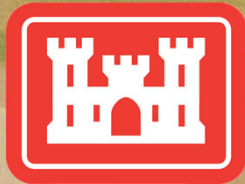


# Former Fort Devens Army Installation Project Status Update 17 October 2019

Restoration  
Advisory Board  
Meeting



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# Agenda

- Per- and Polyfluoroalkyl Substances (PFAS)
  - ▶ Community Involvement Plan (CIP) Update
  - ▶ Sampling Update for Private Wells and Community/Non-Community Systems
  - ▶ Sampling Update for Municipal Water Supply Wells
    - Ayer, Devens
  - ▶ Water Supply Well Treatment Update
    - Ayer, Devens
  - ▶ Remedial Investigation (RI) Update
    - Ongoing field activities
    - Sampling results to date





# Community Involvement Plan Interviews and Survey Findings

October 17, 2019







# Collecting Community Input

## ■ Process

- ▶ Fillable .pdf of questionnaire posted on [ftdevens.org](http://ftdevens.org) website (July 1 – Sept 24)
- ▶ Hard copies of questionnaire placed in town halls and libraries
- ▶ Personal interviews conducted (August 7-9)
- ▶ Online survey posted (July 22-Sept 19)

## ■ Response rate = 141

- ▶ 11 personal interviews
- ▶ 19 written questionnaires
- ▶ 111 Survey Monkey responses

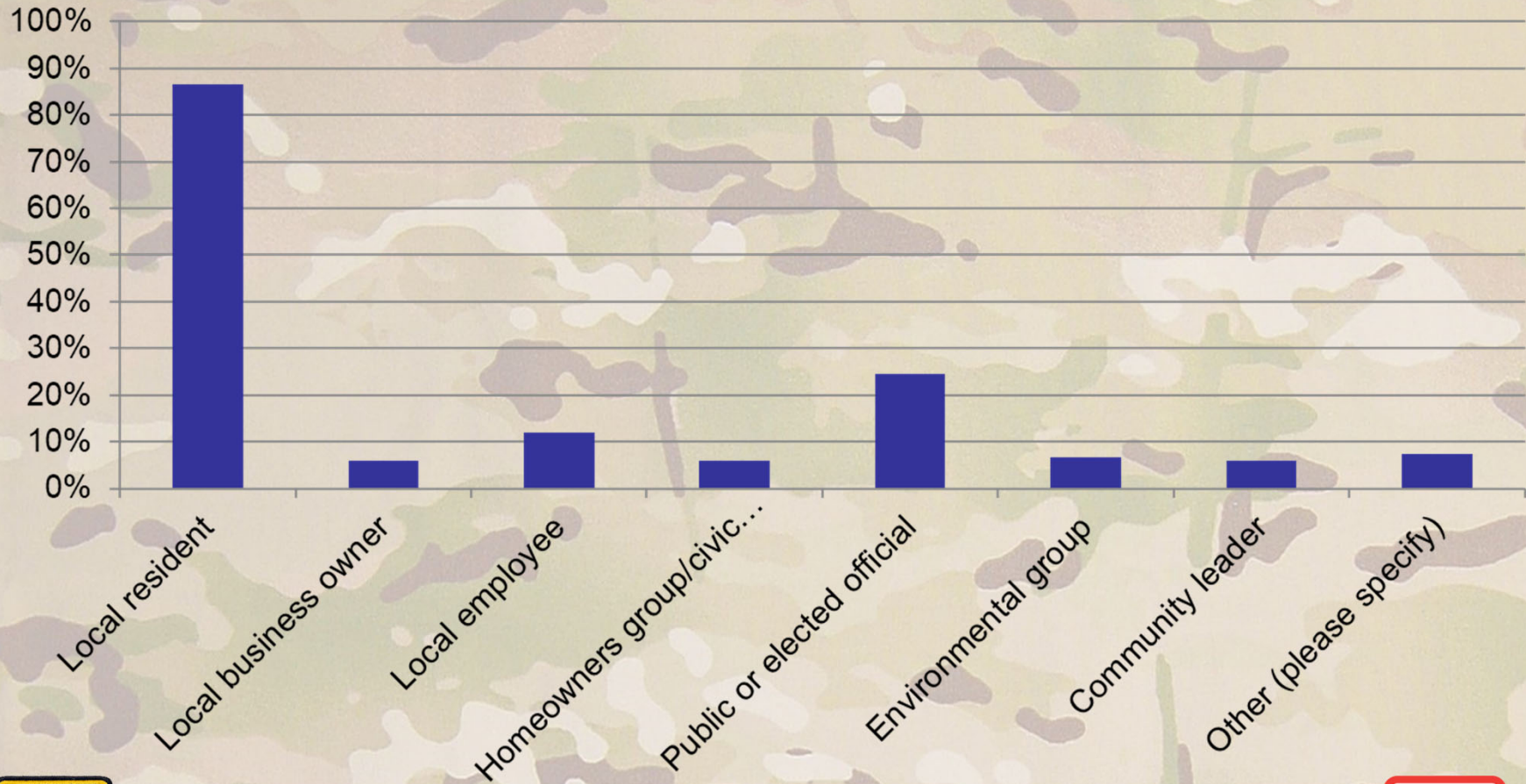






# Respondent Roles

How would you describe your role in the community?







# Interest/Concern about PFAS and Drinking Water

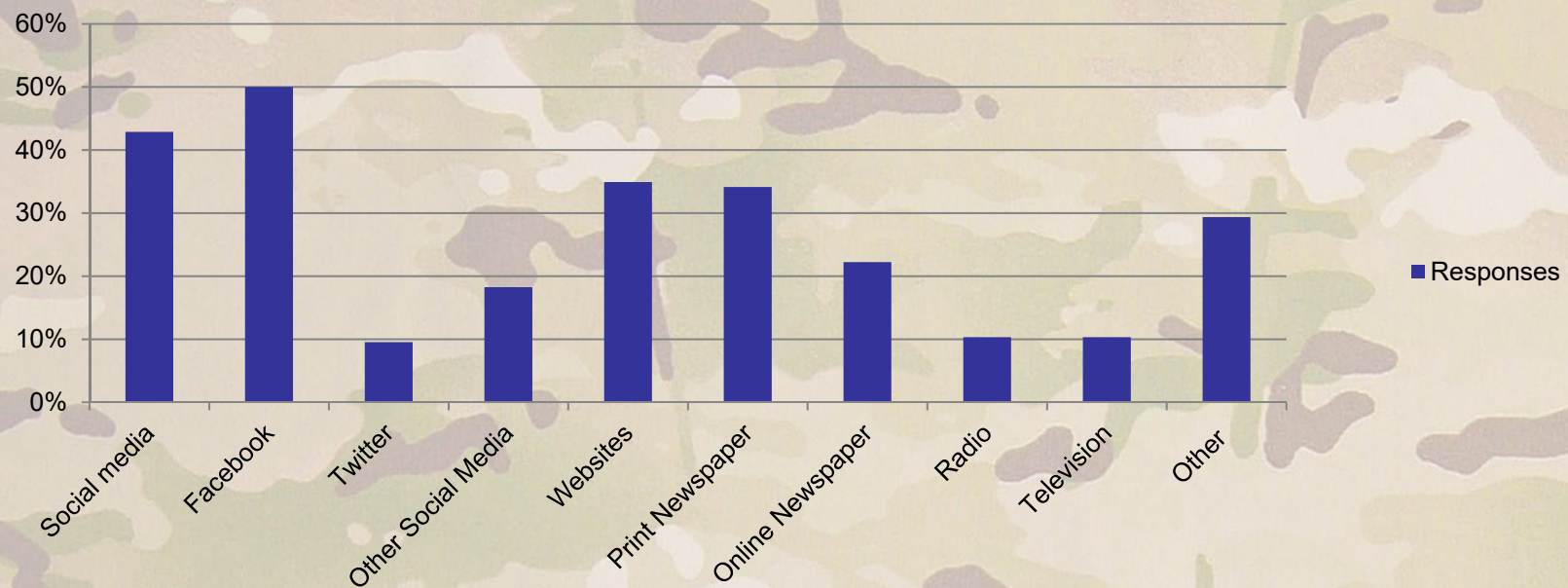
- 97% moderately-extremely interested/concerned
  - ▶ (60% extremely)
- 46% feel they've been affected by PFAS contamination
  - ▶ 44% not sure
  - ▶ 9% no
  - ▶ 1% did not answer
- 93% said "drinking water" when asked about the most important environmental issues facing the community
  - ▶ By comparison:
    - ▶ 53% growth and development
    - ▶ 38% surface water quality
    - ▶ 36% traffic





# Community News Sources

In general, how do you get news about your local community?







