

Former Fort Devens Army Installation Project Status Update 12 April 2018

Restoration
Advisory Board
Meeting





Agenda

- Per- and Polyfluoroalkyl Substances (PFAS)
 - ▶ Army sampling results update
 - Site Inspection (SI) data and report status
 - Additional sampling of Long-Term Monitoring (LTM) wells
 - ▶ Town of Ayer and Devens supply well sampling and operations update
 - ▶ Remedial Investigation (RI) planning





Background – PFAS

- Perfluorinated compounds are found in many household and commercial/industrial products
 - ▶ carpeting, water-proof clothing, rain gear, Teflon pans, food wrappers
 - ▶ metal plating operations
 - ▶ fire-fighting foams
- 2014 – EPA identified perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) as emerging contaminants
 - ▶ PFOS & PFOA most-widely produced PFAS compounds in U.S.
 - ▶ Adverse effects identified in laboratory animals
- 2016 – EPA Lifetime Health Advisory (LHA) for PFOS & PFOA
 - ▶ LHA of 0.07 micrograms per liter ($\mu\text{g/L}$) (70 parts per trillion [ppt]) applies to PFOS and PFOA and the sum of PFOS and PFOA in drinking water
 - ▶ Many different types of PFAS compounds exist
 - ▶ Typically sample for either 6 or 14 of these compounds





