Agenda
Fort Detrick Restoration Advisory Board
Wednesday, January 11, 2023 6:30 p.m.

Time	Subject	Person	Action
6:30-6:32	Welcome/ Greetings	Gary Pauly, RAB Co-Chair	Information
6:32-6:35	Ground Rules/Purpose of Meeting	Joseph Gortva, USAG	Information
6:35-6:45	Prior Meeting Minutes, New Member Vote, and SOPs - Schedule Admin Meeting	Joseph Gortva, USAG	Discussion
6:45-7:15	Community Involvement for Conflict Prevention Program Assessment Findings	Abby Fullem, Consensus Building Institute	Information
7:15–7:35	Waverley Well Drilling/Groundwater Sampling/Vapor Intrusion Update	Brianne Witman, PE, Army Corps of Engineers	Information
7:35–8:40	Fort Detrick Area B Groundwater: Overview of On-Going Investigations	John Cherry, SERES-ARCADIS	Information
8:40-8:45	RAB Member Open Discussion	RAB members	Discussion
8:45-8:50	General Community Comments	Open to Public	Information
8:50-8:55	Parking lot and Action Items	Board Members	Discussion
8:55-9:00	Next Meeting/Adjourn Meeting	Gary Pauly, RAB Co-Chair	Closure

Proposed future RAB meeting dates:

April 5th 2023, July 12th 2023, October 4th 2023, and January 17th 2024

Fort Detrick Superfund Site Recommendations High-level Summary

January 11, 2022
RAB Meeting

Presentation by:
Stacie Smith, Managing Director, CBI

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Presentation Overview

1. Purpose
2. Recommendations
    i. Remediation and Clean-up
    ii. Public and Stakeholder Engagement
    iii. Restoration Advisory Board
3. Next Steps

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Overview of Scope

Consensus Building Institute (CBI) was engaged by EPA through its Conflict Prevention and Resolution Center to:

- Conduct community interviews
- Prepare a situation assessment
- Make recommendations for improvements to the clean-up process, public and stakeholder engagement, and the Restoration Advisory Board (RAB)

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Assessment Methodology

- CBI reviewed background materials and engaged with 22 people in August and September, 2022.
  - 7 Community RAB members
  - 5 Community members & meeting attendees
  - 6 Federal and State agency staff and contractors
  - 4 City and County government staff
- Semi-structured interviews in person and on Zoom, plus review of written comments.
- Drafted findings and revised based on feedback from interviewees

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Recommendations

Remediation and Clean-up

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Recommendations

Remediation and Clean-up

- The project team, state agencies, local government, and developers should continue to ensure compliance with CERCLA and all other legal requirements to:
  - Protect human health and safety
  - Confirm that all existing and new homes built around Fort Detrick are safe from contamination
  - Ensure that information about risks is widely available

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Recommendations

Remediation and Clean-up

- Continue to undertake and inform stakeholders about sampling and mapping activities to determine:
  - Plume location and movement
  - Movement of contamination across media
  - Contamination at nearby homes and businesses
  - Geology of karst structures to understand water movement patterns
- Share updates on testing and restoration work in contaminated areas on Fort Detrick not on the National Priorities List with stakeholders and RAB members.

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Recommendations

Public and Stakeholder Engagement

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Recommendations

Public and Stakeholder Engagement

- Develop an outreach plan to ensure that all potentially affected community members are aware of the Superfund site and RAB.
- Engage the EPA Community Involvement Coordinator (CIC) to support community outreach and engagement.
- Develop a mailing list to share regular updates.
- Connect engagement with existing community forums (e.g., Fort Detrick Facebook page, NextDoor, farmers markets, festivals, and newsletters).

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Recommendations

Public and Stakeholder Engagement

- Support the City of Frederick to include Fort Detrick Superfund site updates in their engagement efforts and on their website.
- Share updates with City of Frederick elected officials (e.g., Alderpeople, City Council).

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Recommendations

Public and Stakeholder Engagement

- Develop outreach materials tailored to RAB members, nearby property owners, elected officials, and the general public. Information could include:
  - Overview of contamination, remediation, and monitoring
  - Agency roles
  - RAB role and purpose
  - Frequently used technical terms
  - Ways to get involved
  - Interactive map with monitoring data.

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Recommendations

Restoration Advisory Board

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Recommendations

Restoration Advisory Board

RAB Communications & Process

- Regularly reorient RAB members to the CERCLA process and timeline, remediation objectives, and project components.
- Regularly review and update governing procedures, including:
  - RAB member and project team roles and responsibilities
  - Expectations for communication
  - Membership and leadership

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Recommendations

Restoration Advisory Board

RAB Communications & Process

- Hold quarterly meetings with dates set in advance. If no monitoring updates, host technical seminar on relevant topics, review the Superfund process, and/or provide time for member questions and updates.
- Standardize timing for sharing calendar invitations, agendas, presentations, meeting minutes, and responses to action items and questions.
- Ensure quick responses and materials turnaround.

Recommendations

Restoration Advisory Board

RAB Communications & Process

- Involve RAB members in meeting preparation.
- Improve information sharing methods, consistent with hosting capacity and security limitations.
  - Clarify completeness and accuracy of administrative record in public library
  - Develop appendix of documents in administrative record
  - Develop brief overviews of key reports
  - Post current RAB meeting minutes, agendas and presentations online

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Recommendations

Restoration Advisory Board

RAB Membership & Participation

- Ensure that the RAB is representative of potentially affected community, and draw on project team members and RAB members to implement outreach.
- Encourage the City of Frederick to fill their RAB seat.
- Encourage continued participation and attendance from developers working adjacent to the site.

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Recommendations

Restoration Advisory Board

RAB Presentations

- Share background information on task order actions, e.g., risk assessments, movement of contamination, analysis and communication, specific remediation technologies.
- Share expectations and best practices with presenters:
  - Ensure maps are in color and take up entire slides
  - Use requested units
  - Send slides in advance of meeting (when possible)
  - Define technical terms and use plain language
  - Include clearly articulated conclusions
  - Include historic data so trends can be observed

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Recommendations

Restoration Advisory Board

RAB Management

- Clarify roles and responsibilities of the agencies and share leadership of the RAB when possible. For example, the EPA CIC could support community engagement.
- Clarify overall authorities, structure, funding, and decision-making for the Fort Detrick Superfund program.
- Increase visibility of and input from regulatory agencies in the preparation and discussions during RAB meetings.

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Next Steps

- CBI to share final situation assessment summary and recommendations

- CBI to help integrate recommendations into updated Community Involvement Plan.

Thank you to those who spoke with us! *If you have any questions or concerns, please email Abby at afullem@cbi.org.*

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About CBI

CBI is a nonprofit organization with decades of experience helping leaders collaborate to solve complex problems.

Our staff are experts in facilitation, mediation, capacity building, citizen engagement, and organizational strategy and development. We are committed to using our skills to build collaboration on today's most significant social, environmental, and economic challenges. We work within and across organizations, sectors, and stakeholder groups.

FOR MORE INFORMATION: CBI.ORG

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Area B Off-Post Waverley View Property Groundwater Investigation

Restoration Advisory Board Project Update

11 January 2023

Brianne Witman, P.E.
Project Manager

US Army Corps of Engineers ®

Waverley View Property Groundwater Investigation

Background

Single-family home development planned on Waverley View property, adjacent to Fort Detrick, Area B

Groundwater samples collected from certain monitoring wells installed in 2013 and 2014 at Waverley View had detections of volatile organic compounds (VOCs), both above and below regional screening levels (RSLs)

The Army is completing an investigation to assess potential risk to future human receptors at the Waverley View property from vapor intrusion

US Army Corps of Engineers ®

Shallow well (installed Spring 2022)
Shallow well (installed Summer 2021)
Fort Detrick Area B Boundary

Property Development Plan

Storm drain
Fire hydrant
Manhole
Cristopher Crossing
Waverley View Road
Lot
Water main
Storm drain line

Notes:

SW-01 through SW-17 were installed and surveyed during the summer of 2021

SW-18 through SW-33 were installed during the Spring of 2022 with locations approved by the property stakeholders.

The Property Development Plan items were imported from CAD drawings provided by the property stakeholders.

