

RESTORATION ADVISORY BOARD (RAB) MEETING

Former Fort Devens Army Installation
February 25, 2021



US Army Corps
of Engineers®



1 | WELCOME!



Thank you for joining us tonight.

Bob Simeone
Army BRAC Environmental Coordinator

Penny Reddy
U.S. Army Corps of Engineers
New England District

Steven Perry
SERES-Arcadis JV Community
Involvement Specialist

Andy Vitolins
SERES-Arcadis JV Program Manager

Erika Houtz, PhD
SERES-Arcadis JV PFAS
Subject Matter Expert

Julee Jaeger
SERES-Arcadis JV Meeting Coordinator



TONIGHT'S TOPICS



1

Welcome!

2

**Project
Updates**

3

**Upcoming
Work**

4

**Community
Involvement &
RAB Discussion**

5

**Next Steps
& Meeting**



1 | WELCOME!



The call is being recorded to facilitate minutes. We have muted all lines to reduce background noise.

We will take questions at the end of the presentation. You can also submit a question via the chat box during the presentation and we will address it at the end.

We will be asking you two questions later in the meeting, for you to submit your thoughts in the chat.

If you need to leave the call, click “Leave.”



**CHAT
BOX**



**MUTE/
UNMUTE**



Leave



2 | PROJECT UPDATES



Water Supply PFAS Treatment and Sampling

- Permanent AIX System for PFAS treatment completed and fully operational at Grove Pond Wellfield.
 - Construction funded through a grant from the Army and completed by the town.
 - Town will conduct future quarterly sampling with the new system in place.
- Army has demobilized the interim PFAS carbon treatment system on Well 8, which operated for 18 months and treated over 173 million gallons.
- Army has completed sampling of community and private water wells identified in previous meetings.





2 | PROJECT UPDATES



Q4 2020 Town of Ayer Water Supply Well Sampling

| Analyte | Grove Pond Wells (ng/L) | | | | | | Spectacle Pond Wells (ng/L) | | |
|--------------------------------------|-------------------------|-------------|-------------|------------------------|-------------------------|------------------------------|-----------------------------|-------------|----------------------------|
| | Well 1 | Well 6 | Well 7 | Well 8 (Pre-treatment) | Well 8 (Post-Treatment) | Finish Water (Wells 1,6,7,8) | Well 1A | Well 2A | Finish Water (Well 1A, 2A) |
| | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 | 12/03/2020 |
| Perfluorobutanesulfonic acid (PFBS) | 1.87 J | 2.26 J | 2.12 | 3.67 | ND | ND | 2.25 J | ND | 1.93 |
| Perfluorohexanoic acid (PFHxA) | 5.37 J | 5.23 J | 7.26 | 93.3 | 2.40 | 5.52 | 3.69 J | 19.9 | 11.7 |
| Perfluoroheptanoic acid (PFHpA) | 5.33 J | 4.12 J | 4.58 | 106 | ND | 4.63 | 2.69 J | 11.3 | 6.64 |
| Perfluorohexanesulfonic acid (PFHxS) | 10.5 J | 8.92 J | 6.92 | 23.0 | ND | 7.21 | 5.09 J | 3.06 | 3.67 |
| Perfluorooctane sulfonate (PFOS) | 5.19 J | 3.72 J | 4.28 | 41.4 | ND | 3.90 | 7.38 J | 5.36 | 6.67 |
| Perfluorooctanoic acid (PFOA) | 15.3 J | 9.63 J | 7.41 | 64.2 | ND | 8.64 | 5.83 J | 9.58 | 7.56 |
| Perfluorononanoic acid (PFNA) | ND | ND | ND | 2.14 | ND | ND | ND | ND | ND |
| Perfluorodecanoic acid (PFDA) | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EPA LHA (70 ng/L)* | 20.5 | 13.4 | 11.7 | 106 | ND | 12.5 | 13.2 | 14.9 | 14.2 |
| MassDEP MCL/GW-1 (ng/L)** | 36.3 | 26.4 | 23.2 | 237 | ND | 24.4 | 21.0 | 29.3 | 24.5 |

Notes:

Only detected compounds are shown (18 compounds analyzed)

ng/L = nanograms per liter; J = estimated value; ND = not detected

Highlighted Cells - Concentration exceeds respective standard

*EPA Lifetime Health Advisory (LHA) - PFOS + PFOA > 70 ng/L.

**MassDEP MCL - PFAS6 (PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) > 20 ng/L



2 | PROJECT UPDATES



Water Supply MassDevelopment



MacPherson, Patton & Shabokin Temp PFAS Installations



The place to grow.

