Former Fort Devens Army Installation Project Status Update 24 January 2019

Restoration
Advisory Board
Meeting









Agenda

- Per- and Polyfluoroalkyl Substances (PFAS)
 - ▶ Website
 - ► Municipal water supply well sampling update
 - Ayer, Devens
 - ► Community Involvement Plan (CIP)
 - ► Remedial Investigation (RI) updates
 - Work Plans status
 - Ongoing field activities
 - · Results to date







Website Now Available https://www.ftdevens.org





HOME

HISTORY

PUBLIC INFORMATION

DOCUMENTS

DATA









Website - Documents





HOME HISTORY PUBLIC INFORMATION (DOCUMENTS) DATA

Fact Sheets

RAB Meeting Minutes

RAB Presentations

PFAS Plans and Reports

PFAS Plans and Reports

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Final Site Inspection (SI) Addendum for Additional PFAS Sampling, Former I

Former Fort Devens, Massachusetts (General Users) pub_002365.pdf (52 MB) metadata

Final Site Inspection (SI) Report for PFAS, Former Fort Devens, BERS-West Former Fort Devens, Massachusetts (General Users)

pub_002366.pdf (225 MB) metadata

Draft Area 3 Field Sampling Plan, Addendum to Remedial Investigation Wor Former Fort Devens, Massachusetts (General Users)

pub_002367.pdf (3 MB) metadata

Final Area 2 Field Sampling Plan, Addendum to Remedial Investigation Wor Former Fort Devens, Massachusetts (General Users)

pub_002368.pdf (6 MB) metadata

Final Area 1 Field Sampling Plan, Addendum to Remedial Investigation Wor Former Fort Devens, Massachusetts (General Users)

pub_002369.pdf (3 MB) metadata





HOME

HISTORY

PUBLIC INFORMATION

DOCUMENTS

DATA

Area 1 - PFAS RI Data

Area 2 - PFAS RI Data

Area 3 - PFAS RI Data

Figures

AOC 57 Soil and Water Data

AOC 74 Soil and Water Data

AOC 75 Soil and Water Data

Grove Pond Wellfield Soil and Water Data

Grove Pond Sediment and Surface Water Data

Cold Springs Brook Sediment and Surface Water Data

FORMER FORT DEVENS

AOC 74 Soil and Water Data



Show All File Types

AOC 74 Monitoring Well and Vertical Profile Results, U.S. Army Corps of Engineers, 2019-01-11 Former Fort Devens, Massachusetts (General Users)

pub_002372.pdf (69 KB) metadata

1 - 1 of 1 Results

Former Fort Devens, Stage 2B Validation - Electronic ar

KOMAN, PFAS RI, Fall 2018 Vertical Profile Samples AOC 74, Barnum Road Firefighting Exercise Site

Locations: 74VP-18-01

Field Sample ID: 74VP-18-01-102-106

Sample Begin Depth: 102.00

Sample End Depth: 106.00 Sample Date: 10/10/2018

PFAS (ng/L)

PFAS (ng/L)	
6:2 Fluorotelomer sulfonate (6:2 FTS)	12.3 J
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.86 U
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.86 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.86 U
Perfluorobutanesulfonic acid (PFBS)	0.986 U
Perfluorodecanoic acid (PFDA)	0.986 U
Perfluorododecanoic acid (PFDoA)	1.48 U
Perfluoroheptanoic acid (PFHpA)	6.40
Perfluorohexanesulfonic acid (PFHxS)	0.512 J
Perfluorohexanoic acid (PFHxA)	2.96
Perfluorononanoic acid (PFNA)	1.48 U
Perfluorooctanesulfonic acid (PFOS)	2.96 U
Perfluorooctanoic acid (PFOA)	11.2
Perfluorotetradecanoic acid (PFTA)	2.96 U
Perfluorotridecanoic acid (PFTrDA)	2.96 U
Perfluoroundecanoic acid (PFUnA)	1.48 U



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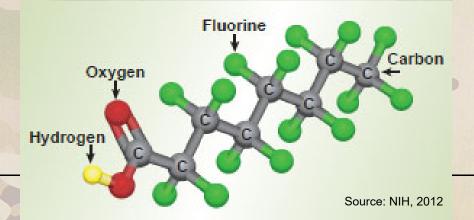


Background - Regulatory



- 2016 EPA Lifetime Health Advisory (LHA) for PFOS & PFOA
 - ► EPA LHA of 0.07 micrograms per liter (µg/L) (70 parts per trillion [ppt])
 - Applies to PFOS and PFOA, and the sum of PFOS and PFOA in drinking water
- 2018 MassDEP issued public health guideline
 - ► Office of Research and Standards Guideline (ORSG) for drinking water
 - ► 70 ppt for PFOS, PFOA, PFNA, PFHxS, and PFHpA (individually or in total)







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Background - Army



- Army is evaluating PFOS/PFOA at the former Fort Devens under CERCLA
- 2016/2017 Base-wide Preliminary Assessment (PA) completed
 - ▶ Identified 10 potential release sites to be further investigated
- 2017 Site Inspection (SI) completed
 - ► April 2017 SI work plan
 - ▶ June 2017 SI sampling of soil, sediment, groundwater, surface water
 - ▶ Jan. 2018 Supplemental sampling of LTM wells
 - ▶ Jan. 2018 Supplemental SI sampling of the Devens Fire Station
 - ▶ May 2018 SI report
 - Recommended sites for an RI AOCs 5, 20, 21, 30, 31, 32, 50, 74, 75,
 Grove Pond Wellfield, MacPherson Well
 - ► Aug. 2018 Supplemental SI report
 - Additional recommendations for RI AOCs 32/43A, 43G, 43J, 57, 76
- 2018 Sampled selected community and private wells
- 2018/2019 Sampling of selected municipal public water supply wells
 2018/2019 Ongoing Remedial Investigation (RI)





Public Water Supply Wells



- Sampling of public water supply wells since Sept. 2016
 - ▶ Ayer Grove Pond wellfield
 - ▶ Devens MacPherson, Patton, and Shaboken wells
- The finished drinking water distributed to the public has not exceeded EPA's LHA for PFOS and PFOA
- In March 2018, MassDEP issued letters to Ayer and Devens indicating that, out of an abundance of caution, PFAS levels in the Ayer and MacPherson wells should be reduced
 - ▶ Using DEP's five compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA),
 Grove Pond well #8 and the MacPherson well exceeded 70 ppt
 - Ayer and Devens changed operations and issued public notices on March 29, 2018
 - Ayer Well #8 and MacPherson well are no longer used for the public water supply (since February 2018)