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Fort Detrick Area B: Waverley
Frederick County, MD

Current & Proposed Well Layout
Area B Groundwater Investigation

Waverley View Property Groundwater Investigation

Updates Since Last RAB Meeting

1. Groundwater samples were collected from monitoring wells SW-1 through SW-33 on Waverley View in August/September 2022.

2. Trichloroethene and chloroform were detected in select monitoring wells over screening criteria during August/September 2022 sampling event.

3. USEPA Vapor Intrusion Screening Level (VISL) Calculator Results of analytical data from August/September indicates 5 monitoring wells where there may be unacceptable risk from vapor intrusion to future residents. Analytical data collected to date (beginning August 2021) indicates 9 monitoring wells where they may be unacceptable risk. These wells are in the northeastern boundary of the Waverley View property.

August/September 2022 Groundwater Sampling Event

		Sample ID	SW-01	SW-02	SW-03	SW-04	SW-05	SW-09	SW-10	SW-11	SW-12	SW-15	SW-16	SW-17	SW-19	SW-24	SW-27	SW-28	SW-29
		Sampling Date	9/7/2022	9/2/2022	9/2/2022	9/1/2022	8/29/2022	9/1/2022	9/1/2022	9/6/2022	9/6/2022	9/1/2022	9/2/2022	9/6/2022	8/31/2022	8/30/2022	8/31/2022	8/31/2022	9/2/2022
COMPOUND	CAS #	Screening Criteria																	
Dichlorodifluoromethane	75-71-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	74-87-3	35.8	ND	ND	ND	ND	0.62 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.65 J
Trichlorofluoromethane	75-69-4	NA	6.7	27	25	16	0.92 J	1.4 J	5.3	11	87	5.2	5.8	110	ND	ND	0.96 J	0.35 J	0.76 J
1,1,2-Trichlorotrifluoroethane	76-13-1	39.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	75-35-4	30.8	ND	1.4	4.6	2.8 J	ND	0.43 J	0.95 J	1.2	1.2	1.5	1.2	6.4	ND	ND	7.7	ND	ND
Acetone	67-64-1	NA	4.2 J	ND	4.3 J	ND	ND	ND	ND	5 J	ND	ND	3.1 J	3.9 J	ND	ND	ND	ND	ND
Methylene Chloride	75-09-2	773	1.3 J	ND	1.1 j	ND	ND	ND	ND	ND	ND	ND	1.2 J	1.2 J	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	156-59-2	NS	0.28 J	ND	0.87 J	0.94 J	ND	ND	ND	ND	0.7 J	0.32 J	ND	1.1	ND	ND	ND	ND	ND
Chloroform	67-66-3	1.39	**2.1**	**6.1**	**11**	**8.2**	0.9 J	1.2	**2.8**	**5.2**	**12**	**5**	**3.1**	**26**	**1.6**	**1.5**	**1.6**	**3.9**	**1.7**
Carbon Disulfide	75-15-0	198	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J	ND	ND	ND
1,1,1-Trichloroethane	71-55-6	1,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	107-06-2	4.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	79-01-6	0.94	**1.7**	**11**	**36**	**29**	**2.8**	**3.5**	**9.2**	**10**	**18**	**13**	**10**	**62**	ND	ND	ND	ND	ND
Bromodichloromethane	75-27-4	1.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46 J	ND
Toluene	108-88-3	3,710	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	127-18-4	11.5	ND	0.58 J	0.84 J	0.86 J	ND	ND	ND	ND	2.6	ND	ND	2.6	ND	ND	ND	ND	ND

Notes:

All values reported in ug/L (ppb)

NA = Not applicable, no screening level generated

NS = Not sampled (SW-30 not sampled in September 2022 due to not enough water)

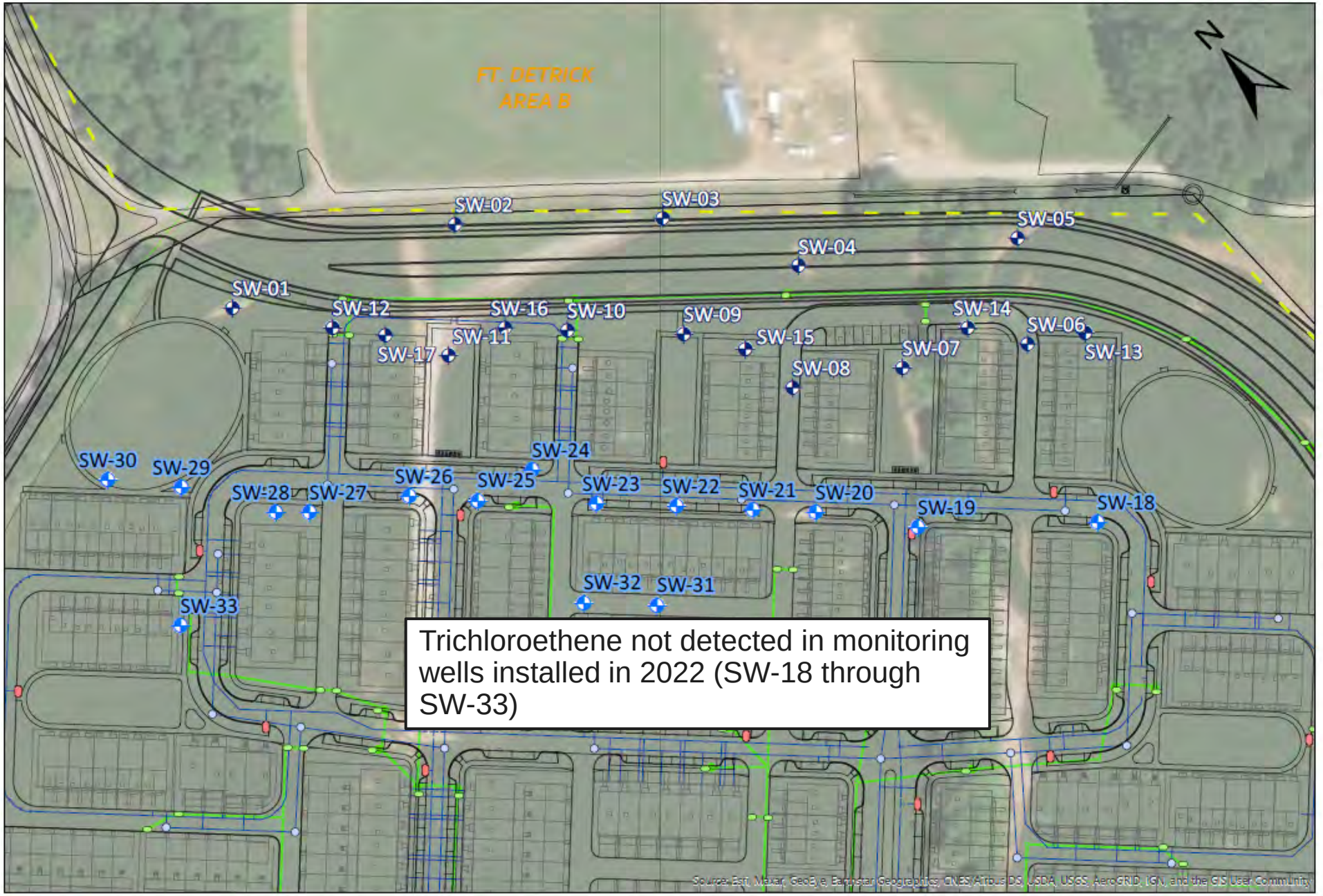
ND = Not detected

J = estimated value

Shaded and **bolded** cells exceed the screening criteria

Screening Criteria is Resident Vapor Intrusion Screening Level (VISL) at average shallow groundwater temperature of 12 degrees Celsius. Target Groundwater Concentration THQ = 0.1.