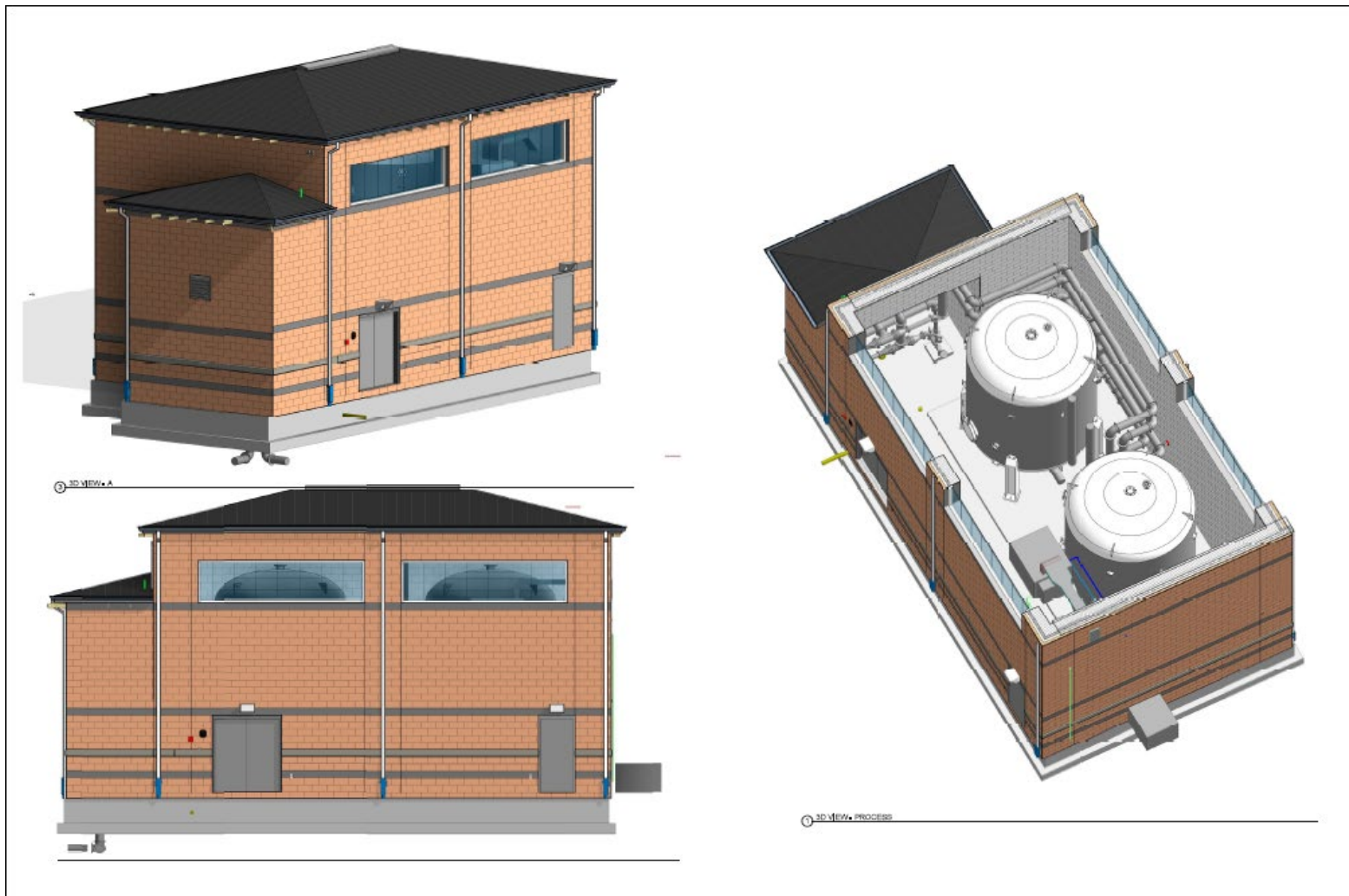
Permanent PFAS WTP's Update for Devens

- MacPherson PFAS WTP Schedule
 - Construction begins March 2021
 - Completion is projected for December 2021

- Patton Fe/Mn and PFAS WTP Schedule
 - Construction begins June 2021
 - Completion is projected for summer 2022

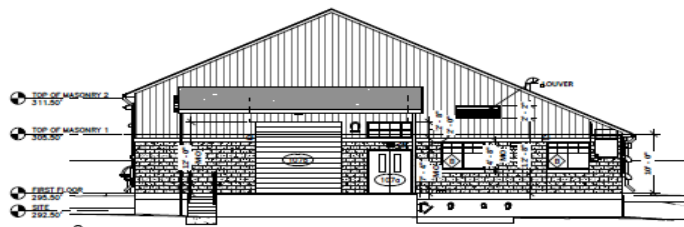
- Shabokin Fe/Mn and PFAS WTP Schedule
 - Construction begins October 2021
 - Completion is projected for spring 2023

MacPherson PFAS WTP

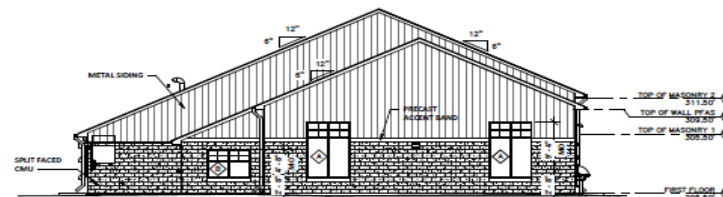


The place to grow.

Patton & Shabokin Fe/Mn & PFAS WTP's



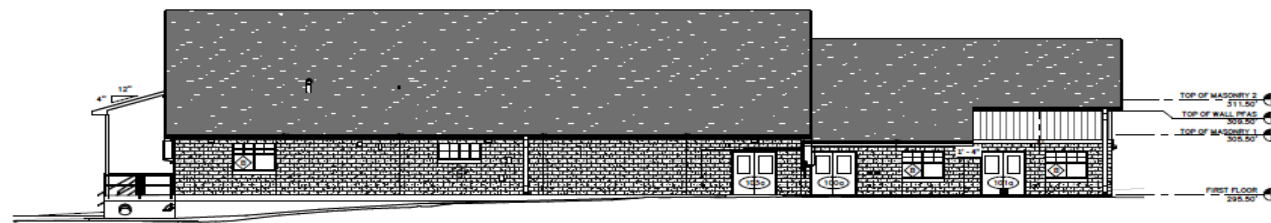
EAST ELEVATION
SCALE: 1/8" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"



SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"