Ayer & Devens Public Supply Wells Detections of PFAS, 25 October 2018



	Grove Pond Wells (ppt)			Spectacle Pond Wells (ppt)			
	Well 1 (offline)	Well 6	Well 7	Finished Water (wells 1,6,7)	Well 1A	Well 2A	Finished Water
PFBS		2.50	3.06	2.71	2.23	ND	2.09
PFHpA		3.22	37.7	21.6	2.68	16.5	9.92
PFHxS		7.01	15.2	11.5	6.49	3.27	4.88
PFHxA		5.44	53.6	31.3	3.80	37.3	20.8
PFOS		3.48	24.8	15.4	8.40	7.84	8.05
PFOA		7.92	21.1	15.5	7.92	10.8	9.24
PFOS+PFOA				30.9			17.29

	PATTON WELL (ppt)	SHABOKEN WELL (ppt)
PFHpA	4.96	ND
PFHxS	8.22	15.9
PFHxA	7.48	ND
PFOS	3.56	3.77
PFOA	10.7	5.12
PFOS+PFOA	14.26	8.89

Results show the detected PFAS out of 14 analytes tested (including the 5 analytes in DEP's ORSG).

Green shading shows concentrations below the EPA LHA (70 ppt) in finished waters

ND = non-detect







Public Water Supply – Finished Water Quality PFOS+PFOA Data – 2018

Location	Well ID	Date	PFOS (ppt)	PFOA (ppt)	PFOS+PFOA (ppt)
Ayer	Ayer Finished Water	1/9/2018	32	15	47
		3/7/2018	7	8	15
		4/23/2018	5	6	11
		8/24/2018	4	9	13
		9/11/2018	14	17	31
		10/25/2018	15	16	31
	Spectacle Pond Finished	3/1/2018	7	7	14
		8/24/2018	8	9	17
		10/25/2018	8	9	17
Devens	Patton Well 05G	5/14/2018	5	10	15
		8/3/2018	3	10	13
		10/25/2018	4	11	15
	Shabokin Well 06G	5/14/2018	6	5	11
		8/3/2018	4	6	10
		10/25/2018	4	5	9



The MassDEP ORSG (70 ppt) was not exceeded in the finished waters in 2018.





CIP Update for PFOS/PFOA What is a CIP?



- A Community Involvement Plan (CIP) is a site-specific strategy to enable meaningful community involvement through the environmental remediation process
 - ➤ Specifies planned community involvement activities designed to address community needs, concerns, and expectations, which are identified through community interviews and other means
 - ➤ Serves as a "roadmap" for community involvement activities throughout remediation
 - Required at the start of environmental remediation and should be updated periodically as needed







CIP Update for PFOS/PFOA CIP Contents



- Section 1 Overview of the CIP
 - ► Introduction, objectives of the Community Involvement program
- Section 2 Facility History and Description
 - Description of the facility and brief history of environmental restoration
 - Description of CERCLA remediation process
- Section 3 Community Profile
 - ► Community profile, including demographics and community resources
 - Summary of past community outreach during remediation
 - Summary of the community's current issues and concerns
- Section 4 The Community Involvement Program
 - Description of the specific community outreach methods USACE will use to address the issues, concerns, and information needs
 - Overview of the timing of planned community involvement activities





CIP Update for PFOS/PFOA CIP Process



- Develop a list of potential interviewees (cross-section of community stakeholders) for community interviews
- Develop interview questions to determine community concerns and information needs
- Schedule and conduct personal interviews
- Analyze results of interviews and other sources of information (RAB meetings, public meetings, public comments, newspaper articles, etc.) about community concerns
- Review and update community involvement methods as necessary
- Draft the CIP Update







Remedial Investigation



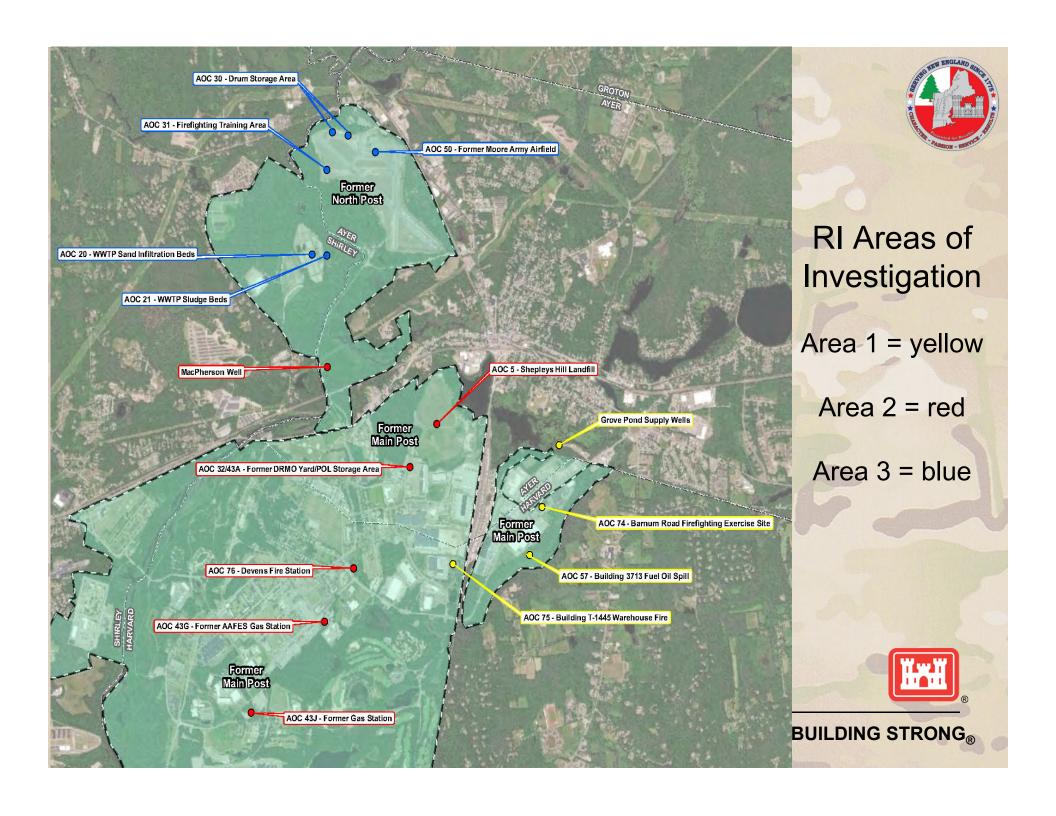
- Field activities for the RI were grouped into three areas based on site locations, public water supply well locations, and direction of groundwater flow
 - ► Area 1 Grove Pond wellfield, AOC 57, AOC 74, AOC 75
 - ▶ Area 2 MacPherson water supply well, AOC 5, AOC 32/43A, AOC 43G, AOC 43J, AOC 76
 - ► Area 3 AOC 20, AOC 21, AOC 30, AOC 31, AOC 50