- Trichloroethene detected in SW-01, SW-02, SW-03, SW-04, SW-05, SW-09, SW-10, SW-11, SW-12, SW-15, SW-16, and SW-17 above the screening criteria of 0.94 ppb at concentrations of (1.7 to 62 ppb)
- Chloroform detected in SW-01, SW-02, SW-03, SW-04, SW-10, SW-11, SW-12, SW-15, SW-16, SW-17, SW-19, SW-24, SW-27, SW-28, and SW-29 above the screening criteria of 1.39 ppb at concentrations of 1.5 to 26 ppb.
- The following monitoring wells without detections above screening criteria are not included in the table: SW-06, SW-07, SW-08, SW-13, SW-14, SW-20, SW-21, SW-22, SW-23, SW-25, SW-26, SW-30, SW-31, SW-32, and SW-33



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Shallow well (installed Summer 2021)
Fort Detrick Area B Boundary

Property Development Plan
- Storm drain
- Fire hydrant
- Manhole
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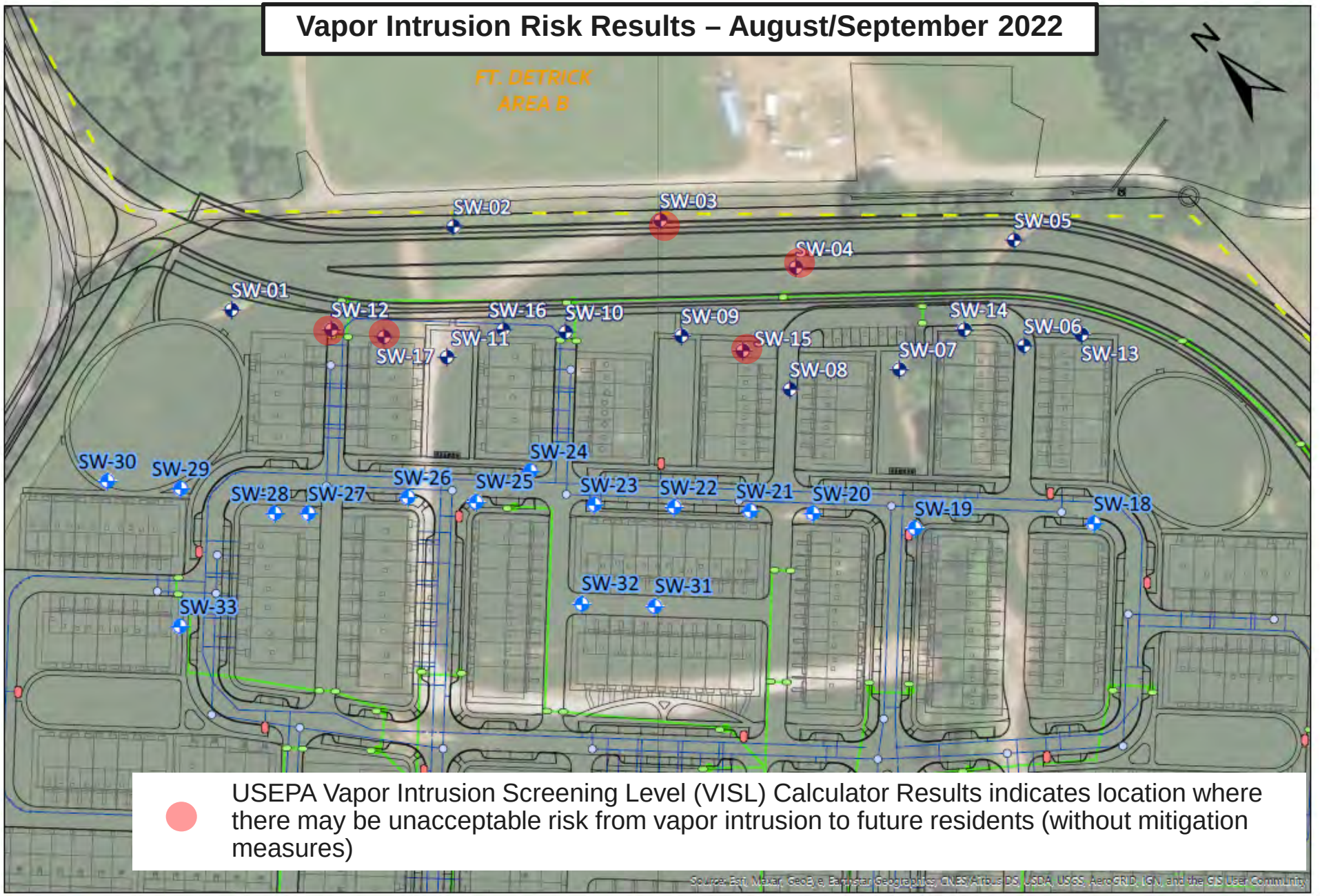
Fort Detrick Area B: Waverley
Frederick County, MD

Current & Proposed Well Layout
Area B Groundwater Investigation

Vapor Intrusion Risk Results – August/September 2022



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● USEPA Vapor Intrusion Screening Level (VISL) Calculator Results indicates location where there may be unacceptable risk from vapor intrusion to future residents (without mitigation measures)

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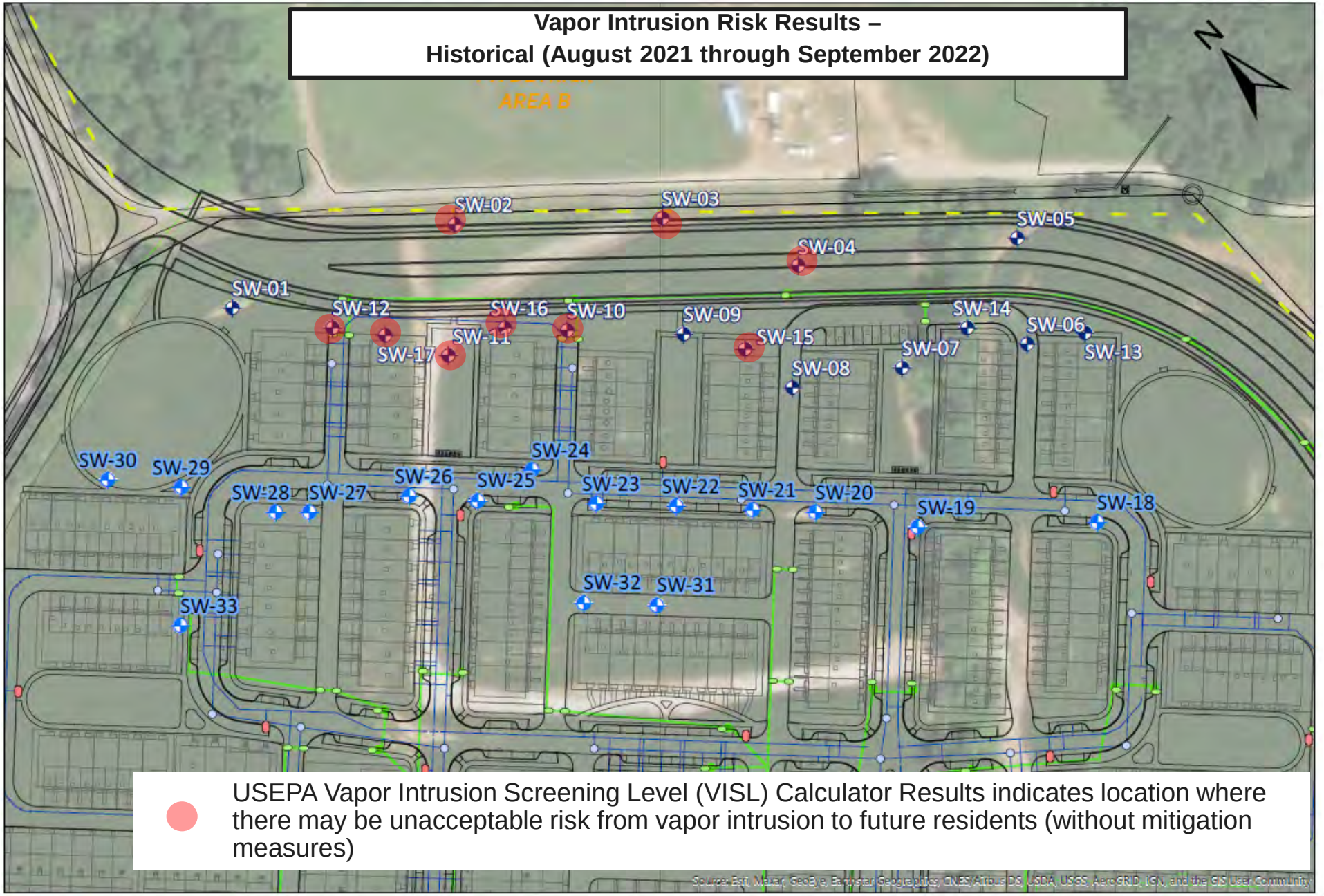
Fort Detrick Area B: Waverley
Frederick County, MD