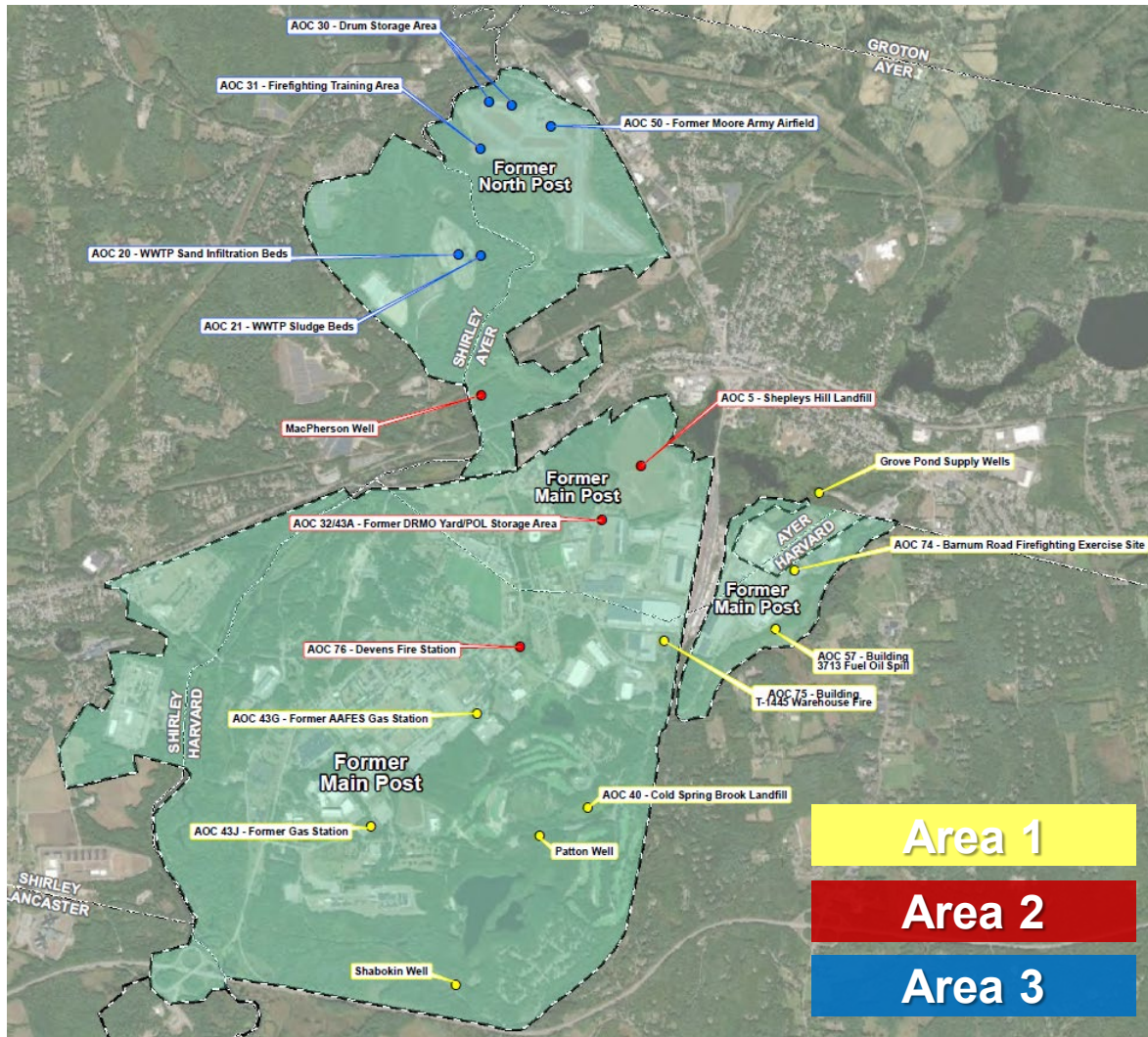
The place to grow.



2 | PROJECT UPDATES



PFAS Remedial Investigation (RI): Status & Path Forward



Phase 1 Remedial Investigation Work Completed:

- Data Reports available on website under Area-specific tabs
 - Area 1 – Completed July 2020
 - Area 2 – Completed September 2020
 - Area 3 – Completed February 2021

Remaining work will be performed following the CERCLA RI/FS process for each Area:

- Phase 2 RI Work Plan
- RI/FS Report
- Proposed Plan
- Record of Decision
- Remedial Design/Remedial Action