# Community News Sources

## Town Sources

- Spike in survey responses the week that Ayer distributed the link
- Of those who provided more information:
  - 65% specifically mentioned town emails and websites
  - 53% said they would contact towns with a question

## Army

- 76% NOT aware of Fort Devens Environmental Restoration Program [www.ftdevens.org](http://www.ftdevens.org) website
- 69% NOT aware of RAB meetings
  - Of those who are aware: 58% have attended a meeting (N=19)
  - Of those who have attended, 100% found it useful
- 55% don't know who to contact with a question
  - 17% would contact Bob Simeone (his name was listed specifically)

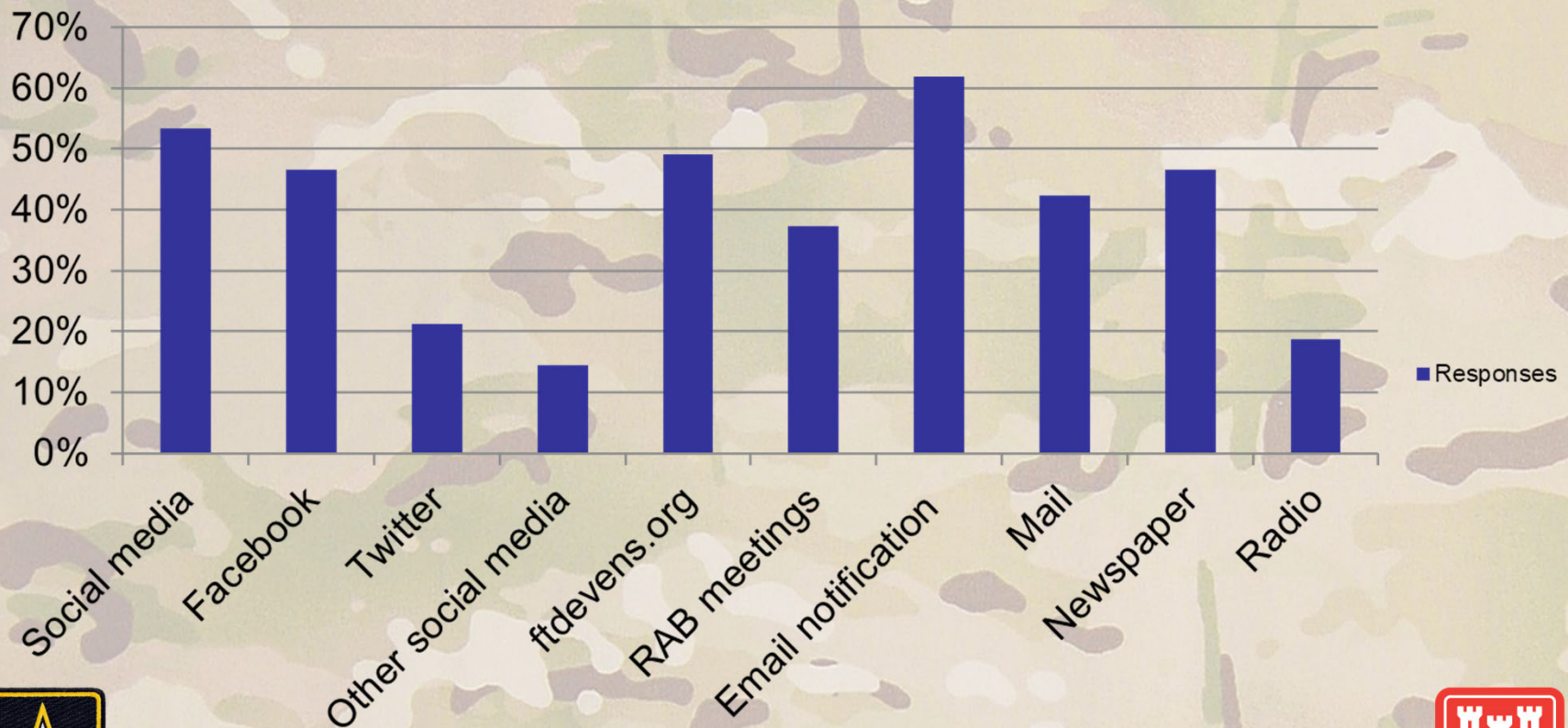






# How Should the Army Communicate about the PFAS Investigation?

What are your recommendations for how the Army should communicate about the PFAS investigation at the former Fort Devens? (check all that apply)







# Summary of Results

- People are very interested & concerned, especially about drinking water and potential health impacts
- For information, people tend to rely on:
  - ▶ Towns (website, email, social media notification)
  - ▶ PACE
- People are not well aware of opportunities provided by the Army (RAB meetings, website, contact)
  - ▶ But 100% who attended a RAB found it informative
- Emphasis on providing information in multiple ways – the more information, the more often, the better







# Community Involvement Plan Next Steps

- Finish analyzing and summarizing results
- Develop enhanced communication strategy
- Prepare CIP for stakeholder review and comment (i.e., MassDev/Devens, MassDEP, EPA, PACE, and local town officials and BOHs)







# Well Sampling Update for Community/ Non-Community Systems and Private Wells

- 2018 (summer) – Sampled 21 wells in Shirley & Harvard
  - ▶ PFAS detected in some wells, but below EPA's LHA of 70 ppt and Mass ORSG of 70 ppt
  - ▶ Source of PFAS in wells uncertain based on hydrogeology
- 2019 (spring) – Sampled 3 locations in Harvard; sampling 1 location quarterly
- 2019 (fall) – Sampling 196 wells at the request of the Harvard Board of Health
- 2019 – Ongoing PFAS Remedial Investigation (RI) to locate possible source areas and define nature and extent of PFAS contamination associated with the former Fort Devens







# Sampling of Municipal Water Supply Wells - Ayer Detections of PFAS, August 2019



	Grove Pond Wells (ppt)			Spectacle Pond Wells (ppt)		
	Well 1	Well 6	Finished Water (wells 1,6)	Well 1A	Well 2A	Finished Water
	8/20/2019	8/20/2019	8/20/2019	8/20/2019	8/20/2019	8/20/2019
PFBS	2.14	1.88	1.92	ND	ND	ND
PFHxA	6.03	45.1	20.8	2.70	21.0	11.2
PFHpA	3.31	39.6	17.3	1.94	9.14	5.17
PFHxS	5.16	7.28	5.05	3.85	2.37	3.02
PFOS	2.92	6.8	4.57	6.79	6.70	7.33
PFOA	6.82	29.8	15.8	7.04	8.48	7.72
EPA LHA	9.74	36.6	20.4	13.8	15.2	15.1
Mass ORSG	18.2	83.5	42.7	19.6	26.7	23.2

Results show the detected PFAS out of 18 analytes tested.