Current & Proposed Well Layout
Area B Groundwater Investigation

Vapor Intrusion Risk Results – Historical (August 2021 through September 2022)



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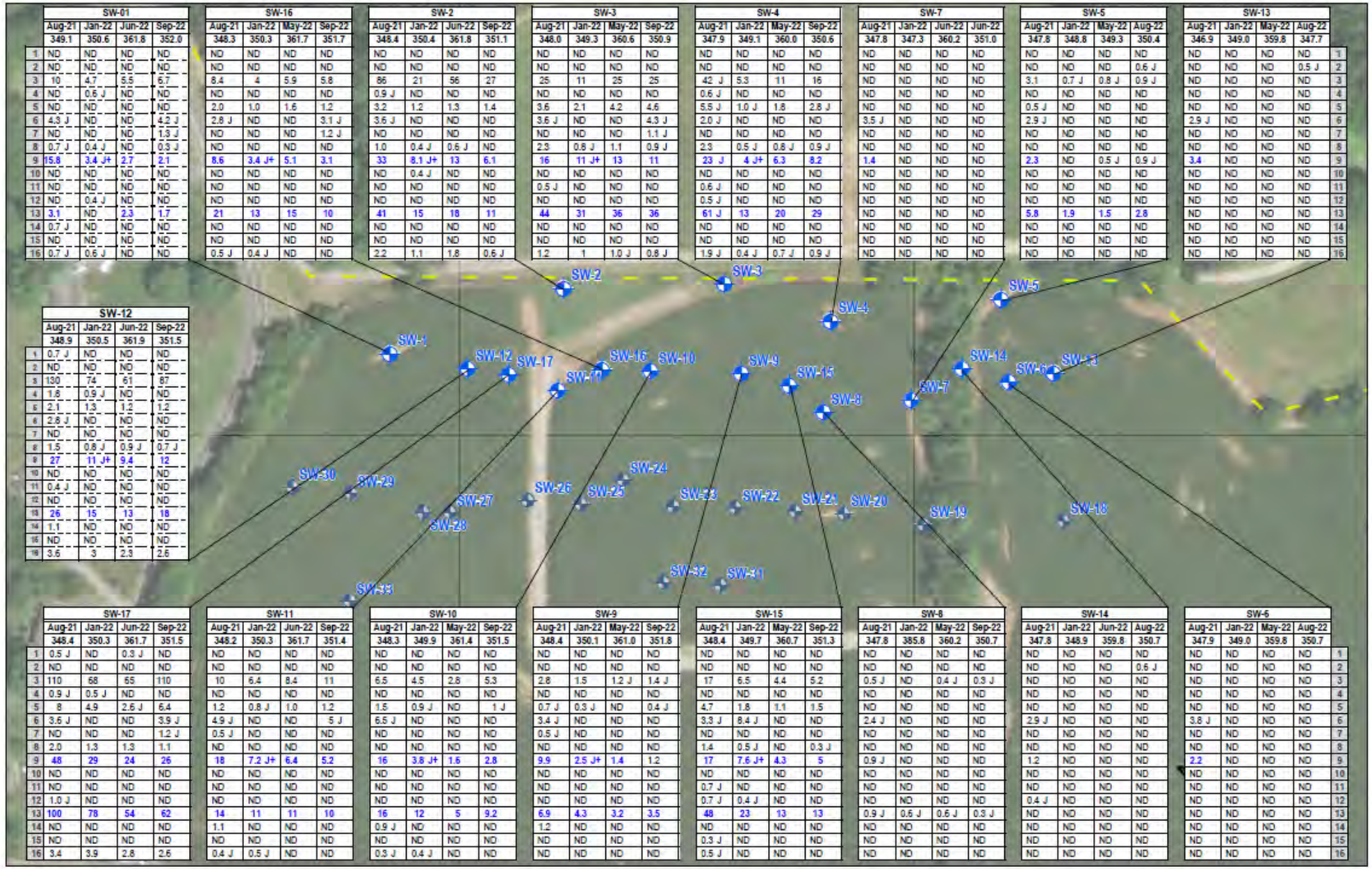
Fort Detrick Area B: Waverley
Frederick County, MD

Current & Proposed Well Layout
Area B Groundwater Investigation



SW-01

	Aug-21	Jan-22	Jun-22	Sep-22
	349.1	350.6	361.8	352.0
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	10	4.7	5.5	6.7
4	ND	0.6 J	ND	ND
5	ND	ND	ND	ND
6	4.3 J	ND	ND	4.2 J
7	ND	ND	ND	1.3 J
8	0.7 J	0.4 J	ND	0.3 J
9	15.8	3.4 J+	2.7	2.1
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	0.4 J	ND	ND
13	3.1	ND	2.3	1.7
14	0.7 J	ND	ND	ND
15	ND	ND	ND	ND
16	0.7 J	0.6 J	ND	ND

SW-16

	Aug-21	Jan-22	May-22	Sep-22
	348.3	350.3	361.7	351.7
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	8.4	4	5.9	5.8
4	ND	ND	ND	ND
5	2.0	1.0	1.6	1.2
6	2.8 J	ND	ND	3.1 J
7	ND	ND	ND	1.2 J
8	ND	ND	ND	ND
9	8.6	3.4 J+	5.1	3.1
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	21	13	15	10
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	0.5 J	0.4 J	ND	ND

SW-2

	Aug-21	Jan-22	Jun-22	Sep-22
	348.4	350.4	361.8	351.1
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	86	21	56	27
4	0.9 J	ND	ND	ND
5	3.2	1.2	1.3	1.4
6	3.6 J	ND	ND	ND
7	ND	ND	ND	ND
8	1.0	0.4 J	0.6 J	ND
9	33	8.1 J+	13	6.1
10	ND	0.4 J	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	41	15	18	11
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	2.2	1.1	1.8	0.6 J

SW-3

	Aug-21	Jan-22	May-22	Sep-22
	348.0	349.3	360.6	350.9
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	25	11	25	25
4	ND	ND	ND	ND
5	3.6	2.1	4.2	4.6
6	3.6 J	ND	ND	4.3 J
7	ND	ND	ND	1.1 J
8	2.3	0.8 J	1.1	0.9 J
9	16	11 J+	13	11
10	ND	ND	ND	ND
11	0.5 J	ND	ND	ND
12	ND	ND	ND	ND
13	44	31	36	36
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	1.2	1	1.0 J	0.8 J

SW-4

	Aug-21	Jan-22	May-22	Sep-22
	347.9	349.1	360.0	350.6
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	42 J	5.3	11	16
4	0.6 J	ND	ND	ND
5	5.5 J	1.0 J	1.8	2.8 J
6	2.0 J	ND	ND	ND
7	ND	ND	ND	ND
8	2.3	0.5 J	0.8 J	0.9 J
9	23 J	4 J+	6.3	8.2
10	ND	ND	ND	ND
11	0.6 J	ND	ND	ND
12	0.5 J	ND	ND	ND
13	61 J	13	20	29
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	1.9 J	0.4 J	0.7 J	0.9 J

SW-7

	Aug-21	Jan-22	Jun-22	Jun-22
	347.8	347.3	360.2	351.0
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	ND	ND	ND	ND
4	ND	ND	ND	ND
5	ND	ND	ND	ND
6	3.5 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	1.4	ND	ND	ND
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	ND	ND	ND	ND
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-5

	Aug-21	Jan-22	May-22	Aug-22
	347.8	348.8	349.3	350.4
1	ND	ND	ND	ND
2	ND	ND	ND	0.6 J
3	3.1	0.7 J	0.8 J	0.9 J
4	ND	ND	ND	ND
5	0.5 J	ND	ND	ND
6	2.9 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	2.3	ND	0.5 J	0.9 J
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	5.8	1.9	1.5	2.8
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-13

	Aug-21	Jan-22	May-22	Aug-22
	346.9	349.0	359.8	347.7
1	ND	ND	ND	ND
2	ND	ND	ND	0.5 J
3	ND	ND	ND	ND
4	ND	ND	ND	ND
5	ND	ND	ND	ND
6	2.9 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	3.4	ND	ND	ND
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	ND	ND	ND	ND
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-12