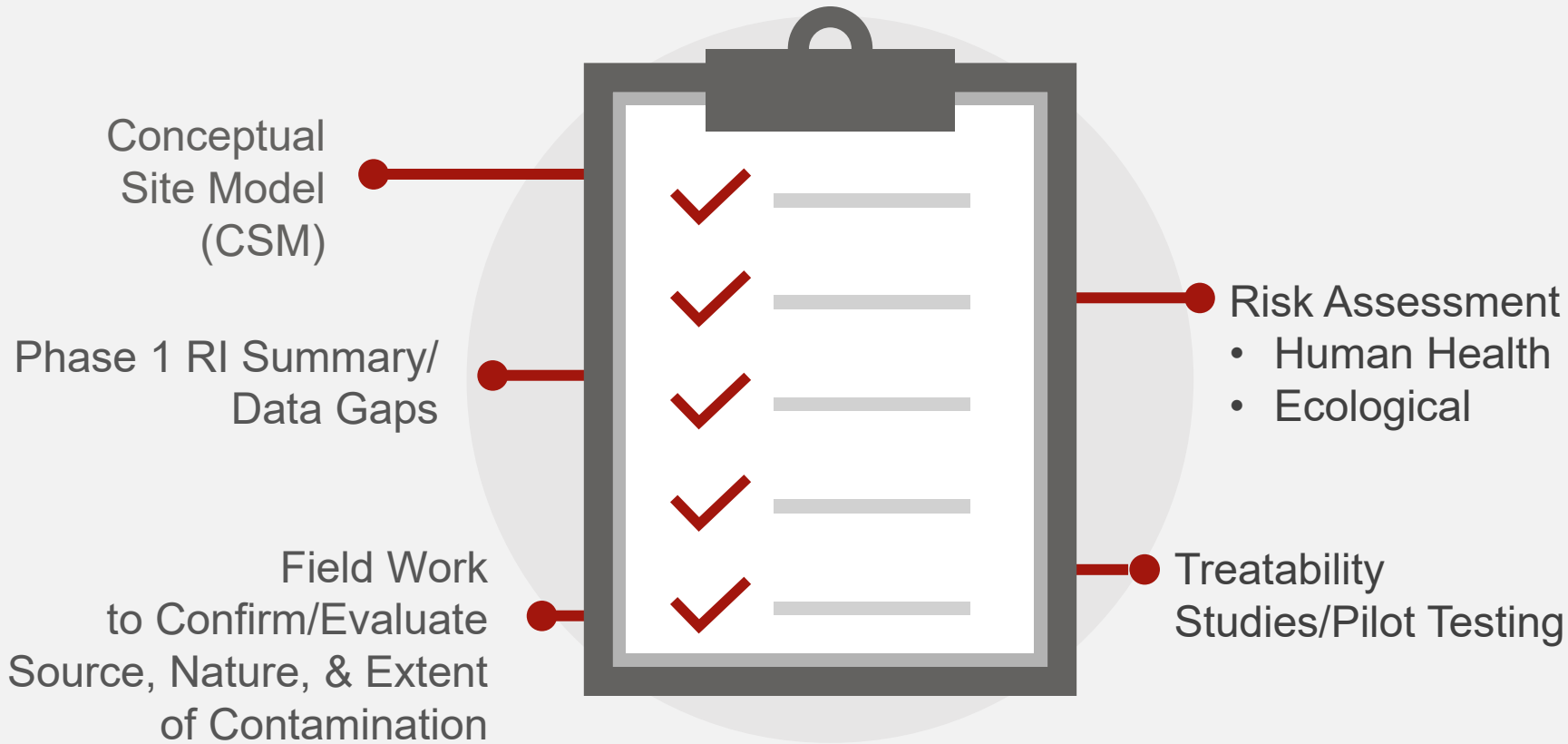


2 | PROJECT UPDATES



PFAS Remedial Investigations: Status & Path Forward

Phase 2 RI Work Plan will be developed for each Area:



Schedule for Draft Phase 2 RI Work Plans

| | |
|--------------|--------|
| June 2021 | Area 1 |
| October 2021 | Area 2 |
| January 2022 | Area 3 |



2 | PROJECT UPDATES



Important Concepts for the PFAS RI

There are many PFAS, and their structure/composition impacts how they behave in the environment

- The number of carbon atoms in a PFAS influences its *bioaccumulation potential and mobility*
- For example: PFOS and PFOA have eight carbon atoms (C8) – “O” = Octane
- No. of carbons in compound also referred to as “chain” – longer chain = more fluorinated carbon atoms

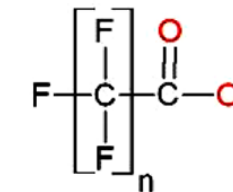
- C1 Methane
- C2 Ethane
- C3 Propane
- C4 Butane
- C5 Pentane
- C6 Hexane
- C7 Heptane
- C8 Octane**
- C9 Nonane
- C10 Decane
- C11 Unodecane
- C12 Dodecane
- C13 Tridecane
- C14 Tetradecane

Perfluoroalkyl Sulfonates^L



| | |
|---------|--------|
| PFBS | n = 4 |
| PFPeS * | n = 5 |
| PFHxS | n = 6 |
| PFHpS | n = 7 |
| PFOS | n = 8 |
| PFNS * | n = 9 |
| PFDS | n = 10 |

Perfluoroalkyl Carboxylates^L



| | |
|-------|--------|
| PFBA | n = 4 |
| PFPeA | n = 5 |
| PFHxA | n = 6 |
| PFHpA | n = 7 |
| PFOA | n = 8 |
| PFNA | n = 9 |
| PFDA | n = 10 |
| PFUDA | n = 11 |
| PFDoA | n = 12 |
| PFTrA | n = 13 |
| PFTeA | n = 14 |



2 | PROJECT UPDATES



Important Concepts for the PFAS RI

Poly- and Perfluoroalkyl Substances (PFAS)

Polyfluoroalkyl Substances – “Precursors”

“Precursors” – Polyfluorinated compounds that can transform in the environment to perfluorinated acids (4 of the 16 compounds we sample for – NMeFOSAA, NEtFOSAA, 6:2 FtS, 8:2 FtS)

For example, PFOA/PFOS can be formed in the environment from precursor compounds (in addition to being present in the original mixture)

Perfluoroalkyl Substances - “Regulated” Compounds

12 of the 16 individual compounds that we sample for are typically the “end products” of precursor transformation

- Do not degrade or biotransform in the environment
- Example: MassDEP PFAS 6 Compounds (PFOS, PFOA, PFHxS, PFNA, PFHpA, PFDA)



2 | PROJECT UPDATES



Important Concepts for the PFAS RI

PFAS Chemistry: What chemicals detected say about sources and transport

We measure
16 PFAS in most soil/
groundwater samples.

These different compounds
can indicate types of sources
of the release, which helps
determine a remediation/
treatment strategy.

Examples:

- Historical 3M foams contained high concentrations of PFOS, PFHxS, and PFHxS precursors.
- PFOS is also associated with other kinds of sources like chromium plating and household use.
- GenX, measured in drinking water, is a PFOA-replacement indicative of more recent PFAS sources and has no relationship to firefighting foams.
- Not only the types of compounds detected but their relative amounts (i.e., their “**fingerprint**”) are important in evaluating sources and environmental transport.