Yellow shading shows concentrations above the EPA LHA (Lifetime Health Advisory) (PFOS, PFOA of 70 ppt) and/or Mass ORSG (Office of Research and Standards Guideline) for drinking water (PFOS, PFOA, PFHpA, PFNA, PFHxS of 70 ppt).

The MassDEP has proposed a groundwater cleanup standard (GW-1) for the sum of PFOS, PFOA, PFHpA, PFNA, PFHxS, PFDA of 20 ppt.

ND = non-detect







# Sampling of Municipal Water Supply Wells - Devens Detections of PFAS, August-September 2019



	Patton Well (ppt)	Shaboken Well - Raw (ppt)	Shaboken Well - Finished (ppt)	MacPherson Well - Raw (ppt)	MacPherson Well - Finished (ppt)
	8/20/2019	9/19/2019	9/19/2019	9/11/2019	9/11/2019
PFBS	ND	ND	ND	5.48	ND
PFHxA	5.96	3.93	ND	21.3	ND
PFHpA	3.37	ND	ND	18.9	ND
PFHxS	6.23	13.6	ND	68.1	ND
PFOS	3.06	5.74	ND	53.9	ND
PFOA	8.42	6.85	ND	28.4	ND
PFNA	ND	ND	ND	2.99	ND
EPA LHA	11.5	12.6	ND	82.3	ND
Mass ORSG	21.1	26.2	ND	172.3	ND

Results show the detected PFAS out of 18 analytes tested.

Yellow shading shows concentrations above the EPA LHA (Lifetime Health Advisory) (PFOS, PFOA of 70 ppt) and/or Mass ORSG (Office of Research and Standards Guideline) for drinking water (PFOS, PFOA, PFHpA, PFNA, PFHxS of 70 ppt).

The MassDEP has proposed a groundwater cleanup standard (GW-1) for the sum of PFOS, PFOA, PFHpA, PFNA, PFHxS, PFDA of 20 ppt.

ND = non-detect







# Update on Grove Pond Wellfield - Time Critical Removal Action (TCRA)



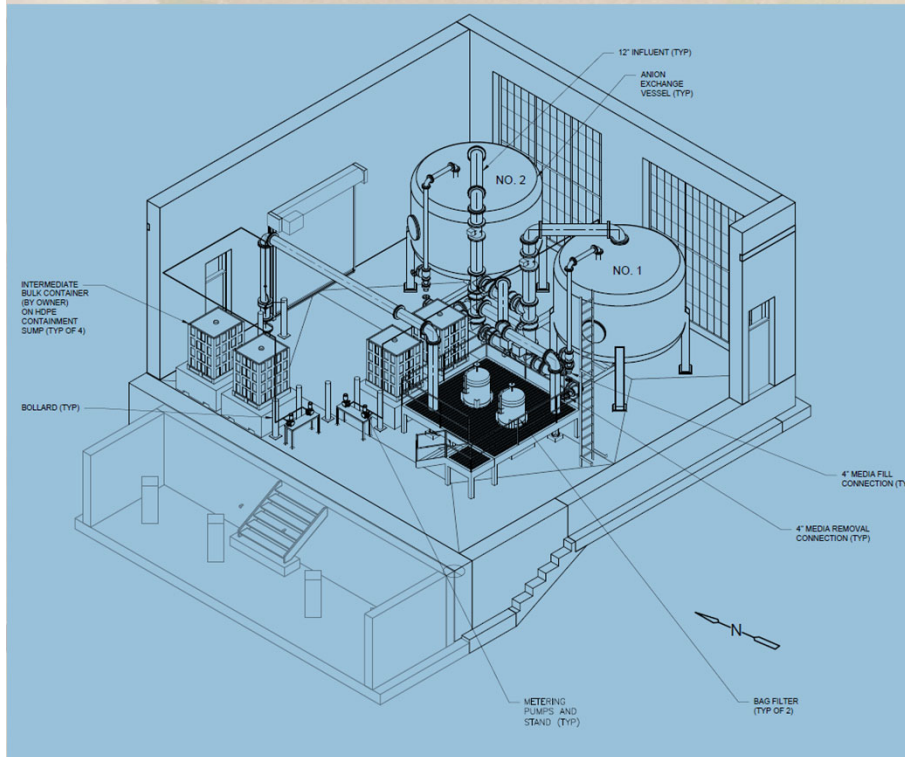
- Ongoing temporary treatment of Well #8 using granular activated carbon
  - ▶ On-line since June 2019; pumping ~ 200 gpm; >6M gallons treated
  - ▶ Well #8 raw water range from 200 to 245 ppt for 5 OSRG PFAS compounds
  - ▶ Treated Well #8 water ND for PFAS compounds
  - ▶ Well #7 off-line







# Update on Grove Pond Wellfield - Environmental Services Cooperative Agreement (ESCA)



- Supported by federal ESCA grant ~ \$4.4M signed 5-Sep-2019
- Permanent upgrade to Grove Pond Water Treatment Plant – New Ion Exchange (IX) System
  - ▶ Installation of IX begun: Sept 2019
  - ▶ Anticipated completion: June 2020
  - ▶ Will treat up to 2M gallons per day





# MacPherson Well



Devens installed a single GAC filter in June 2019. Has been treating ~ 600K GPD since activation on 8-5-19.

*The place to grow.*

# Shabokin Well

Devens installed four (4) Calgon GAC filters in July 2019.

The vessels have been treating ~ 500K gals per day since full activation on 9-24-19. Full treatment capacity is up to 1 MGD.

A temporary structure will be installed NLT 11-30-19 to winterize the system.

Vessels will be moved to a new Fe and Mn WTP's to be completed in late 2021.