	Aug-21	Jan-22	Jun-22	Sep-22
	348.9	350.5	361.9	351.5
1	0.7 J	ND	ND	ND
2	ND	ND	ND	ND
3	130	74	61	87
4	1.8	0.9 J	ND	ND
5	2.1	1.3	1.2	1.2
6	2.8 J	ND	ND	ND
7	ND	ND	ND	ND
8	1.5	0.8 J	0.9 J	0.7 J
9	27	11 J+	9.4	12
10	ND	ND	ND	ND
11	0.4 J	ND	ND	ND
12	ND	ND	ND	ND
13	26	15	13	18
14	1.1	ND	ND	ND
15	ND	ND	ND	ND
16	3.6	3	2.3	2.6

SW-17

	Aug-21	Jan-22	Jun-22	Sep-22
	348.4	350.3	361.7	351.5
1	0.5 J	ND	0.3 J	ND
2	ND	ND	ND	ND
3	110	68	65	110
4	0.9 J	0.5 J	ND	ND
5	8	4.9	2.6 J	6.4
6	3.6 J	ND	ND	3.9 J
7	ND	ND	ND	1.2 J
8	2.0	1.3	1.3	1.1
9	48	29	24	26
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	1.0 J	ND	ND	ND
13	100	78	54	62
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	3.4	3.9	2.8	2.6

SW-11

	Aug-21	Jan-22	Jun-22	Sep-22
	348.2	350.3	361.7	351.4
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	10	6.4	8.4	11
4	ND	ND	ND	ND
5	1.2	0.8 J	1.0	1.2
6	4.9 J	ND	ND	5 J
7	0.5 J	ND	ND	ND
8	ND	ND	ND	ND
9	18	7.2 J+	6.4	5.2
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	14	11	11	10
14	1.1	ND	ND	ND
15	ND	ND	ND	ND
16	0.4 J	0.5 J	ND	ND

SW-10

	Aug-21	Jan-22	May-22	Sep-22
	348.3	349.9	361.4	351.5
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	6.5	4.5	2.8	5.3
4	ND	ND	ND	ND
5	1.5	0.9 J	ND	1 J
6	6.5 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	16	3.8 J+	1.6	2.8
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	16	12	5	9.2
14	0.9 J	ND	ND	ND
15	ND	ND	ND	ND
16	0.3 J	0.4 J	ND	ND

SW-9

	Aug-21	Jan-22	May-22	Sep-22
	348.4	350.1	361.0	351.8
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	2.8	1.5	1.2 J	1.4 J
4	ND	ND	ND	ND
5	0.7 J	0.3 J	ND	0.4 J
6	3.4 J	ND	ND	ND
7	0.5 J	ND	ND	ND
8	ND	ND	ND	ND
9	9.9	2.5 J+	1.4	1.2
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	6.9	4.3	3.2	3.5
14	1.2	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-15

	Aug-21	Jan-22	May-22	Sep-22
	348.4	349.7	360.7	351.3
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	17	6.5	4.4	5.2
4	ND	ND	ND	ND
5	4.7	1.8	1.1	1.5
6	3.3 J	8.4 J	ND	ND
7	ND	ND	ND	ND
8	1.4	0.5 J	ND	0.3 J
9	17	7.6 J+	4.3	5
10	ND	ND	ND	ND
11	0.7 J	ND	ND	ND
12	0.7 J	0.4 J	ND	ND
13	48	23	13	13
14	ND	ND	ND	ND
15	0.3 J	ND	ND	ND
16	0.5 J	ND	ND	ND

SW-8

	Aug-21	Jan-22	May-22	Sep-22
	347.8	385.8	360.2	350.7
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	0.5 J	ND	0.4 J	0.3 J
4	ND	ND	ND	ND
5	ND	ND	ND	ND
6	2.4 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	0.9 J	ND	ND	ND
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	0.9 J	0.6 J	0.6 J	0.3 J
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-14

	Aug-21	Jan-22	Jun-22	Aug-22
	347.8	348.9	359.8	350.7
1	ND	ND	ND	ND
2	ND	ND	ND	0.6 J
3	ND	ND	ND	ND
4	ND	ND	ND	ND
5	ND	ND	ND	ND
6	2.9 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	1.2	ND	ND	ND
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	0.4 J	ND	ND	ND
13	ND	ND	ND	ND
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

SW-6

	Aug-21	Jan-22	May-22	Aug-22
	347.9	349.0	359.8	350.7
1	ND	ND	ND	ND
2	ND	ND	ND	ND
3	ND	ND	ND	ND
4	ND	ND	ND	ND
5	ND	ND	ND	ND
6	3.8 J	ND	ND	ND
7	ND	ND	ND	ND
8	ND	ND	ND	ND
9	2.2	ND	ND	ND
10	ND	ND	ND	ND
11	ND	ND	ND	ND
12	ND	ND	ND	ND
13	ND	ND	ND	ND
14	ND	ND	ND	ND
15	ND	ND	ND	ND
16	ND	ND	ND	ND

Fort Detrick Area B boundary
2021 monitoring well
2022 monitoring ell

Notes:
Ground water elevation is provided below the date field and is in feet above mean sea level.

Blue bolded cells exceed the screening criteria

Screening Criteria is Resident Vapor Intrusion Screening Level (VISL) at average shallow groundwater temperature of 12° Celsius. Target Groundwater Concentration THQ = 0.1. (Compounds and criteria below)

All values reported in ug/L (ppb)

Data qualifiers:
"NA" = Not applicable, no screening level generated
"NS" = Not sampled (SW-30 not sampled in September 2022 due to not enough water)
"ND" = Not detected
"J" = estimated value
"J+" = estimated high (due to detections in equipment blanks and field blanks above the laboratory limit of quantitation)

Compound	Index	Screening Criteria
Dichlorodifluoromethane	1	NA
Chloromethane	2	35.80
Trichlorofluoromethane	3	NA
1,1,2-Trichlorotrifluoroethane	4	39.6
1,1-Dichloroethene	5	30.8
Acetone	6	NA
Methylene Chloride	7	773
cis-1,2-Dichloroethene	8	NS
Chloroform	9	1.39
Carbon Disulfide	10	198
1,1,1-Trichloroethane	11	1,300
1,2-Dichloroethene	12	4.12
Trichloroethene	13	0.94
Bromodichloromethane	14	1.63
Toluene	15	3,710
Tetrachloroethene	16	11.50

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Fort Detrick Area B: Waverley
Frederick County, MD