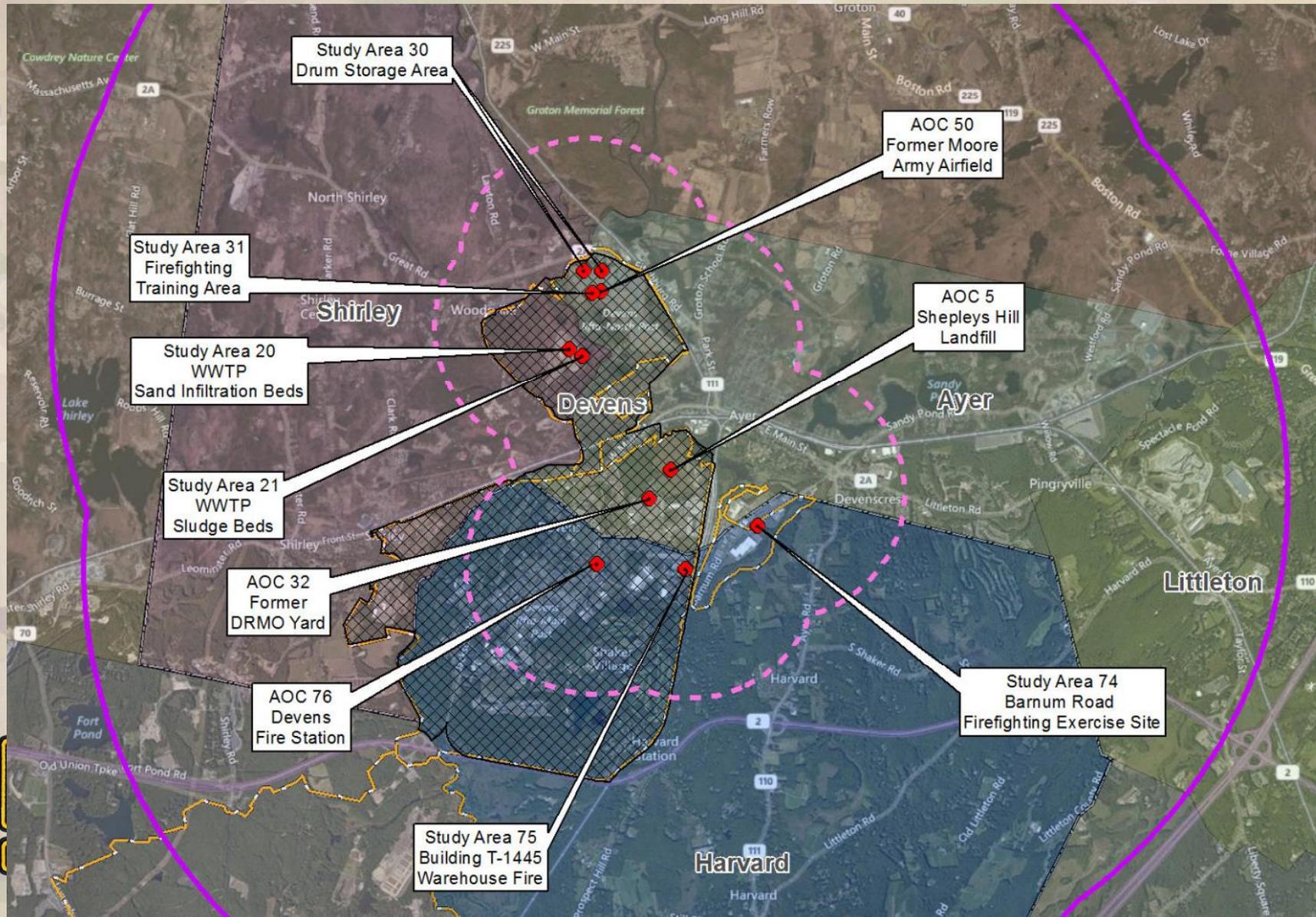
Site Inspection Summary

- Sept 2016 – Draft Preliminary Assessment (PA) report
- Sept 2016 – Commence water supply well sampling in Ayer
- June 2017 – SI sampling begins
 - ▶ Nine areas investigated as part of the SI
- Sept 2017 – Draft SI report and final PA report
 - ▶ Draft SI recommended further investigation for AOCs 5, 32, 50, 30, 31, 20, 21, 74, and 75
 - ▶ Evaluation of source of PFAS in public water supply wells (MacPherson and Grove Pond) and evaluation if impacts to other water supplies
- Dec 2017/Jan 2018 – Supplemental sampling of LTM wells
- Jan 2018 – SI Addendum sampling at the Devens Fire Station
- April 2018 – Draft SI Addendum report (fire station results) and LTM well data report
 - ▶ Recommend further investigation for AOCs 43G, 57, and Devens Fire Station (AOC 76)





Site Inspection (SI) and SI Addendum Sampling Areas





SI Addendum

Devens Fire Station

- Field work conducted in January 2018
- Soil and groundwater samples collected from 9 locations around the Devens Fire Station (AOC 76)
- Six locations had PFOS and/or PFOA detected at or above the EPA LHA (70 ppt) in groundwater
 - ▶ Maximum groundwater concentration of 4,160 ppt in surface swale adjacent to Fire Station





Analyte	FH-17-09_GW012318
	1/23/2018
PFBS	18
PFHpA	130
PFHxS	780
PFNA	19
PFOS	4000
PFOA	160
PFOS + PFOA	4160

Analyte	FH-17-08_GW012218
	1/23/2018
PFBS	4.3
PFHpA	41
PFHxS	49
PFNA	45
PFOS	1500
PFOA	21
PFOS + PFOA	1521

Analyte	FH-17-05_GW012218
	1/22/2018
PFBS	9.5
PFHpA	14
PFHxS	140
PFNA	1.2 J
PFOS	46
PFOA	34
PFOS + PFOA	80

Analyte	FH-17-03_GW012218	FH-DUP01
	1/22/2018	1/22/2018
PFBS	60	67
PFHpA	19	18
PFHxS	670	540
PFNA	2.3 U	1.5 U
PFOS	26 ^(d)	18 ^(d)
PFOA	330	260
PFOS + PFOA	356	278

Analyte	FH-17-07_GW012318
	1/23/2018
PFBS	3.0
PFHpA	4.1
PFHxS	16
PFNA	0.55 J
PFOS	13
PFOA	11
PFOS + PFOA	24

Analyte	FH-17-02_GW012218
	1/22/2018
PFBS	20
PFHpA	4.0
PFHxS	170
PFNA	1.6 U
PFOS	5.3
PFOA	23
PFOS + PFOA	28.3

Analyte	FH-17-06_GW012318
	1/23/2018
PFBS	13
PFHpA	9.1
PFHxS	31
PFNA	2.6
PFOS	42
PFOA	30
PFOS + PFOA	72

Analyte	FH-17-01_GW012218
	1/22/2018
PFBS	7.7
PFHpA	2.1 J
PFHxS	110
PFNA	1.8 U
PFOS	3.7 U
PFOA	9.2
PFOS + PFOA	9.2

Analyte	FH-17-04_GW012218
	1/22/2018
PFBS	21
PFHpA	6.0
PFHxS	230
PFNA	3.0 U
PFOS	14 J
PFOA	56 J
PFOS + PFOA	70

Devens Fire Station

Devens

Elm Rd

Jackson Rd

Jackson Rd

Barnum Rd



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SI and SI Addendum Conclusions

- PFAS detected in groundwater and soil at several sites

- Recommend that a Remedial Investigation (RI) be conducted to further investigate PFAS contamination
 - ▶ AOCs 20, 21, 30, 31, 50 at the former North Post
 - ▶ AOCs 74, 75 along Barnum Road
 - ▶ AOCs 5, 32, 76 at the former Main Post
 - ▶ Evaluation of source of PFAS in public water supply well systems (Macpherson and Grove Pond) and evaluation if impacts to other water supplies