© 2013 MassDevelopment

*The place to grow.*



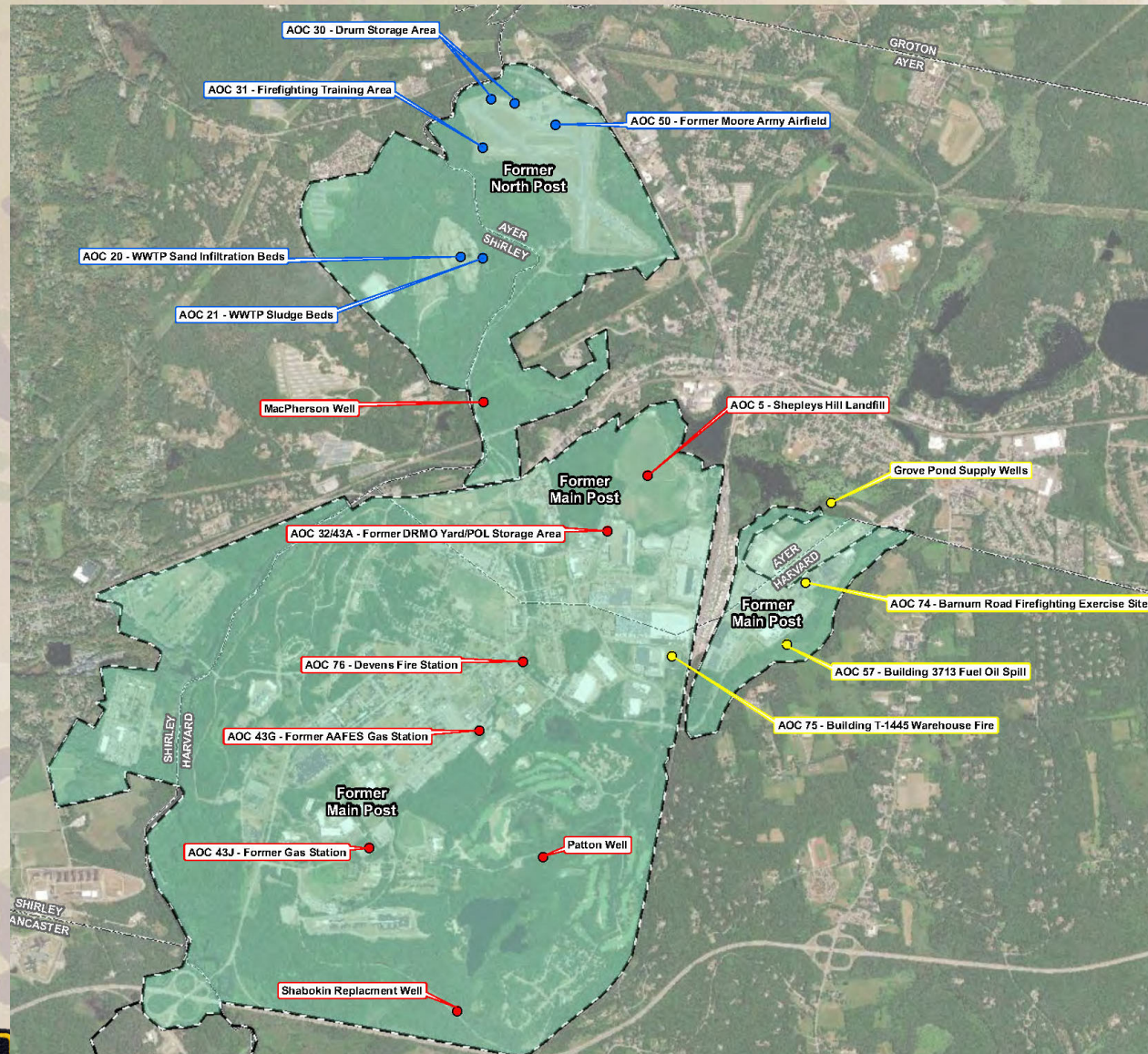
# Patton Well

- Devens has entered an agreement with WSP to provide 3 resin filters. To be delivered NLT 10/30/19.
- Projected to be ready for activation NLT 12/31/19.
- Units will be housed in a modified storage container.



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*The place to grow.*



## RI Areas of Investigation

Area 1 = yellow

Area 2 = red

Area 3 = blue







# Area 1 Activities

## ■ Completed

- ▶ 95 Vertical profiles conducted
- ▶ 9 Piezometers installed
- ▶ 37 Soil borings conducted
- ▶ 31 Monitoring wells sampled
- ▶ 14 Surface water and sediment samples collected
- ▶ 2 Synoptic water level surveys

## ■ Planned

- ▶ Monitoring well and piezometer installation
- ▶ Monitoring well sampling
- ▶ Synoptic water level survey
- ▶ Cold Spring Brook investigation