2021 Installed Wells: 2022 GWE & VISL Analytes
Area B Groundwater Investigation

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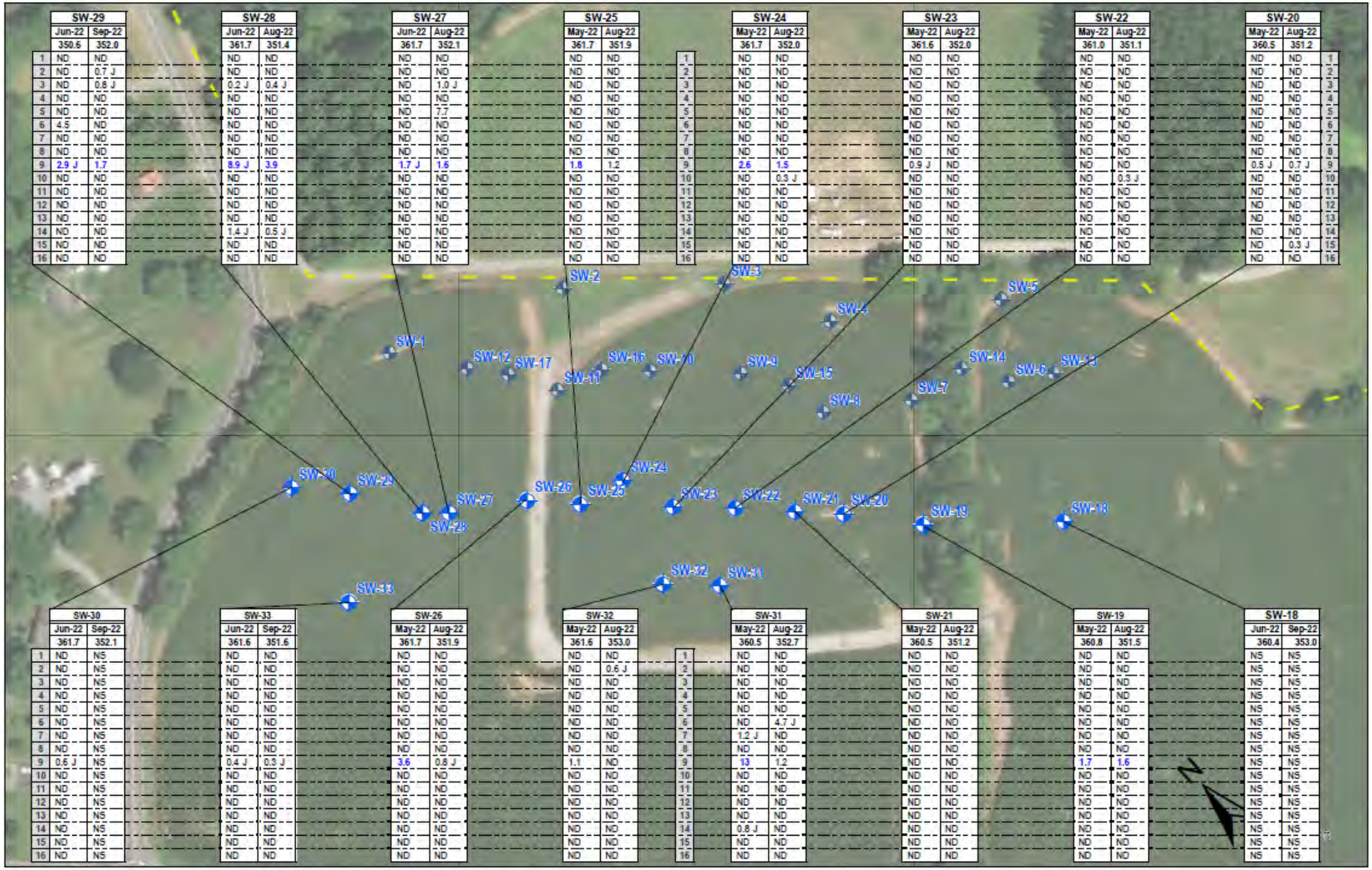

Fort Detrick Area B boundary
2021 monitoring well
2022 monitoring ell

Notes:
Ground water elevation is provided below the date field and is in feet above mean sea level.

SW-18 not sampled due to damaged casing.

Blue bolded cells exceed the screening criteria

Screening Criteria is Resident Vapor Intrusion Screening Level (VISL) at average shallow groundwater temperature of 12° Celsius. Target Groundwater Concentration THQ = 0.1. (Compounds and criteria below)

All values reported in ug/L (ppb)

Data qualifiers:
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Trichloroethene	13	0.94
Bromodichloromethane	14	1.83
Toluene	15	3,710
Tetrachloroethene	16	11.50

US Army Corps of Engineers
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Fort Detrick Area B: Waverley
Frederick County, MD

2022 Installed Wells: 2022 GWE & VISL Analytes
Area B Groundwater Investigation

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Waverley View Property Groundwater Investigation

Future Work Planned

- Lab data collected in December is pending with results to be shared at the next RAB meeting.
- The Army will collect one additional round of groundwater samples in March 2023, update VISL model projections, and will use to ensure protection of human health as the Waverley View property is developed.

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Fort Detrick Area B Groundwater: Overview of On-Going Investigations

RAB Meeting

January 11, 2023

John Cherry, Arcadis

PRESENTATION OBJECTIVE

Provide a high-level summary of recent and on-going environmental investigation activities at Fort Detrick Area B to help stakeholders keep track of what work is occurring and by whom.

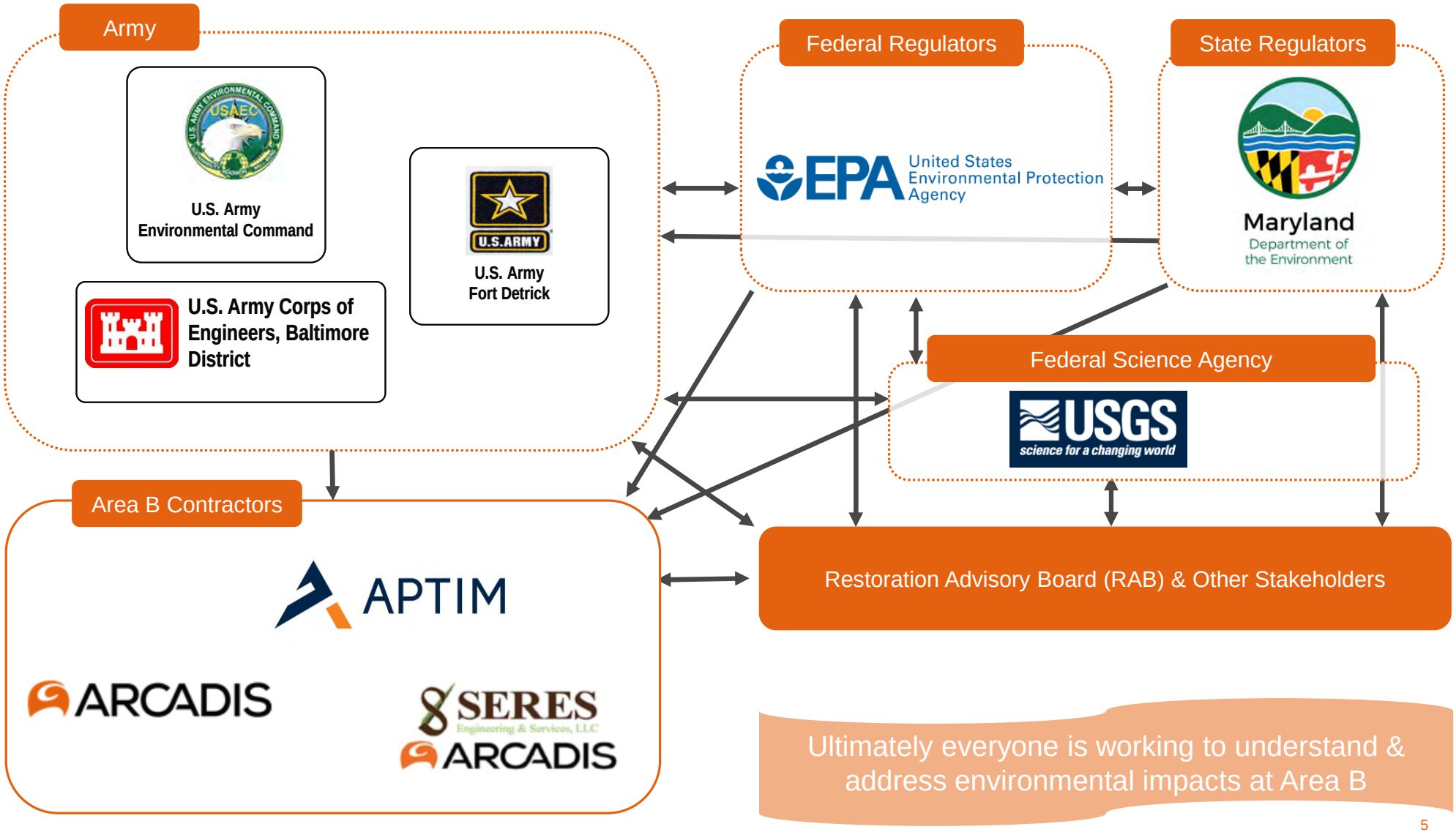
Challenges for Stakeholders

- There are numerous overlapping phases of work being implemented on different schedules by different contractors and agencies.

- Each RAB meeting usually focuses on only one or two on-going activities, with other tasks being discussed infrequently. This makes it challenging to follow along, see the whole picture, & have confidence that some concerns have not been forgotten or ignored.