Status

- Area 1 field work ongoing
- Area 2 field work has commenced and is ongoing
- Area 3 work plan in regulatory review





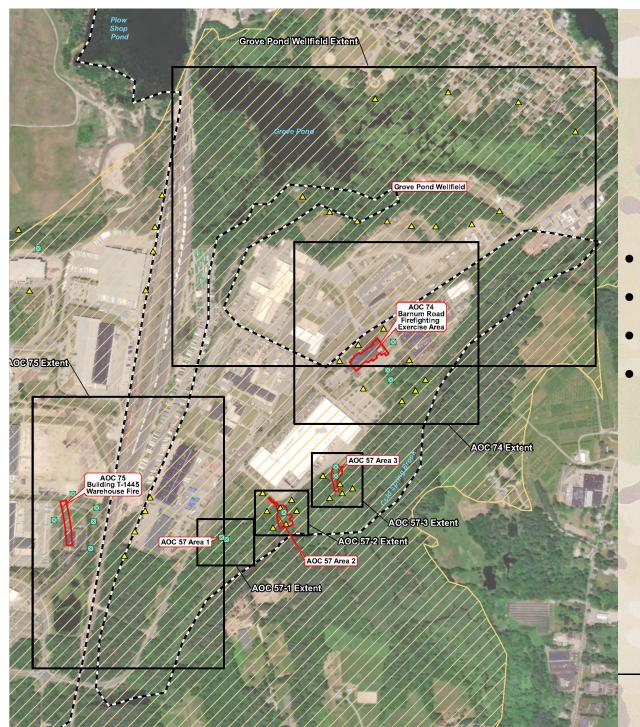




Remedial Investigation Work Plan



- Draft RI WP is being revised based on regulatory agency comments
- Draft Human Health and Ecological Risk Assessment (HERA) Work Plan will be submitted for regulatory agency review
- Field Sampling Plans (FSP)
 - ► Area 1 FSP was finalized on Sep. 22nd
 - ► Area 2 FSP was finalized on Dec. 7th
 - Area 3 Draft FSP was issued Nov. 19th and is under review by the regulatory agencies





Area 1

- Grove Pond Wellfield
- AOC 57
- AOC 74
- AOC 75

Legend

- Proposed Soil Boring and Vertical Profiling Location
- ▲ Proposed Vertical Profiling Location
 - MassDEP Zone II Wellhead Protection Area
- Area of Contamination (AOC)
 - Former Fort Devens Boundary



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Area 1 Field Activities



Completed:

- ► Existing groundwater wells at AOC 57 (17 wells) and Grove Pond Wellfield (14 wells). There are no existing wells at AOCs 74 or 75
- ► Irrigation well at AOC 74
- ➤ Surface water and sediment from Cold Spring Brook (8 locations), Grove Pond (5 locations), Balch Pond (1 location)
- ➤ Soil borings at AOC 74 (7 locations) and AOC 75 (7 locations)
- Vertical profiles of groundwater at AOC 57 (19 locations),
 AOC 74 (13 locations), AOC 75 (14 locations), upgradient of Grove Pond (9 locations)





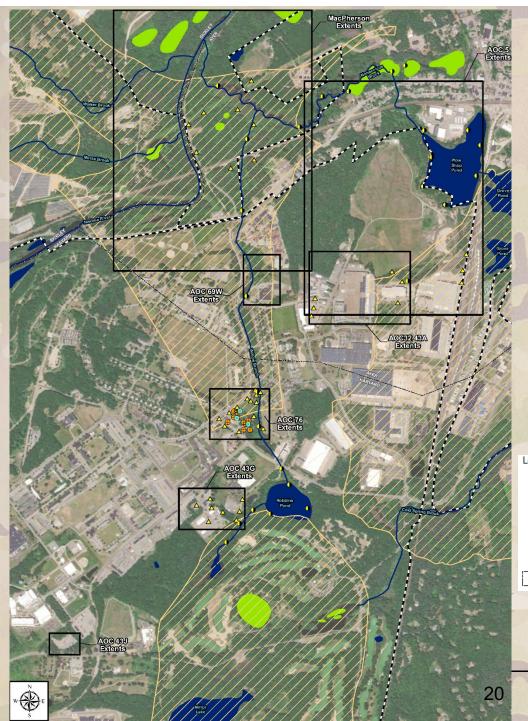


Area 1 Field Activities (continued)

- To be completed:
 - ► Vertical profiles of groundwater at AOC 57 (3 locations), upgradient of Grove Pond (13 locations)
 - ► Soil borings at AOC 57 (12 locations)
 - ► Install overburden monitoring wells
 - 27 monitoring wells in Area 1, selected based on results
 - ▶ Install bedrock monitoring wells
 - 3 monitoring wells, selected based on results
 - ▶ Sample new monitoring wells
 - ► Conduct synoptic water level monitoring event









Area 2

- AOC 5 (Shepley's Hill Landfill)
- AOCs 32/43A
- AOC 43G
- AOC 43J
- AOC 76
- MacPherson Well

Leaend

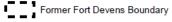
- Proposed Surface Water and Sediment Sampling Location
- Proposed Soil Boring and Vertical Profiling
- △ Proposed Vertical Profiling Location
- Proposed Soil Boring Location
- City/Town Boundary













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Area 2 Field Activities



Completed:

- ➤ Sampled 84 existing groundwater wells at SHL, AOC 69W, AOC 43G, AOC 43J, AOC 32/43A, and Town of Ayer
- Sampled outflow from the Town of Ayer wastewater treatment plant
- ➤ Sampled all the surface water and sediment locations (26 locations) at Plow Shop Pond, Nonacoicus Brook, Willow Brook, Robbins Pond, unnamed tributary, detention pond
- Conducted vertical profiles of groundwater at AOC 76 (3 locations)





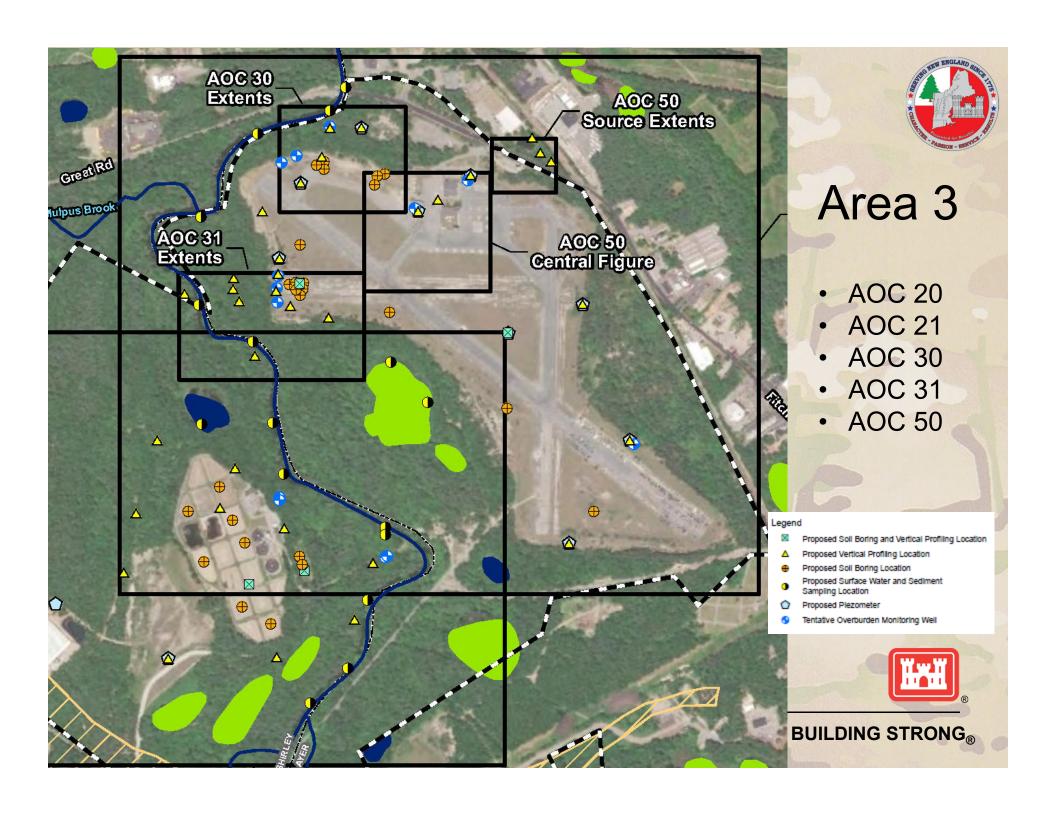


Area 2 Field Activities (continued)



- To be completed:
 - ► Sample 22 existing groundwater wells
 - ➤ Vertical profiles of groundwater at AOCs 32/43A (9 locations), AOC 43G (8 locations), AOC 76 (13 locations), MacPherson well area (8 locations)
 - ▶ Install piezometers at AOC 76 (12 locations)
 - ► Soil borings AOC 76 (13 locations)
 - ► Install overburden monitoring wells
 - 22 monitoring wells in Area 2, selected based on results
 - ► Install bedrock monitoring wells
 - 1 monitoring well, selected based on results
 - ➤ Sample new monitoring wells
 - Conduct synoptic water level monitoring event







Proposed Area 3 Field Activities



- Sample Existing Groundwater Wells
 - ► AOC 20/21 (11 wells), AOC 50 (31 wells)
 - ▶ No existing wells are available at AOCs 30 and 31
- Sample Surface Water and Sediment
 - ► Nashua River (13 locations), AOC 50 wetland (2 locations), AOCs 20/21 pond (1 location) and stream (1 location)
- Groundwater Vertical Profiles
 - ► AOC 20 (10 locations), AOC 21 (2 locations), AOC 30 (4 locations), AOC 31 (8 locations), AOC 50 (15 locations)
 - ▶ Install 2 piezometers at AOC 20, and 9 piezometers at AOCs 30/31/50
- Soil Borings
 - ► AOC 20 (8 locations), AOC 21 (3 locations), AOC 30 (6 locations), AOC 31 (7 locations), AOC 50 (10 locations)







