2.3	< 2	23	< 4	< 4	< 2
	73	77	264.55	189.55	10/7/2019	N	52.0	170	187	17	35	< 1.8	7.7	110	< 1.8	< 35	< 18	< 18	< 18	2.5	< 1.8	15	< 3.5	< 3.5	< 1.8
	83	87	264.55	179.55	10/7/2019	N	184	513	544	3.9	180	< 1.8	9.3	320	< 1.8	< 36	< 18	< 18	< 18	4.5	< 1.8	26	< 3.6	< 3.6	< 1.8
	93	97	264.55	169.55	10/8/2019	N	224	604	634	4.2	220	< 1.8	10	370	< 1.8	< 36	< 18	< 18	< 18	4	< 1.8	26	< 3.6	< 3.6	< 1.8
	103	107	264.55	159.55	10/8/2019	N	208	557	583	7.7	200	< 1.8	9	340	< 1.8	< 35	< 18	< 18	< 18	3.3	< 1.8	23	< 3.5	< 3.5	< 1.8
	113	117	264.55	149.55	10/9/2019	N	138	305	336	78	60	< 1.9	7	160	< 1.9	< 38	< 19	< 19	< 19	6.8	< 1.9	24	< 3.8	< 3.8	< 1.9
	123	127	264.55	139.55	10/9/2019	N	153	301	335	110	43	< 1.8	7.2	140	0.78	< 36	< 18	< 18	< 18	6.1	< 1.8	28	< 3.6	< 3.6	< 1.8
	133	137	264.55	129.55	10/10/2019	N	302	666	735	220	82	< 2	13	350	0.77	< 39	< 20	< 20	< 20	21	< 2	48	< 3.9	< 3.9	< 2
	143	147	264.55	119.55	10/10/2019	N	210	627	716	110	100	< 2.1	16	400	0.96	< 41	< 21	< 21	< 21	26	< 2.1	63	< 4.1	< 4.1	< 2.1
	153	157	264.55	109.55	10/14/2019	N	161	450	479	21	140	< 2.2	9.4	280	< 2.2	< 45	< 22	< 22	< 22	4	< 2.2	25	< 4.5	< 4.5	< 2.2
	160	164	264.55	102.55	10/15/2019	N	173	464	494	23	150	< 2.6	11	280	< 2.6	< 52	< 26	< 26	< 26	4.2	< 2.6	26	< 5.2	< 5.2	< 2.6

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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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

‡ 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-19-03	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		**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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		**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:
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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

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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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:
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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-19-08	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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:
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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-19-02	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 (PFTrDA)		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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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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-19-04	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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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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-19-06	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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

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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (PFTrDA)		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:
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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 = 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

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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:
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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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

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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-19-06	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
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-19-08	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)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.70 U	2.40 U	2.00 U	2.00 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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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-19-09	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
The LOQ value will be used to report non-detects when blank contamination occurs

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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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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
The LOQ value will be used to report non-detects when blank contamination occurs

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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 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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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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-19-12	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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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

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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

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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 (µg/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

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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

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 (µg/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

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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

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 (µg/kg)	Results (µg/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

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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

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

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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

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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-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

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Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

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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, 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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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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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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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

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

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

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 = 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-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:

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-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 (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/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:

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-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 (µg/kg)	Results (µg/kg)	Results (µg/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:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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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

All Locations

TOC Results

KOMAN, PFAS RI, Sediment-Area3
Total Organic Carbon Data

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**

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-19-06	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**

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**

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**

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