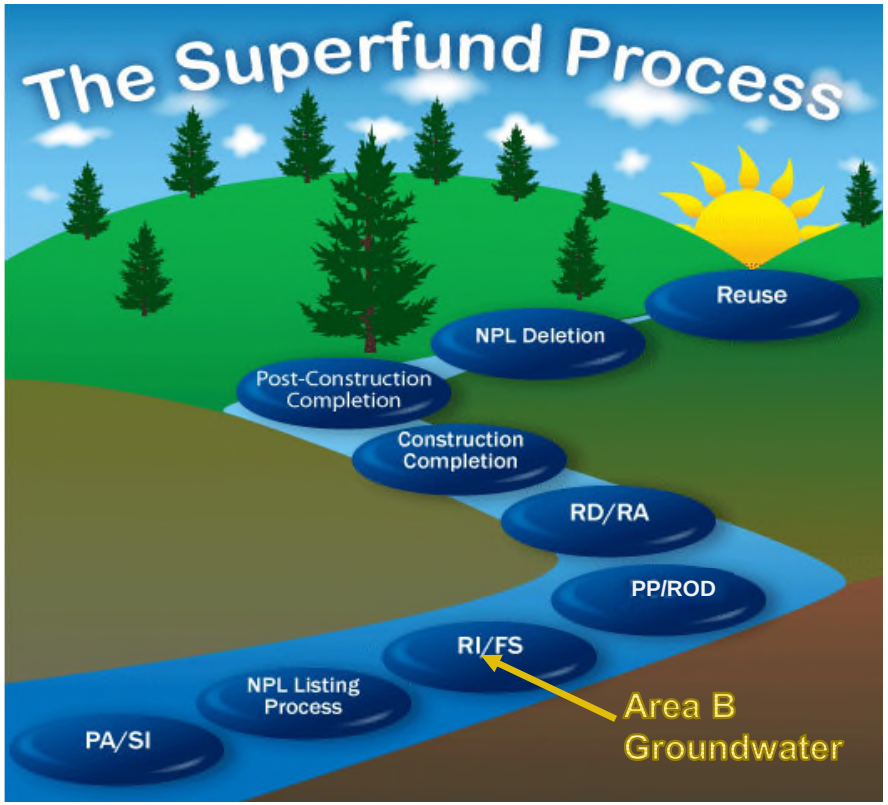
Ultimately, the various investigation tasks are all intended to help the Army and all stakeholders understand the nature and extent of environmental impacts in and around Area B so that future decisions can be made about remedial alternatives.

Who is Who?


Army
U.S. Army Environmental Command
U.S. Army Fort Detrick
U.S. Army Corps of Engineers, Baltimore District
Federal Regulators
EPA United States Environmental Protection Agency
State Regulators
Maryland Department of the Environment
Federal Science Agency
USGS science for a changing world
Area B Contractors
APTIM
ARCADIS
SERES Engineering & Services, LLC
ARCADIS
Restoration Advisory Board (RAB) & Other Stakeholders
Ultimately everyone is working to understand & address environmental impacts at Area B

Where in the CERCLA/Superfund process is the *Fort Detrick Area B Groundwater* site?

Where is Area B within the CERCLA/Superfund Process?



Remedial Action (RA)-Implement selected remedy

Remedial Design (RD)- Work plan and design of selected remedy

Record of Decision (ROD)- Final legal document selecting remedy

Proposed Plan (PP)- public document to solicit input on preferred remedy

Feasibility Study (FS)- Assessment of possible remedies

Remedial Investigation (RI)- Thorough investigation; develop conceptual site model, complete risk assessment

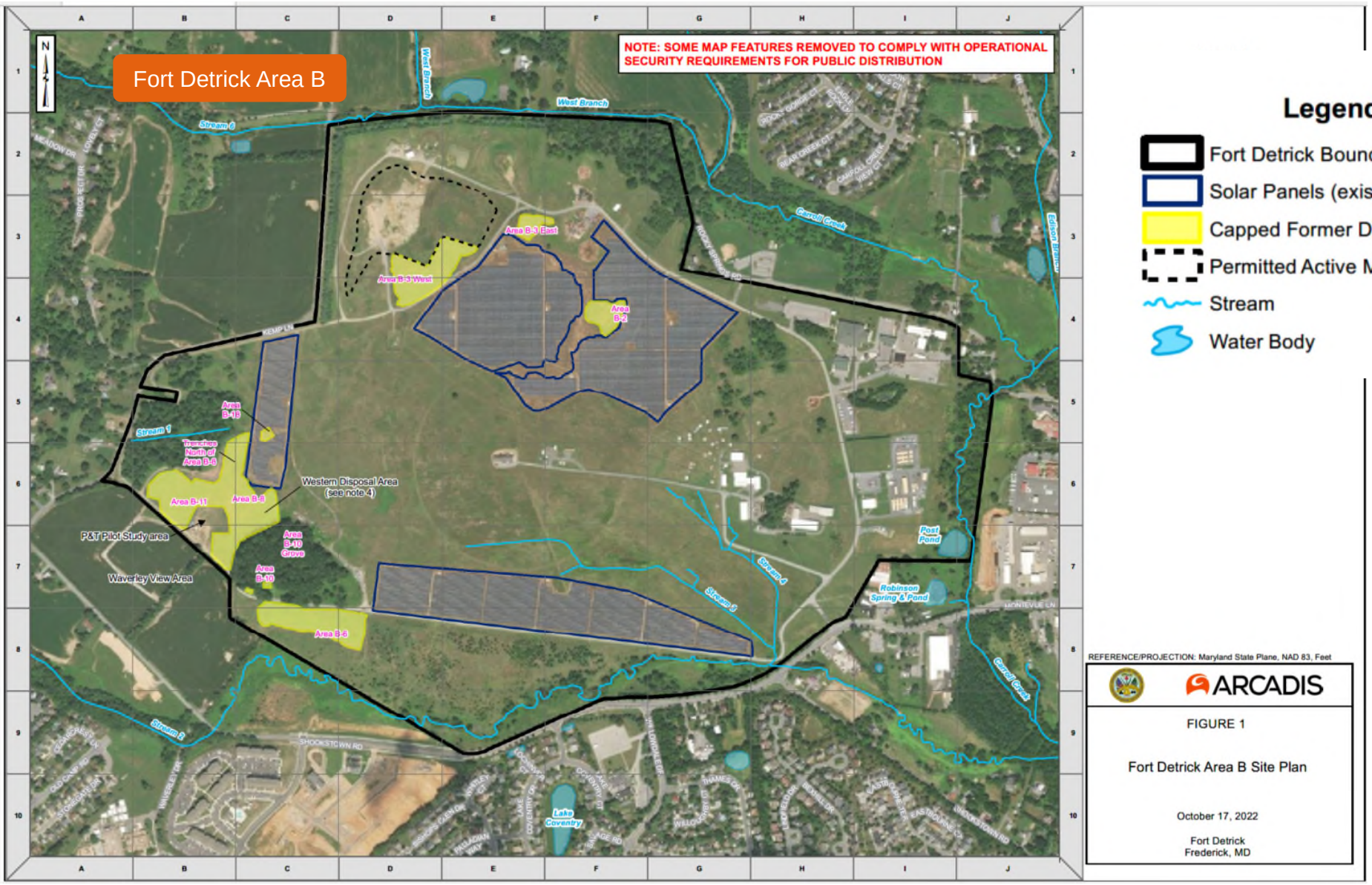
Site Investigation (SI)- Initial sampling to test for a release of hazardous substances to the environment