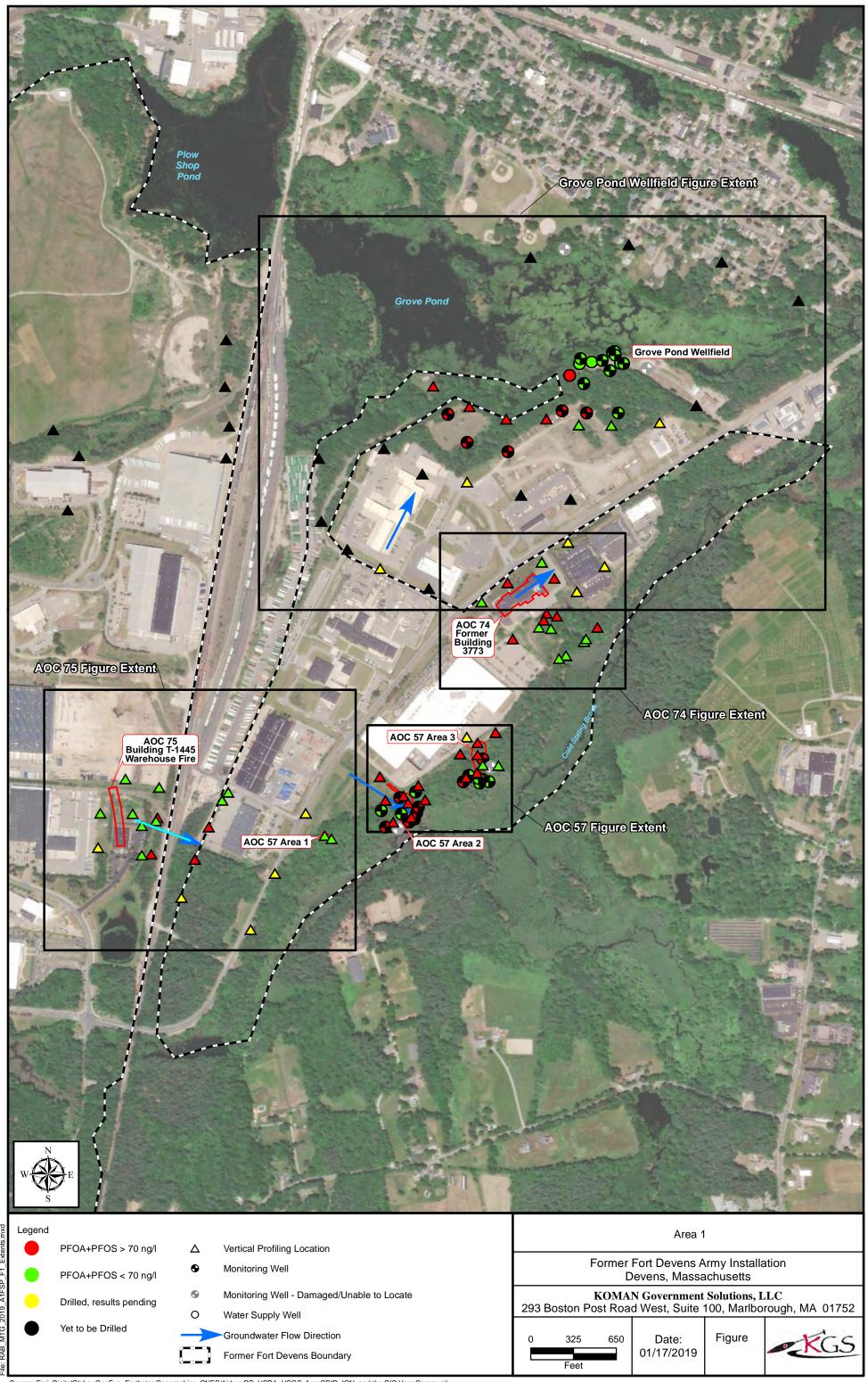
Proposed Area 3 Field Activities (continued)



- Install overburden monitoring wells
 - 4 monitoring wells in AOCs 20/21, selected based on initial sampling results
 - ▶ 10 monitoring wells in AOCs 30/31/50, selected based on initial sampling results
- Sample new monitoring wells
- Conduct synoptic water level monitoring event









Area 1 Results



- AOC 57 Area 1
 - ▶ 2 vertical profiles completed
 - ► Both vertical profiles had groundwater concentrations less than the EPA LHA
 - ► Maximum PFOA+PFOS detection in groundwater is 12.2 ng/L (ppt)



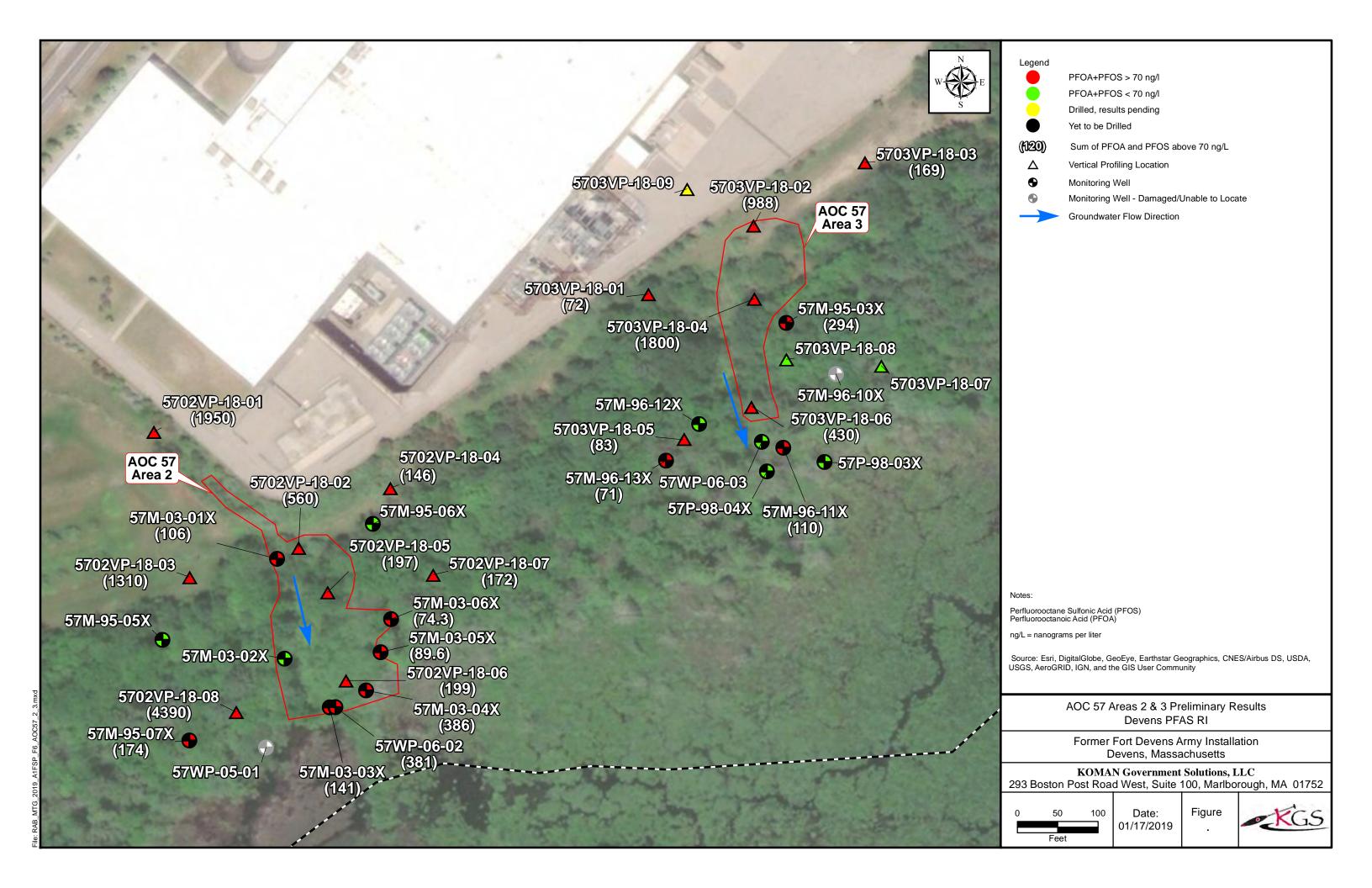






- AOC 57 Area 2
 - ▶ 8 vertical profiles completed
 - ▶ 10 existing monitoring wells sampled
 - ► 3 locations had groundwater concentrations less than the EPA LHA
 - ► 15 locations had groundwater concentrations greater than the EPA LHA
 - ► Maximum PFOA+PFOS detection in groundwater is 4,390 ppt