PFAS Sampling of Select LTM Wells

- Additional PFAS samples were collected from 29 existing LTM monitoring wells and 1 surface water location in Dec. 2017/Jan. 2018
- Included AOCs previously evaluated as part of the SI
 - ▶ AOC 5 (SHL)
 - ▶ AOC 32 (DRMO)
 - ▶ AOC 50 (airfield)
- Included AOCs not previously sampled for PFAS
 - ▶ AOC 43J (former gas station/motor pool)
 - ▶ AOC 43G (former gas station)
 - ▶ AOC 57 (Building 3713 Fuel Oil Spill, vehicle maintenance area)





PFAS Results at Select LTM Wells

- AOC 43J
 - ▶ 4 wells sampled, maximum PFOA+PFOS = 11 ppt
- AOC 43G
 - ▶ 2 wells sampled, maximum PFOA+PFOS = 123 ppt
 - ▶ AOC 43G will be included in the RI
- AOC 57
 - ▶ 6 wells sampled, maximum groundwater PFOA+PFOS = 125 ppt
 - ▶ 1 surface water sample, PFOA+PFOS = 25 ppt
 - ▶ AOC 57 will be included in the RI
- AOC 5, AOC 32, AOC 50 are already planned to be included in the RI (data were collected to provide more information)





Public Supply Wells PFAS Sampling

- Ongoing quarterly sampling of public water supply wells since Sept. 2016
 - ▶ Grove Pond wellfield (Ayer)
 - ▶ MacPherson well (Devens)
- Results – drinking water below LHA
- On March 1, MassDEP issued letters to Ayer and Devens indicating that out of an abundance of caution MassDEP has summed 5 PFAS compounds and compared to 70 ppt and recommended concentrations in drinking water be reduced.
 - ▶ Using the five compounds (PFOS, PFOA, PFNA, PFHxS, and PFHpA), the drinking waters at the Grove Pond wellfield and MacPherson well exceeded 70 ppt.
- Ayer and Devens changed operations and issued public notices





Public Supply Well PFAS Data



Location	Well ID	Date	PFOS (ug/L)	PFOA (ug/L)	PFOS+PFOA (ug/L)	MassDEP Draft Policy (ug/L)
Ayer Wells	Ayer Multi-Finished 4 Grove	10/17/2017	0.038	0.016	0.054	0.098
		1/9/2018	0.032	0.015	0.047	0.085
		3/7/2018 ⁺	0.007	0.008	0.015	0.025
	Washington Street Storage Tank	1/9/2018	0.020	0.012	0.032	0.060
	Pingry Hill Storage Tank	1/9/2018	0.009	0.009	0.018	0.032
	Ayer RW-06G/GW 6	10/17/2017	<0.004	0.008	0.008	0.019
		1/9/2018	<0.004	0.007	0.007	0.016
	Ayer RW-07G/GW 7	10/17/2017	0.014	0.014	0.028	0.059
		1/9/2018	0.012	0.016	0.028	0.056
	Ayer RW-08G/GW 8*	10/17/2017	0.091	0.023	0.114	0.177
		1/9/2018	0.066	0.027	0.093	0.168
	Ayer Grove Pond Well 1	2/8/2018	<0.004	0.007	0.007	0.017
	Ayer Grove Pond Well 1	2/12/2018	0.017	0.008	0.025	0.031
	Spectacle Pond Well 1A	3/1/2018	0.007	0.006	0.013	0.017
Spectacle Pond Well 2A	3/1/2018	0.006	0.008	0.014	0.021	
Spectacle Pond Finished	3/1/2018	0.007	0.007	0.014	0.022	
Devens Wells	MacPherson Well 03G	9/19/2017	0.040	0.021	0.061	0.1311
		12/19/2017	0.040	0.022	0.062	0.134
	Patton Well 05G	9/1/2016	<0.004	0.004	0.004	0.011
	Shabokin Well 06G	9/1/2016	0.004	0.004	0.008	0.021
		4/12/2017	0.004	0.007	0.011	

Shaded data cell indicates an exceedance of the USEPA Lifetime Health Advisory (0.070 ug/L)

MassDEP draft policy is the sum of PFOS, PFOA, PFNA, PFHxS, and PFHpA (0.070 ug/L), identified March 1, 2018

+ = sample collected after operational change implemented

* taken out of service on February 26, 2018





Public Supply Wells Operations

- MacPherson water supply well (Devens) was taken out of service on February 27
- Grove Pond Wellfield (Ayer)
 - ▶ Drinking water was below LHA
 - ▶ Operations were revised
 - Well #8 was taken out of service on February 26
 - Well #1 was brought on-line
 - ▶ March 2018 sampling indicates drinking water is currently below 70 ppt for the sum of the 5 PFAS compounds
 - ▶ Town of Ayer is evaluating treatment options at the Grove Pond wellfield