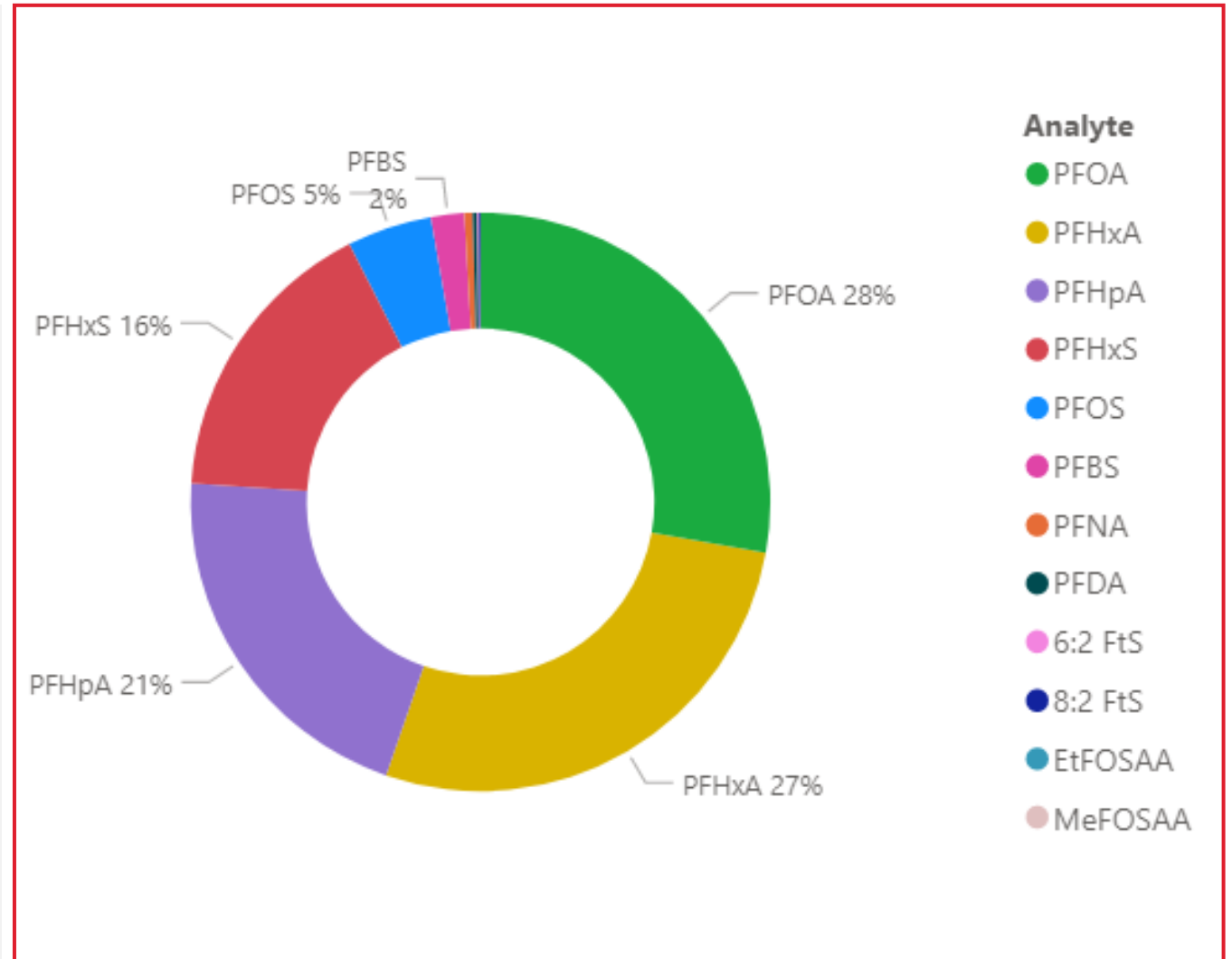
2 | PROJECT UPDATES



Important Concepts for the PFAS RI

PFAS “Fingerprint” or Mixture

- Relative amounts of different PFAS
- Influenced by:
 - Types of sources
 - Locations of sources
 - Differential migration of PFAS
 - Enrichment of shorter PFAS expected away from source
 - Transformation of precursors