- AOC 57 Area 3
 - ▶ 9 vertical profiles completed (awaiting results on one location)
 - ▶ 7 existing monitoring wells sampled
 - ► 6 locations had groundwater concentrations less than the EPA LHA
 - ▶ 9 locations had groundwater concentrations greater than the EPA LHA
 - Maximum PFOA+PFOS detection in groundwater is 1,800 ppt

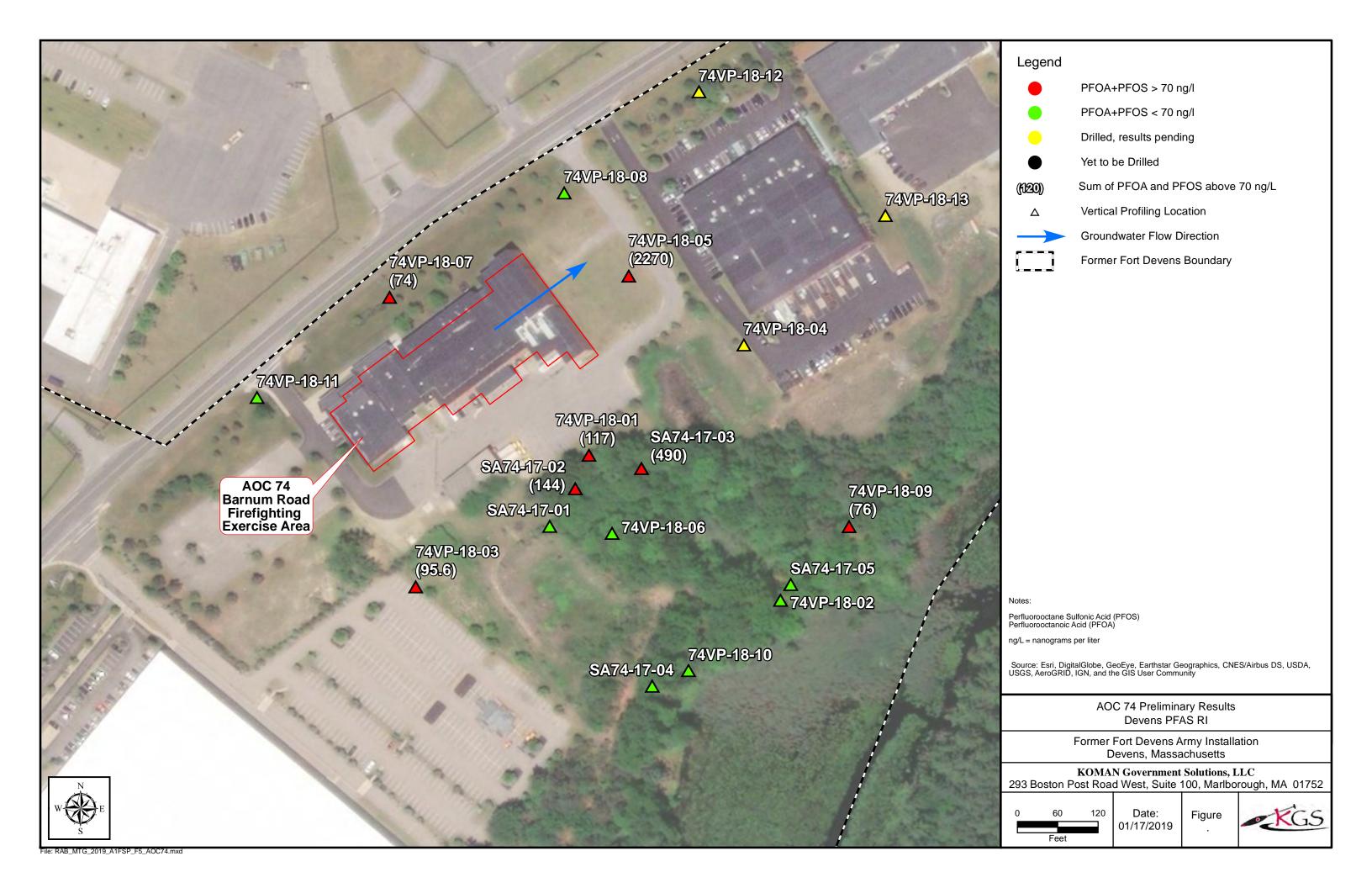






- AOC 74
 - ▶ 7 soil borings complete (awaiting results)
 - ► 13 vertical profiles complete (awaiting results at 3 locations)
 - ► 8 locations with groundwater concentrations less than the EPA LHA
 - ► 7 locations with groundwater concentrations greater than the EPA LHA
 - Maximum PFOA+PFOS detection in groundwater is 2,270 ppt