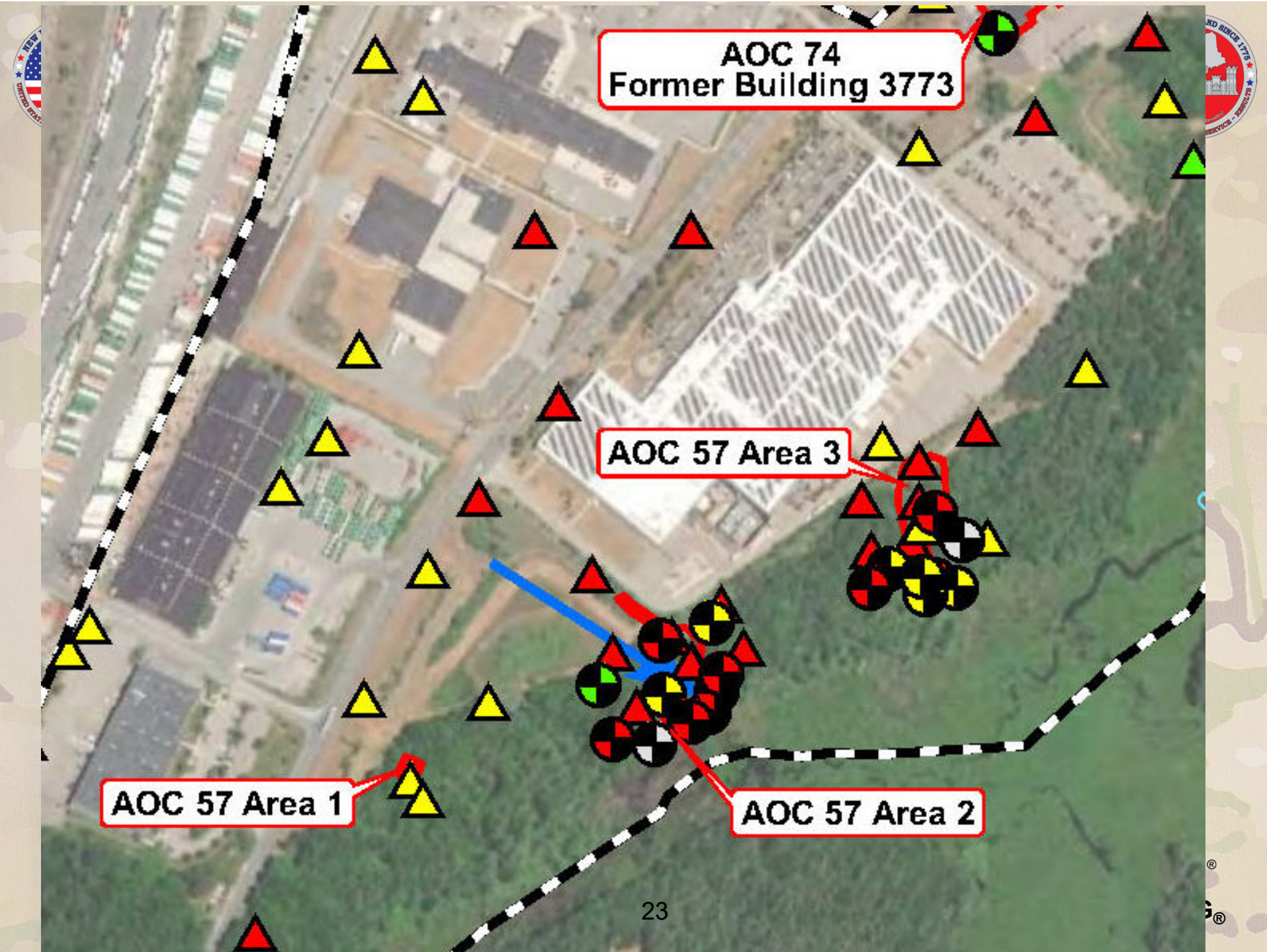




AOC 75  
Building T-1445  
Warehouse Fire

AOC 57 Area 1









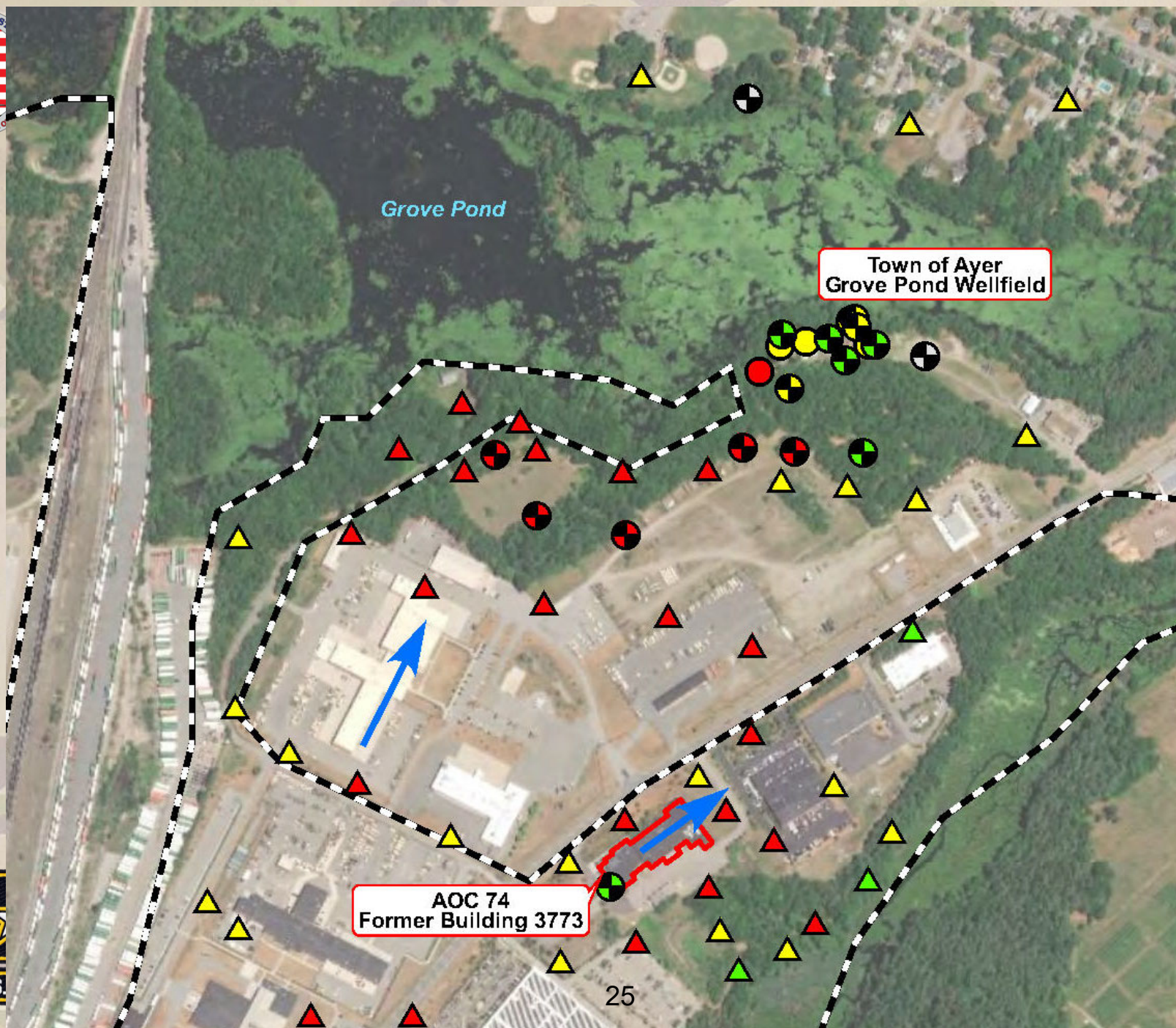
Town of Ayer  
Grove Pond Wellfield

AOC 74  
Former Building 3773



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# Area 1 Preliminary Observations

- AOC 75 – Former Bldg T-1445 Warehouse Fire
  - ▶ not all sources and extent identified
  - ▶ flows toward Cold Spring Brook
  - ▶ maximum PFOA+PFOS in groundwater = 1,400 ppt
- AOC 57 – Building 3713 Fuel Oil Spill Site
  - ▶ multiple sources, not all sources and extent identified
  - ▶ flows toward Cold Spring Brook
  - ▶ maximum PFOA+PFOS in groundwater = 4,390 ppt







# Area 1 continued

## ■ AOC 74 – Barnum Road Firefighting Exercise Site

- ▶ likely source area identified, extent not confirmed
- ▶ flows toward Cold Spring Brook and Grove Pond
- ▶ Maximum PFOA+PFOS = 2,270 ppt

## ■ Grove Pond Area

- ▶ multiple potential sources, extent not confirmed
- ▶ broad area of impacted groundwater
- ▶ flows toward Grove Pond, impacts to Grove Pond not yet evaluated
- ▶ maximum PFOA+PFOS in groundwater = 640 ppt



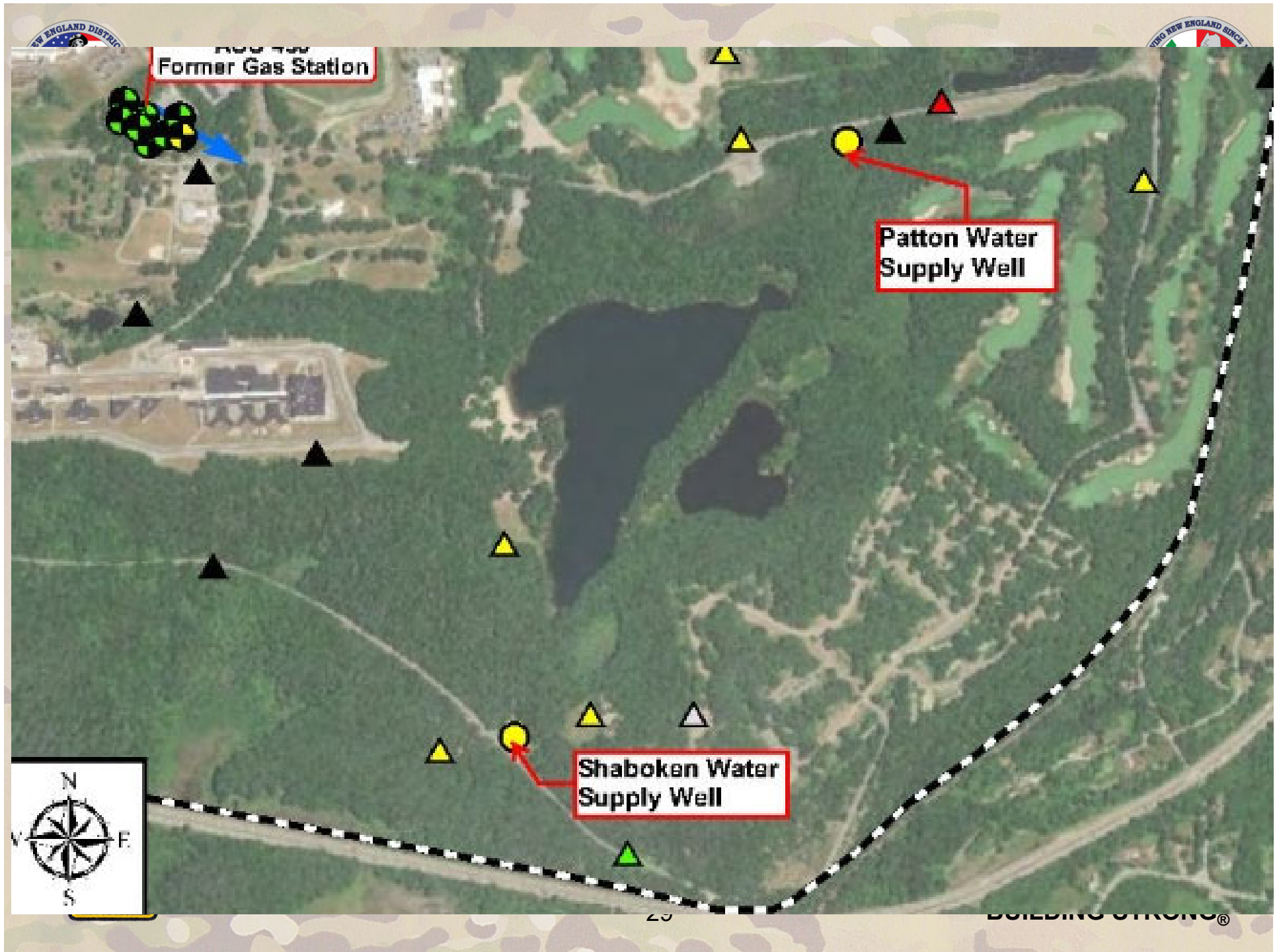


# Area 2 Activities

- Completed
  - ▶ 79 Vertical profiles conducted
  - ▶ 31 Piezometers installed
  - ▶ 15 Soil borings conducted
  - ▶ 75 Monitoring wells sampled
  - ▶ 26 Surface water and sediment samples collected
  - ▶ 2 Synoptic water level surveys
- Planned
  - ▶ Vertical profiling
  - ▶ Monitoring well and piezometer installation
  - ▶ Monitoring wells sampling
  - ▶ Synoptic water level survey
  - ▶ Soil borings