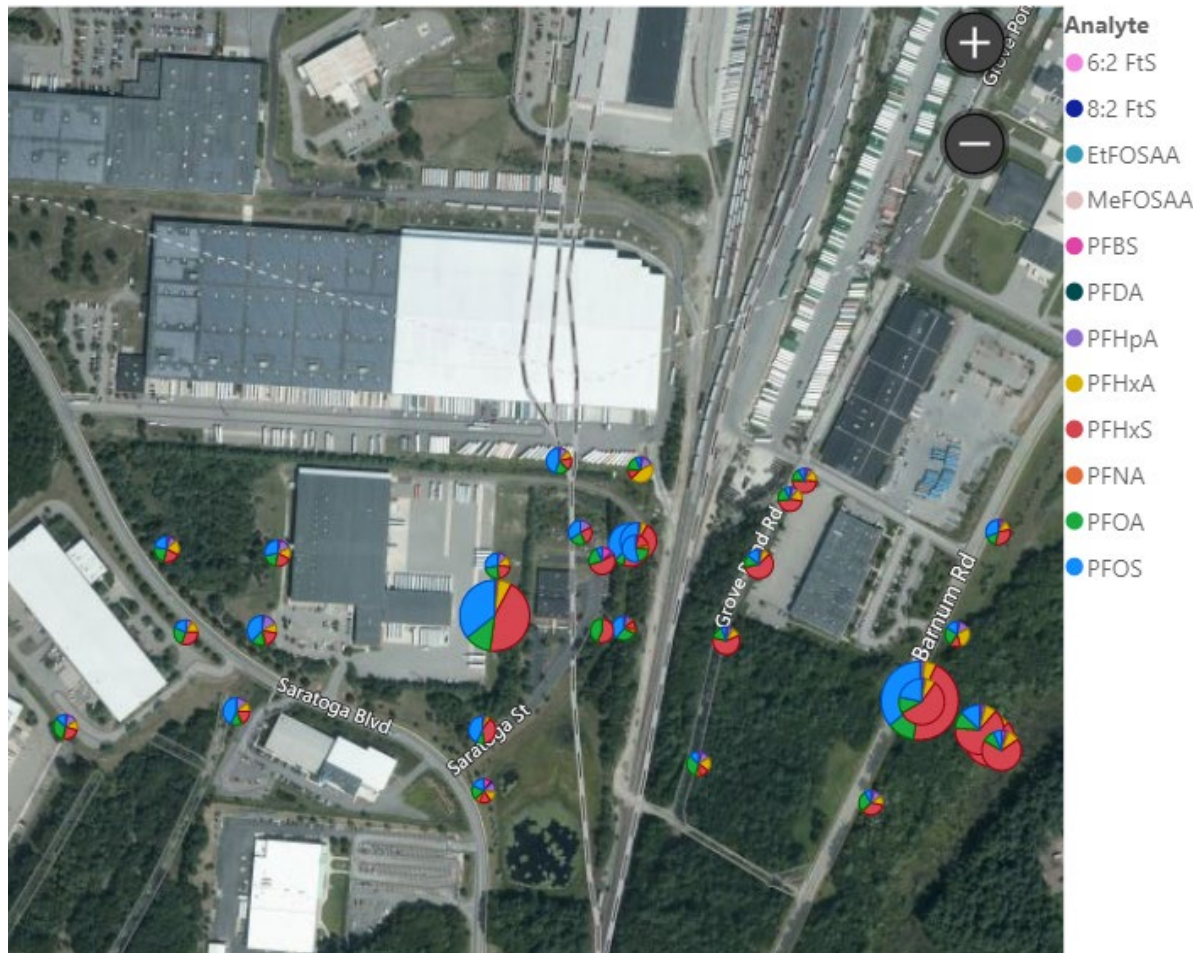


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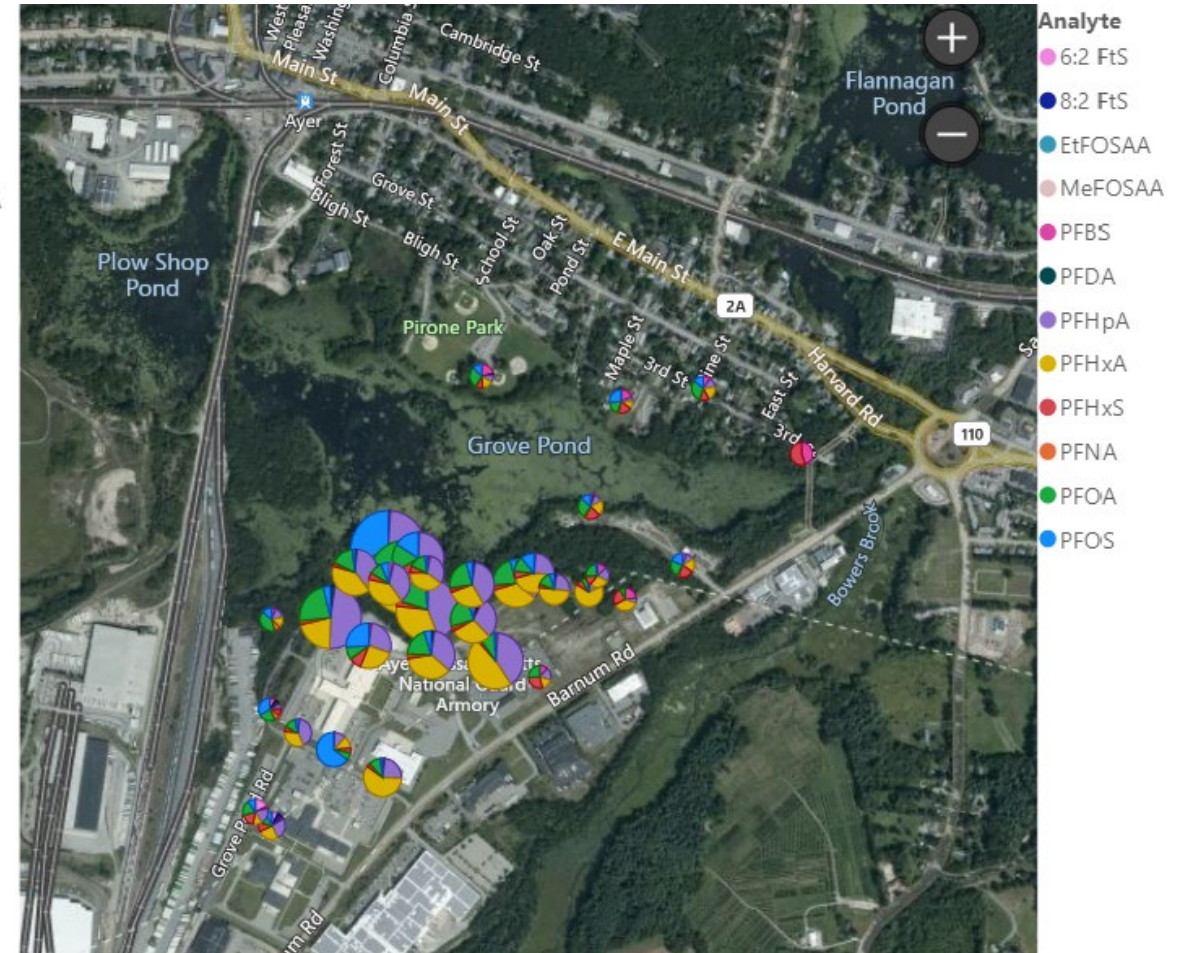