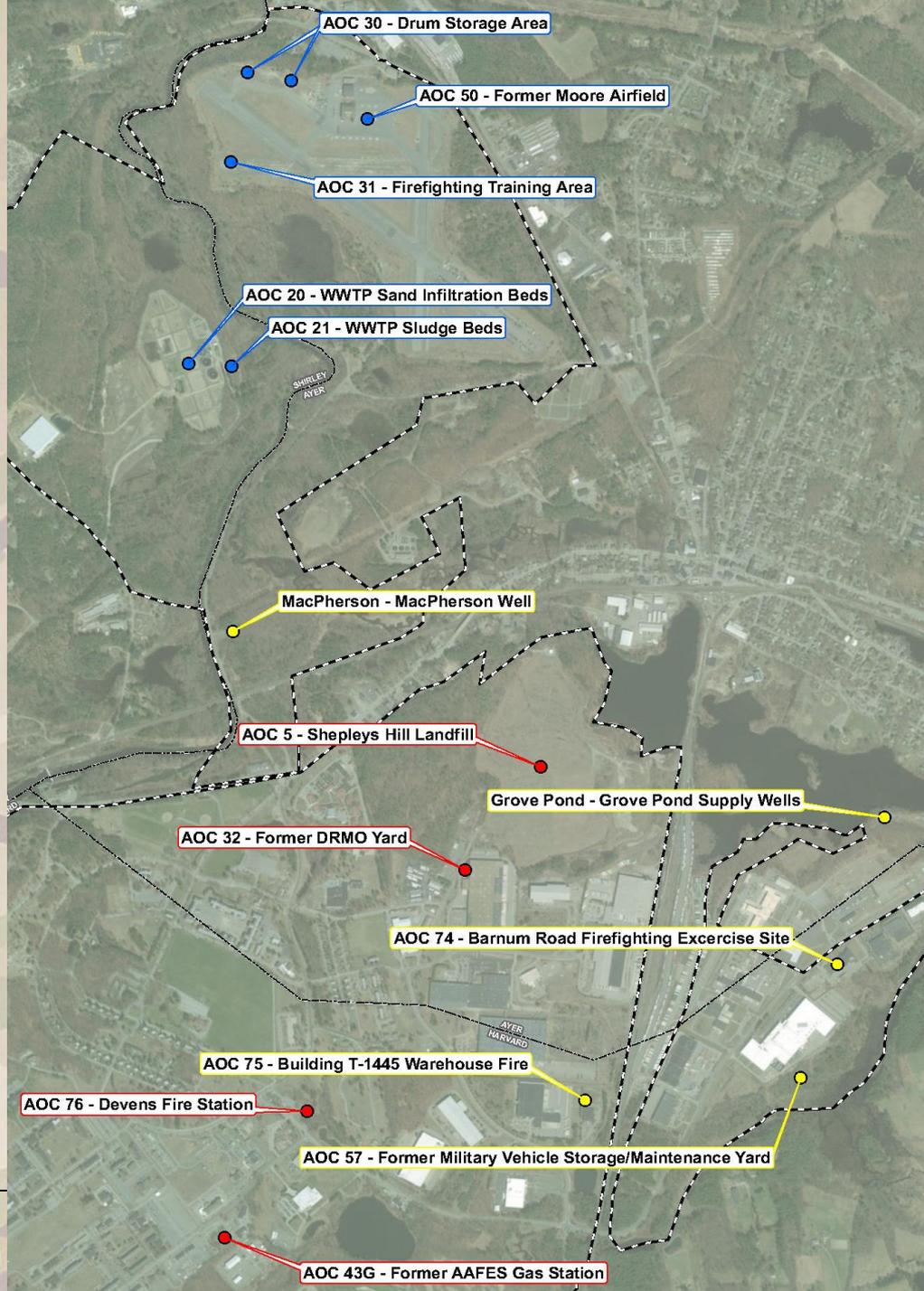




Next Steps

- PFAS Remedial Investigation, next step in the CERCLA process after the SI
- Ongoing planning of the RI Work Plan
 - ▶ Subdivided sites into areas to expedite work plan and field work
 - ▶ Area 1 – Grove Pond wellfield, MacPherson water supply well, AOC 57, AOC 74, AOC 75
 - ▶ Area 2 – AOC 5, AOC 32, AOC 43G, AOC 76
 - ▶ Area 3 – AOC 20, AOC 21, AOC 50, AOC 30, AOC 31
 - ▶ Comprehensive public and private well inventory and sampling if a migration pathway is present
- Schedule – work plan approval and commence field work, summer 2018





PFAS RI Areas of Investigation

Area 1 = yellow

Area 2 = red

Area 3 = blue



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Former Fort Devens Army Installation Project Status Updates

Questions?