**Patton Water  
Supply Well**

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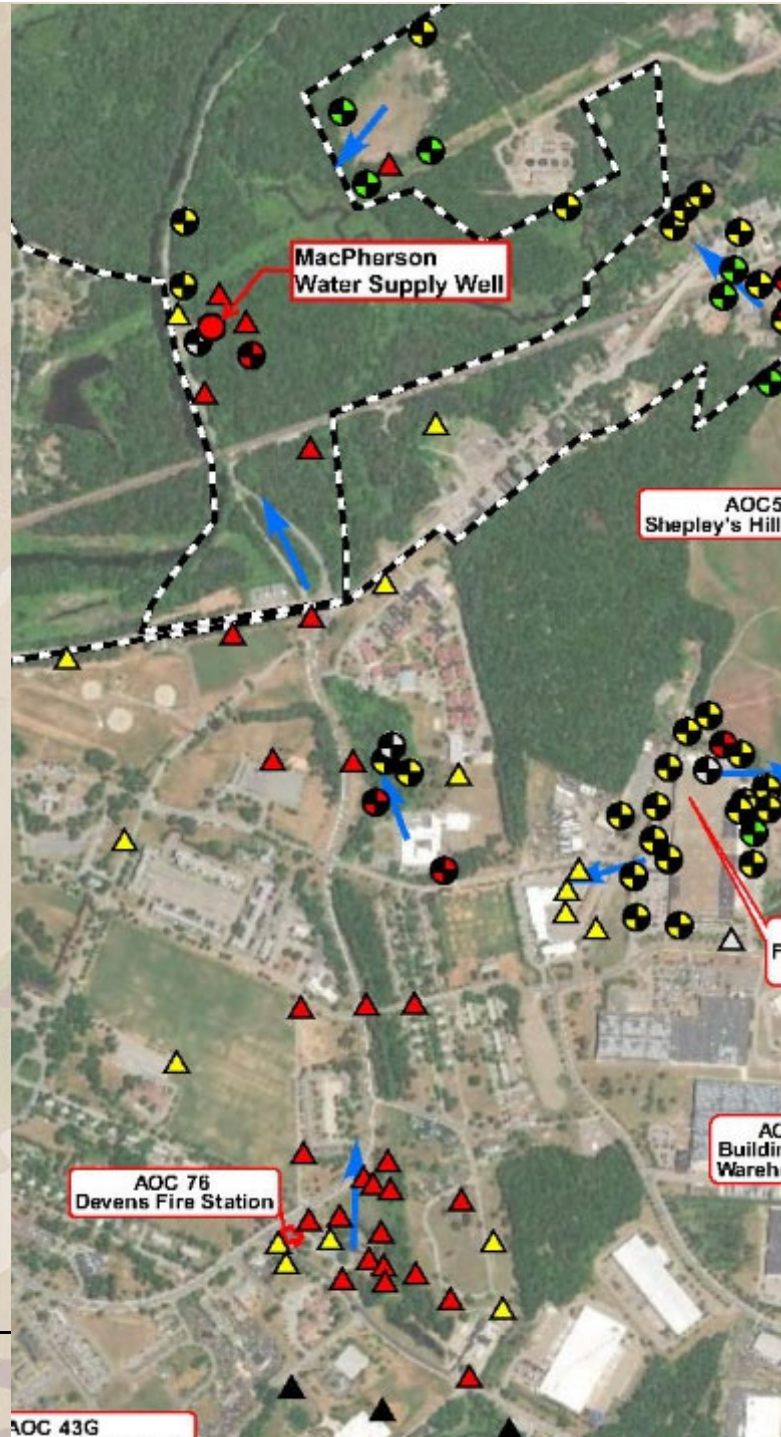
**AOC 43G**  
**Former AAFES Gas Station**