Important Concepts for the PFAS RI

PFAS Fingerprint Example AOC 75 Shallow Groundwater

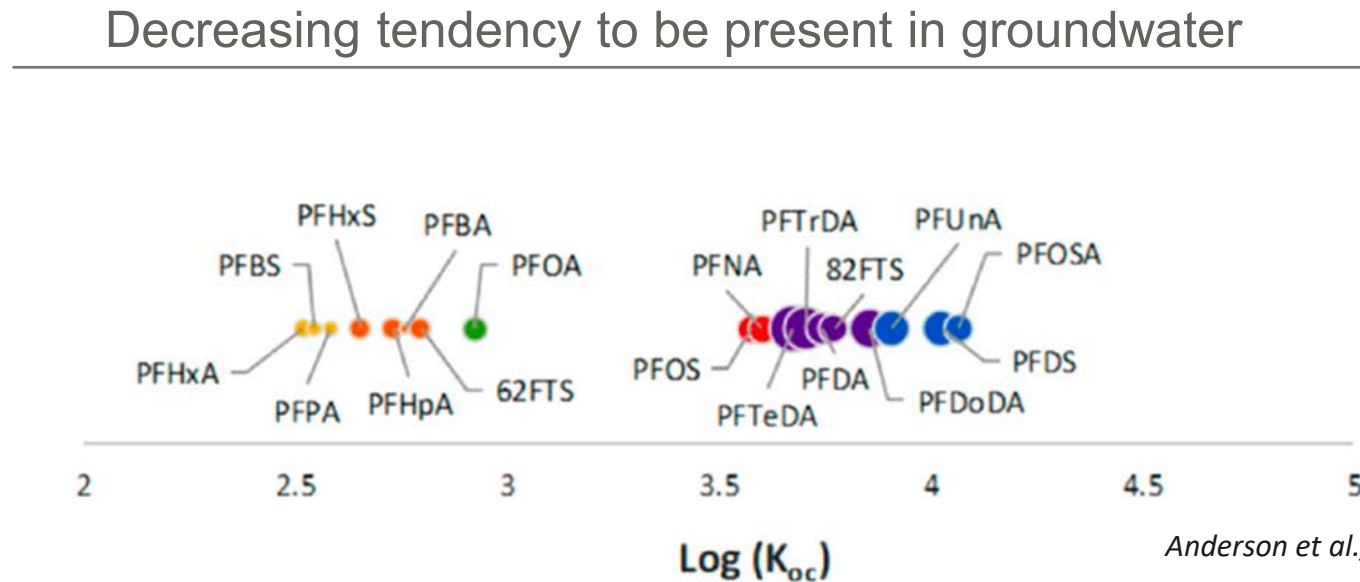


PFAS Fingerprint Example Grove Pond AOC Shallow Groundwater



Important Concepts for the PFAS RI

Individual Compound Characteristics Impact Migration Potential



Anderson et al., 2019, J. Contaminant Hydrology

Fig. 4. Apparent $\text{Log}(K_{OC})$ estimates illustrating significant differences represented by different letters. Bubble sizes reflect the relative difference in perfluorinated chain-length.

Soil organic content is a major factor that governs the distribution between soil and groundwater.



2 | PROJECT UPDATES

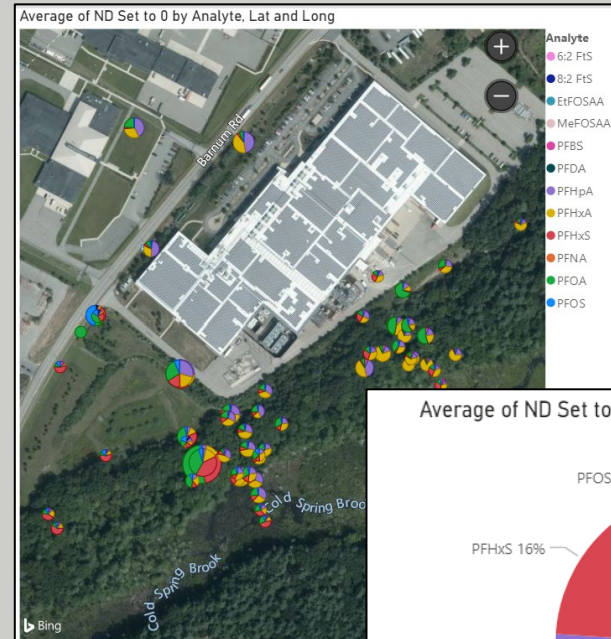
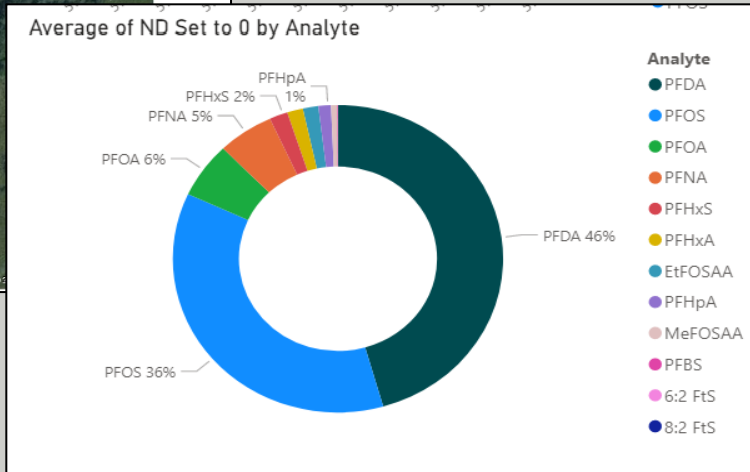


Important Concepts for the PFAS RI

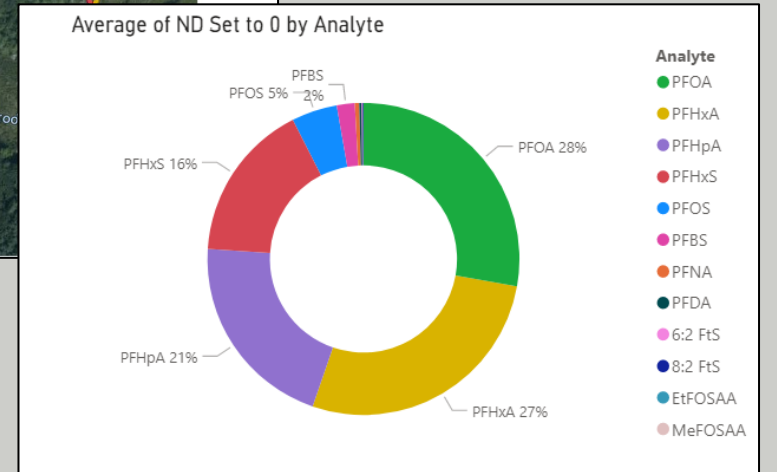
Example: PFAS in Shallow Soil vs. Shallow Groundwater at AOC 57



Shallow Soil



Shallow Groundwater





3 | UPCOMING WORK

The Look Ahead for Technical Work



Spring 2021

- Area 1 Draft Phase 2 RI Work Plan Submission
- Shepley's Hill Landfill Remedy Evaluations
- Long-Term Monitoring Program Spring Sampling

Summer 2021

- Shepley's Hill Landfill Remedy Evaluations
- Begin Work Plans Resulting from the 2020 Five-Year Review
- PFAS Treatability Study/Pilot Testing Planning

Fall 2021

- Area 2 Draft Phase 2 RI Work Plan Submission
- Long-Term Monitoring Program Fall Sampling and Land Use Controls Inspection

Winter 2021-2022

- Area 1 Phase 2 RI Fieldwork
- Area 3 Draft Phase 2 RI Work Plan Submission



4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION



Community Involvement Plan (CIP) has been finalized.