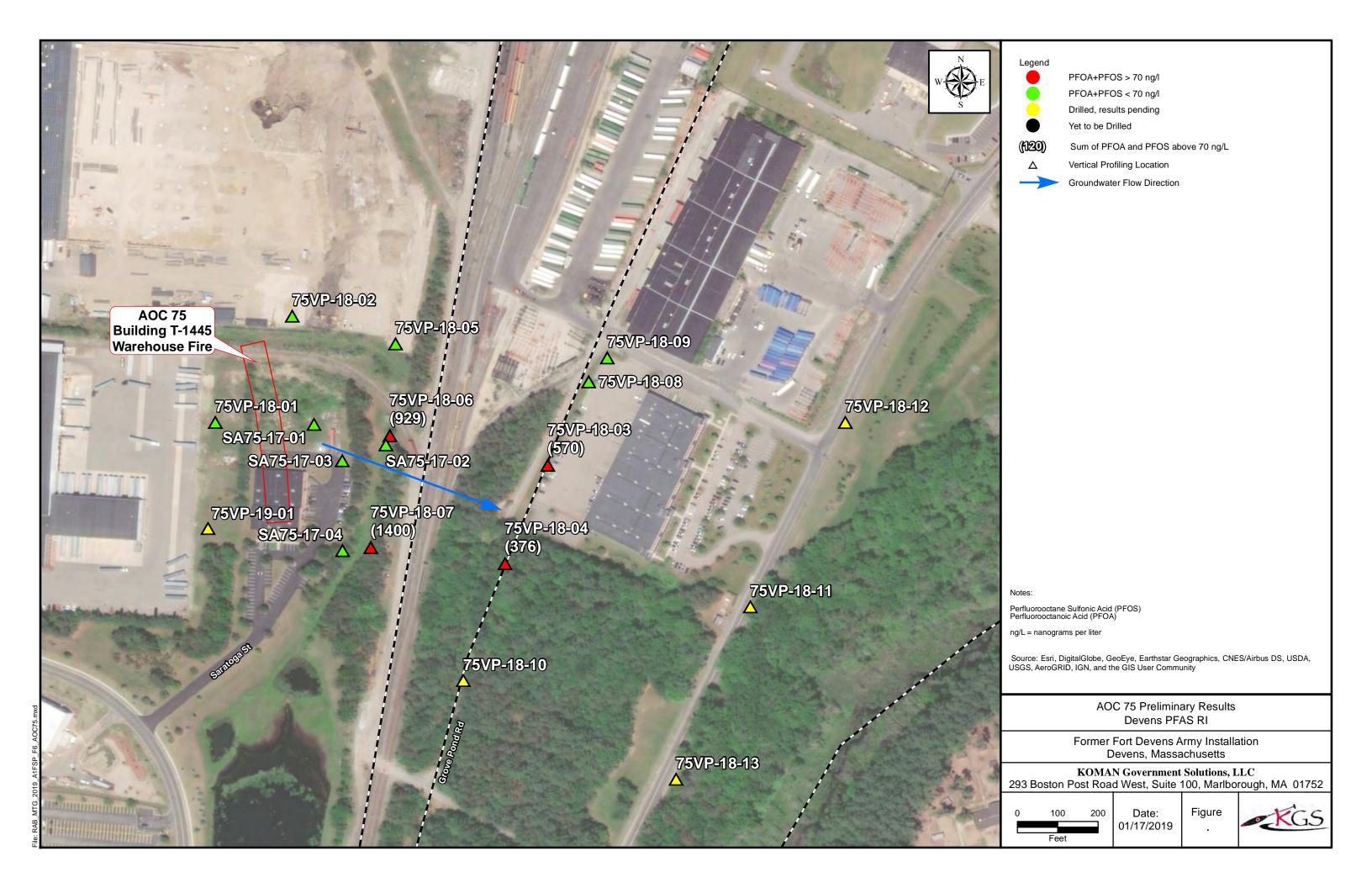






- AOC 75
 - ▶ 7 soil borings complete (awaiting results)
 - ► 14 vertical profiles complete (awaiting results at 5 locations)
 - ▶ 9 locations with groundwater concentrations less than the EPA LHA
 - ► 4 locations with groundwater concentrations greater than the EPA LHA
 - Maximum PFOA+PFOS detection in groundwater is 1,400 ppt