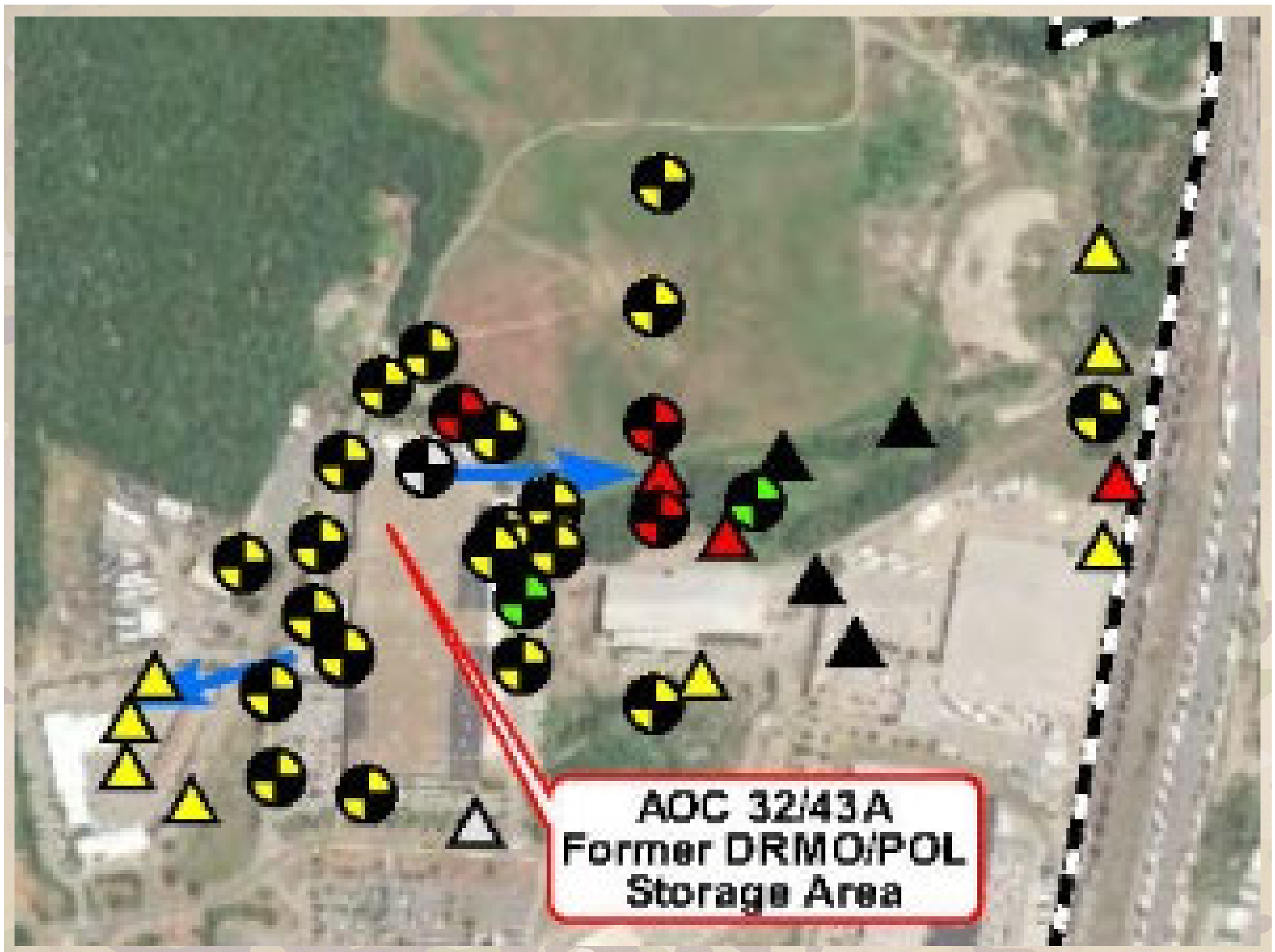




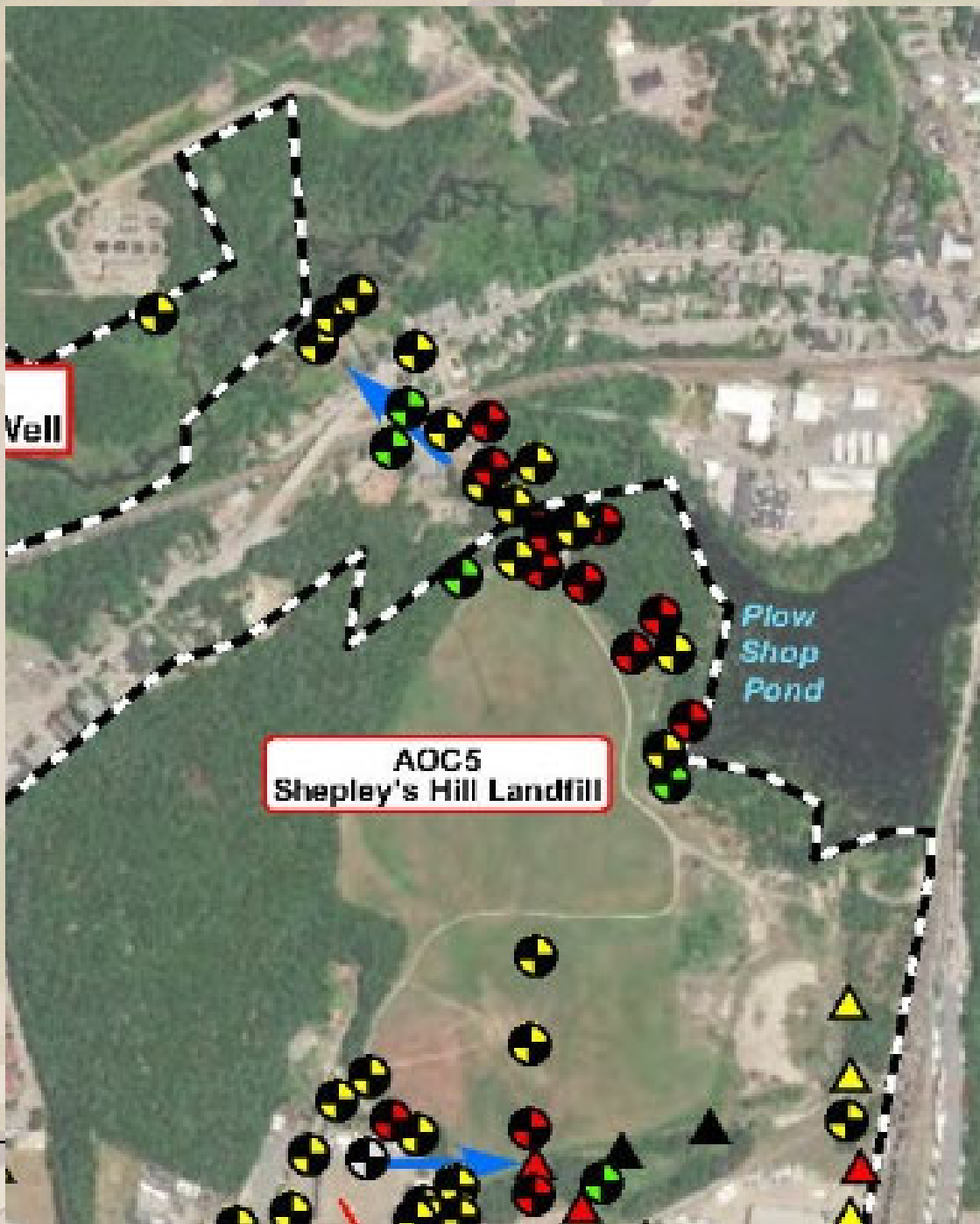
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# Area 2 Preliminary Observations

- Shaboken Water Supply Well
  - ▶ source or sources unknown
  - ▶ groundwater flow direction is approximated
  - ▶ maximum PFOA+PFOS in groundwater = 24 ppt
- Patton Water Supply Well
  - ▶ potential source is AOC 40 (former disposal area), extent not confirmed
  - ▶ groundwater flow direction is approximated
  - ▶ maximum PFOA+PFOS in groundwater = 394 ppt
- AOC 43J – Historical Gas Station J
  - ▶ groundwater flows to the southeast
  - ▶ maximum PFOA+PFOS in groundwater = 36.6 ppt







# Area 2 continued

- AOC 43G – Historical Gas Station G
  - ▶ likely source area identified, extent not confirmed
  - ▶ groundwater flows to east and then north
  - ▶ maximum PFOA+PFOS in groundwater = 2,190 ppt
- AOC 76 – Devens Fire Station
  - ▶ likely source identified, extent not confirmed
  - ▶ groundwater flows to the north
  - ▶ maximum PFOA+PFOS in groundwater = 4,160 ppt
- MacPherson Water Supply Well
  - ▶ PFAS likely attributed to AOC 76 – Devens Fire Station
  - ▶ maximum PFOA+PFOS in groundwater = 119 ppt





# Area 2 continued

- AOC 32/43A – Former DRMO/POL Storage
  - ▶ multiple sources, Devens Recycling Center Fire, extent not confirmed
  - ▶ groundwater flows to the east and then northeast
  - ▶ maximum PFOA+PFOS in groundwater = 2,880 ppt
- AOC 5 – Shepley's Hill Landfill
  - ▶ groundwater flows to Plow Shop Pond and Nonacoicus Brook
  - ▶ maximum PFOA+PFOS in groundwater = 127 ppt