Top four public issues identified are:

1. Water quality (drinking, surface)
2. Growth and development
3. Traffic
4. Air quality

Next Step: Continue implementation

CIP is available on the website at:

<https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>



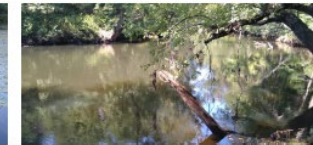
US Army Corps of Engineers®



Community Involvement Plan
Investigation of Per- and Polyfluoroalkyl Substances (PFAS)
Environmental Restoration Program

Former Fort Devens, Massachusetts

FINAL
NOVEMBER 2020



Prepared by:
KOMAN Government Solutions, LLC
and
Jacobs Engineering Group, Inc.

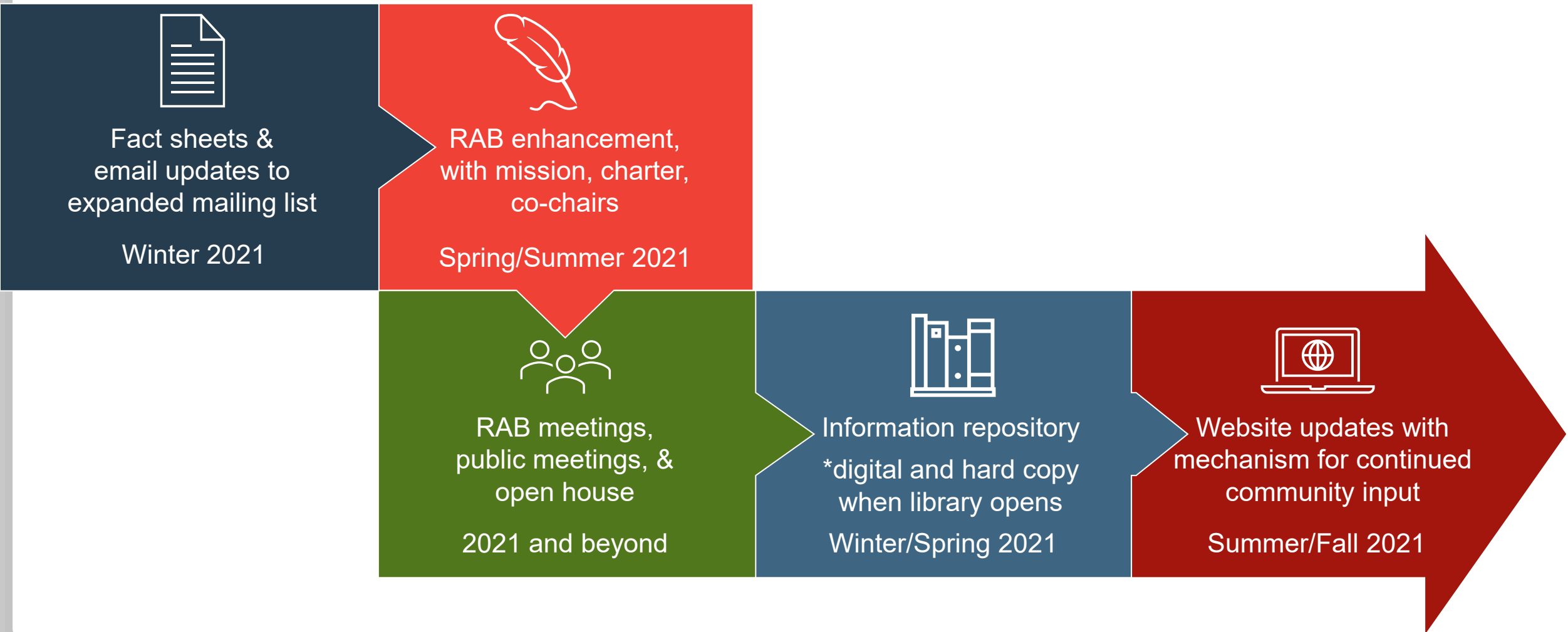
CONTRACT NO. W912WJ-18-C-0011



4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION



Implementing the CIP





4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION

What is a RAB?

- Advisory group for the restoration process, with members from the public, Army, and regulatory agencies – key resources in efforts to communicate openly and effectively with the community at large.

What is the main goal of a RAB?

- To gain effective input from stakeholders on cleanup activities and increase installation responsiveness to the community's concerns.

What does a RAB do?

- Acts as a focal point for the exchange of information between a DoD facility and the local community.
- Brings environmental restoration community members with diverse interests within the local community together with officials representing the Army, EPA, and MassDEP.
- Facilitates two-way flow of information, concerns, values, and needs.



4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION



What does this mean?

From the questionnaire, we heard that nearly 70% of the respondents are not aware of the RAB.

We'd like to communicate to the public and stakeholders about what the RAB does and what is beneficial about being involved.

Let's have a conversation about this and we will use our digital "white board" to write down ideas. *We will use this preliminary "brainstorming" to inform future group breakout sections about restructuring the RAB.*

Finish this sentence in the chat box:

"In my eyes, the RAB is beneficial because _____."



4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION



What does this mean?

We'd also like to refresh the mission statement, charter, roles and responsibilities, and co-chairs.

Let's make sure we have a RAB structure and mission that will work for this group and community moving forward.

Our next question: What is our RAB's mission or what should be part of that mission statement? Please add key words or phrases to the chat and we will record them on our digital "white board" to share.



4 | COMMUNITY INVOLVEMENT & RAB DISCUSSION

Something to think about . . .



For our next RAB meeting, please bring additional ideas to share on what would help make your/our RAB more effective and beneficial.



5 | NEXT STEPS & MEETING

Community Involvement & RAB

Action Item 1

Ongoing and enhanced communication (updates, fact sheets, information repository, website) with the community and stakeholders via different methods of communication that align with results of the questionnaire

Action Item 2

Special events to share information, concerns, and solutions, including restructured RAB and RAB meetings, public meetings, and open houses



Pause for Questions & Answers





THANK YOU!
YOUR PARTICIPATION IS APPRECIATED!

NEXT RAB MEETING IS:
MAY 20, 2021