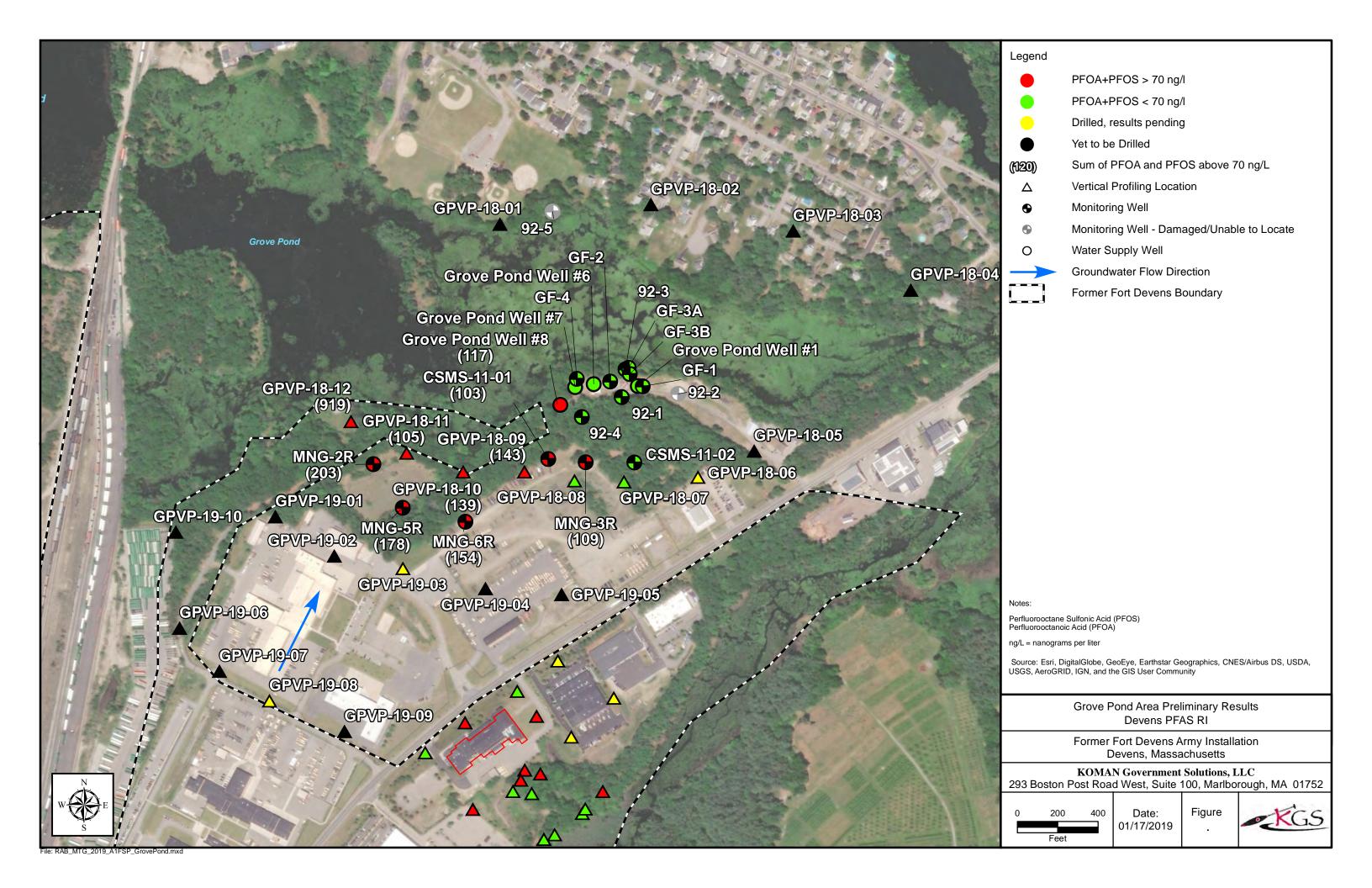






- Grove Pond Area
 - ► 9 vertical profiles complete (received results from 6 locations)
 - ▶ 14 monitoring wells sampled
 - ► 11 locations with groundwater concentrations less than the EPA LHA
 - ► 9 locations with groundwater concentrations greater than the EPA LHA
 - Maximum PFOA+PFOS detection in groundwater is 919 ppt









- Cold Spring Brook
 - ► Eight locations sampled
 - Surface water (max) PFOA = 45 ppt and PFOS = 16 ppt
 - ► Sediment (max) PFOA = 2.5 μg/kg, PFOS = 5.6 μg/kg
- Grove Pond
 - ► Five locations sampled
 - ► Surface water (max) PFOA = 10 ppt and PFOS = 4 ppt
 - ► Sediment PFOA and PFOS were non-detect





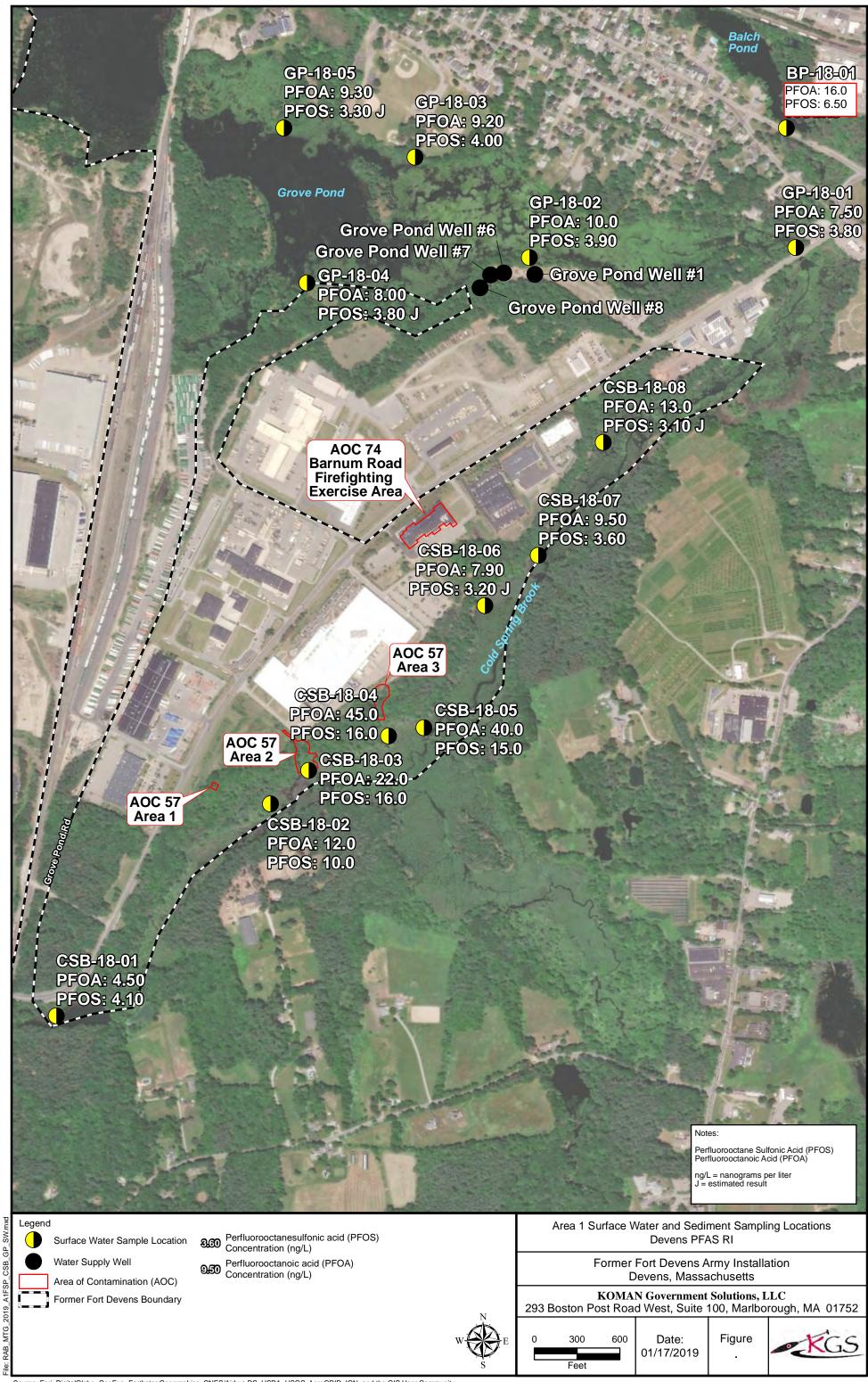




- Balch Pond
 - One location sampled
 - Surface water PFOA = 16 ppt and PFOS = 6.5 ppt
 - Sediment PFOA = 0.16J µg/kg and PFOS was nondetect









Next Steps



- Remedial Investigation Work Plans
 - ► RI Work Plan is being finalized
 - Risk Assessment Work Plan to be submitted for regulatory review
 - Regulatory review of Area 3 FSP
- Continue RI sampling efforts in Areas 1 and 2
 - ▶ Begin Area 3 sampling upon regulatory review of FSP
- 2019-Q1 Town Water Supply Well Sampling (February)
- Community Interviews and Draft CIP (spring 2019)









Former Fort Devens Army Installation Project Status Updates

Questions?