# Area 3 Activities

## ■ Completed

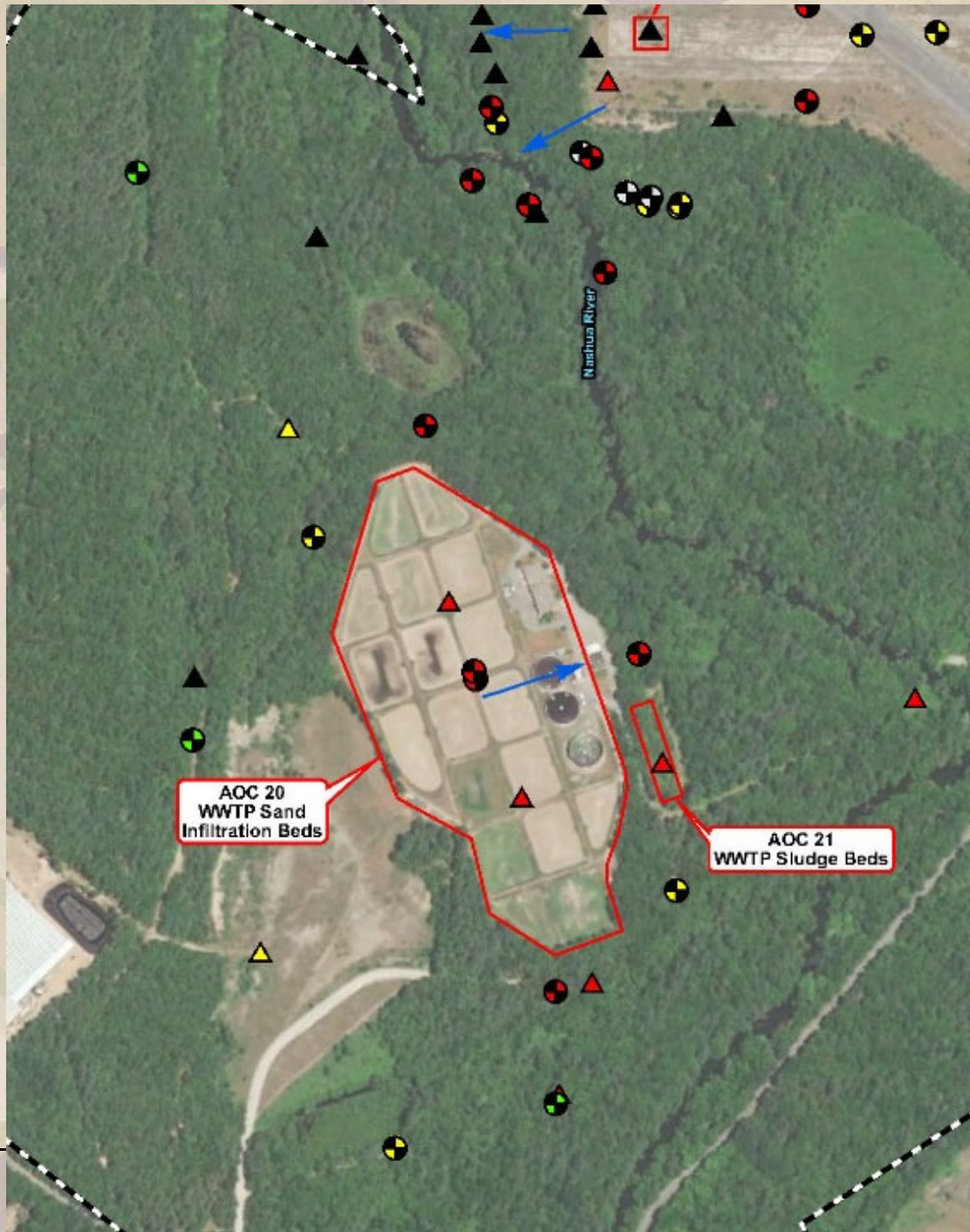
- ▶ 31 Vertical profiles conducted
- ▶ 13 Piezometer installed
- ▶ 43 Monitoring wells sampled

## ■ Planned

- ▶ Vertical profiling/piezometer installation
- ▶ Soil borings
- ▶ Surface water and sediment sampling
- ▶ Monitoring well and piezometer installation
- ▶ Monitoring well sampling
- ▶ Synoptic water level surveys

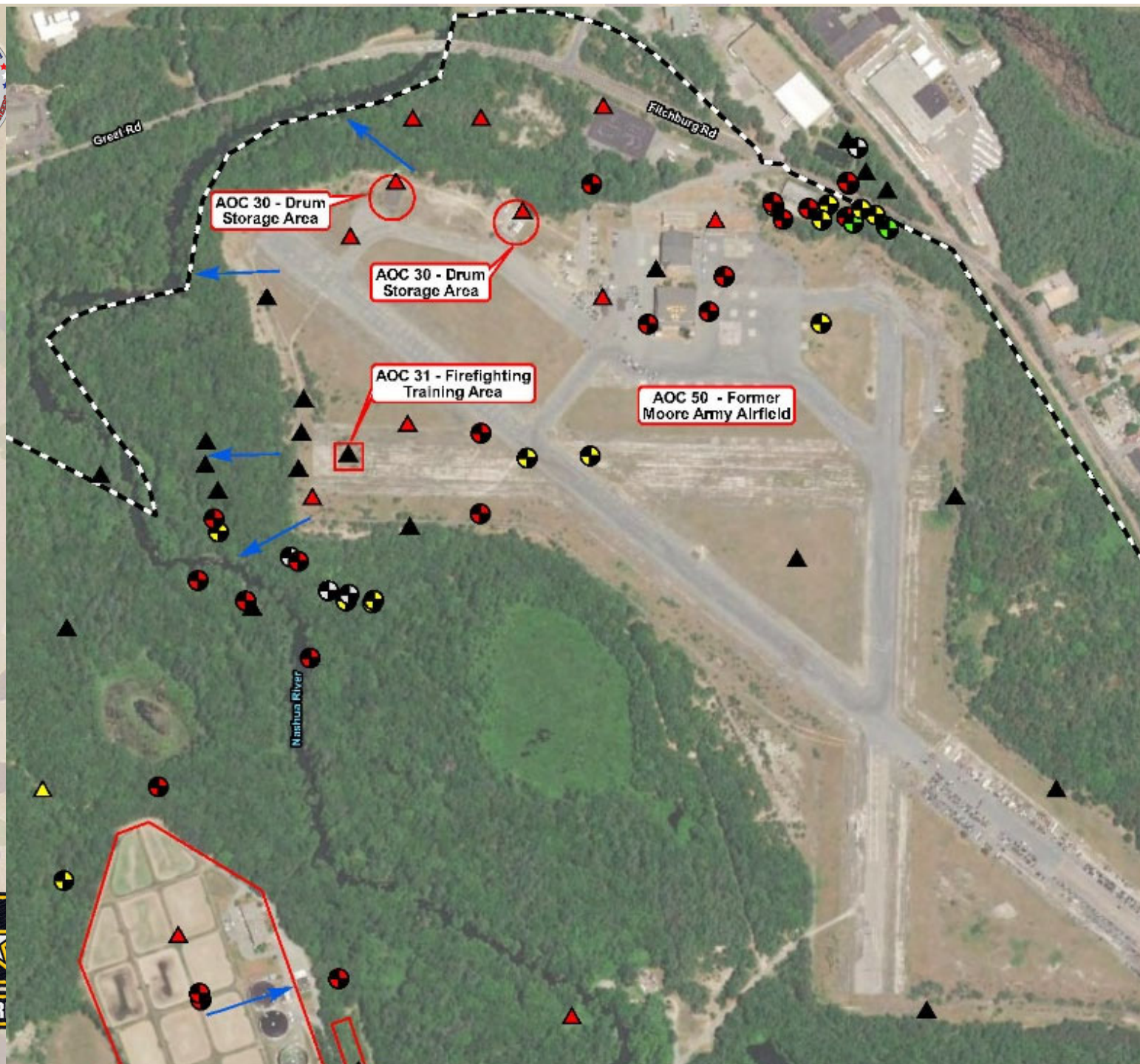






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# Area 3 Preliminary Observations

- AOC 20/21 – Devens Wastewater Treatment Sand Filter Beds/Sludge Drying Beds
  - ▶ likely source areas identified, extent not confirmed
  - ▶ groundwater flow toward Nashua River
  - ▶ maximum PFOA+PFOS in groundwater = 320 ppt
- AOC 30 – Former Moore Army Airfield Drum Storage Area
  - ▶ likely sources identified, extent not confirmed
  - ▶ groundwater flow toward Nashua River
  - ▶ maximum PFOA+PFOS in groundwater = 3,530 ppt







# Area 3 continued

- AOC 31 – Former Moore Army Airfield Fire Training Area
  - ▶ likely source identified, extent not confirmed
  - ▶ groundwater flow toward Nashua River
  - ▶ maximum PFOA+PFOS in groundwater = 39,000 ppt
- AOC 50 – Former Moore Army Airfield
  - ▶ multiple sources, extent not confirmed
  - ▶ groundwater flow toward Nashua River
  - ▶ maximum PFOA+PFOS in groundwater = 10,500 ppt





# Next Steps

- Continue RI sampling efforts in Areas 1, 2, and 3
- Private well sampling in Harvard (Oct.-Nov.)
- 2019-Q4 Town Water Supply Well Sampling (Nov.)
- Prepare Community Involvement Plan for stakeholder review and comment (Dec.)
- Continue to operate temporary treatment system at Grove Pond well #8
- Compilation/presentation of existing RI data







# Former Fort Devens Army Installation Project Status Updates

## Questions?