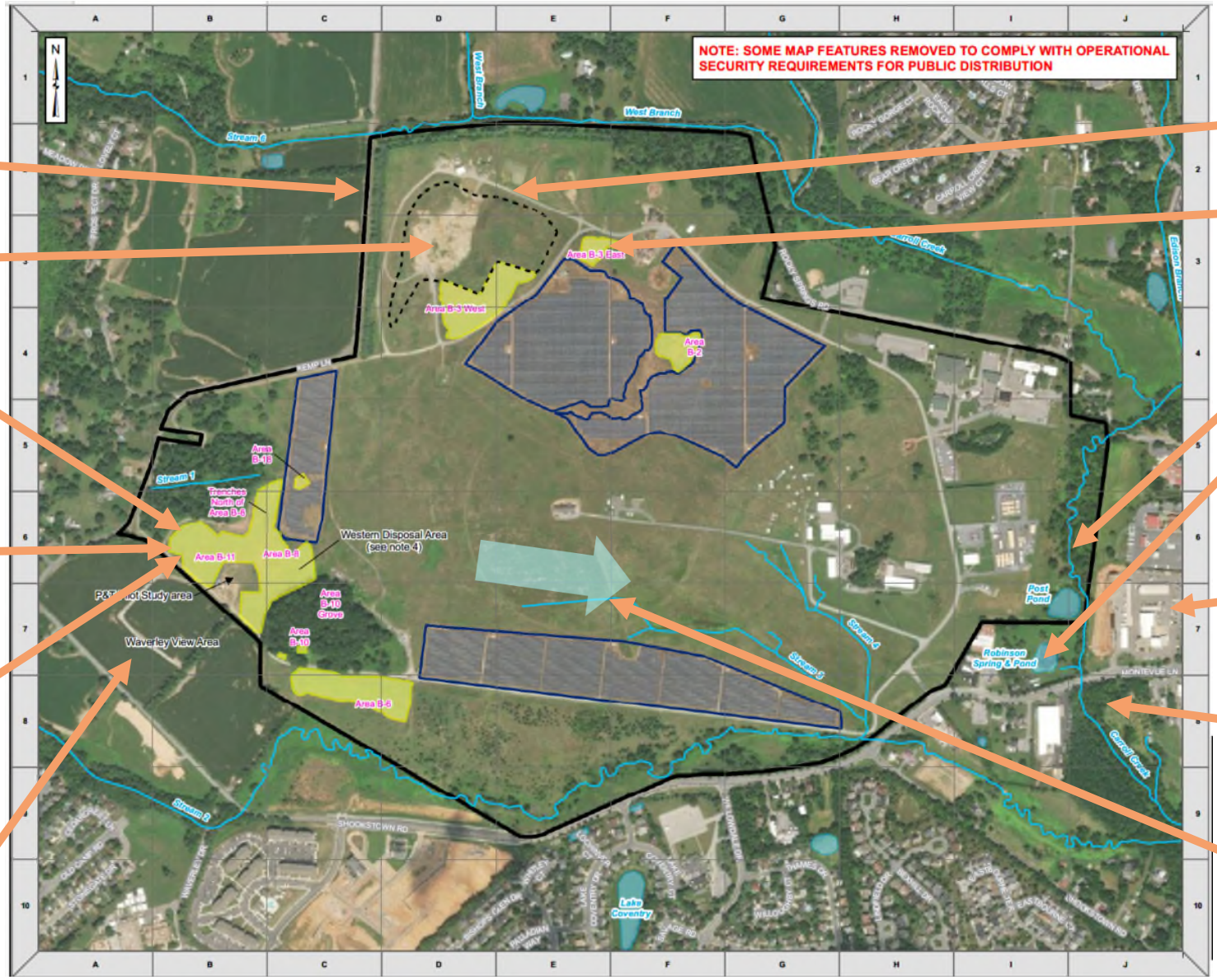
Preliminary Assessment (PA)- Initial review to identify sites that may pose a threat to the environment

On-going Area B Environmental Activities & where each falls within the CERCLA Process (colors correspond to following slides discussing these activities)

- Capped Landfill Inspections & Landfill GW monitoring
- Pilot Study
- Expanded SI sites
- RI & Envir. Support
- Quarterly GW Sampling
- USGS Hydro Study
- USACE Drilling & VI
- Area B PFAS RI

Area B Overview and Key Features/Locations


Fort Detrick Area B
NOTE: SOME MAP FEATURES REMOVED TO COMPLY WITH OPERATIONAL SECURITY REQUIREMENTS FOR PUBLIC DISTRIBUTION
N
West Branch
Stream 6
Area B-1 East
Area B-3 West
Area B-2
Carroll Creek
Area B-12
Stream 1
Trenches North of Area B-4
Western Disposal Area (see note 4)
Area B-11
Area B-4
P&T Pilot Study area
Area B-10 Grove
Waverley View Area
Area B-10
Area B-6
Post Pond
Stream 4
Stream 5
Robinson Spring & Pond
Stream 3
Lake Coventry
Legend
Fort Detrick Boundary
Solar Panels (existing)
Capped Former Disposal Areas
Permitted Active Municipal Landfill
Stream
Water Body
REFERENCE/PROJECTION: Maryland State Plane, NAD 83, Feet
ARCADIS
FIGURE 1
Fort Detrick Area B Site Plan
October 17, 2022
Fort Detrick
Frederick, MD



Area B Property Line

Active Sanitary Landfill

Western Disposal Area (WDA)

B-11 (former disposal trench) & BMW-67 monitoring point

Hot spot removal actions in this area 2001-2004

Waverley View Property

BMW-77 (monitoring point)

Capped Former Disposal Pits/Landfills (8) (yellow polygons, all capped 2009-2010)

Carroll Creek

Robinson Pond

Frederick County Offices & Facilities

Primary Discharge Area (approx.)

General groundwater flow direction (though it varies locally)

List of Previous Area B Environmental Investigations

Area B has been under investigation for decades. The activities on-going today continue to build upon these previous investigations to refine our understanding of the nature & extent of contamination and to address outstanding regulatory concerns.

List of Previous Area B Environmental Investigations **(major activities)**

1. Geohydrologic Study (1992)
2. Geophysical Investigation (1993)
3. Groundwater sampling investigation near sanitary landfill (1994)
4. Dye tracing study (1995)
5. Phase I and II Remedial Investigation (1994-1997)
6. Additional Remedial Investigation Field Efforts (1998-1999)
7. Surface Geophysical Survey (1999)
8. Photogeologic Analysis (2000)
9. Geophysical Investigation of Cambrian-Triassic Contact (2000)
10. USGS Seepage Study (2000-2001)
11. Area B-11 Hot Spot Removal Actions (2001-2004)
12. Intrinsic Biodegradation Assessment (2005)
13. Geophysical Investigation (2005)
14. Disposal Site Characterization & Capping (2006-2008)
15. Disposal Area RI/FS & Decision Document reports (2006-2009)
16. Capping at the Disposal Areas (2009-2010)
17. Off-Post Private Well Monitoring (2015)
18. Area B Site Investigations (SI) at 7 sites (2016)
19. Additional Remedial Investigation Field Efforts (2011-2017) *(See details on next slide)*

ON-GOING ACTVITIES (discussed tonight)

20. Groundwater/Surface Water Pilot Study
21. Landfill Support & Groundwater Monitoring Contract
22. RI Drilling & Field Investigation
23. Expanded SI at Area B & Area A
24. USGS Hydrogeological Study
25. USACE Waverley View Property Groundwater Investigation
26. PFAS Remedial Investigation

Most Recent Remedial Investigation Phase (2011-2017)

1. Well reconnaissance survey & repair of existing monitoring points (2011).
2. On- and Off-Post bedrock drilling & well installation (2011-2014) - 37 deep bedrock sampling point, including wells at Area B, Waverley & County properties.
3. Shallow Direct Push Technology (DPT) Piezometer Installation & Sampling (2012 & 2013) - 58 DPT borings with 34 shallow piezometers installed, mostly in off-post areas.
4. Comprehensive groundwater sampling rounds (2012) – 91 new/existing groundwater monitoring points sampled for VOCs, SVOCs, pesticides/herbicides, PCBs, inorganics, & other parameters.
5. Stream Surveys & Sampling (2012 & 2017) – evaluated Carroll Creek & surrounding streams for springs; 27-30 sets of surface water & sediment samples collected; and 28 springs tested.
6. Groundwater tracer study (2013 – 2014) – 2 dyes injected, 18 monitoring rounds over 9 months to track movement of groundwater via dye detections.
7. Synoptic groundwater level gauging (2012, 2013, & 2017) – water level measurements collected at 175+ locations (sampling points, stream gauges, piezometers)
8. Quarterly groundwater monitoring (2011-present) – 15 sampling points and 1 spring.
9. Vapor intrusion investigation (2013-2016) – On- and off-post VI sampling
10. Waverley View & County Property monitoring point sampling (2014 & 2015) – 8 new monitoring points installed.
11. Waverley View “First Water” Sampling Points (2014) – 11 temporary sampling points installed
12. Off-post soil gas sampling (2016)- Building inspection & 10 soil gas sampling points on the Frederick County Montevue campus.
13. Shallow Well Installation (2017) – 12 monitoring points installed on Frederick County Montevue Campus & surrounding area
14. Pore water sampling along Carroll Creek (2017) – 20 probes advanced along Carroll Creek for pore water sampling.
15. Expansion of Existing Landfill Monitoring Well Network (2017-2018) – 16 new shallow wells installed around the capped former disposal areas; 5 wells replaced.
16. Isotopic forensic profiling study (2017) – ‘fingerprinting’ evaluation to compare VOCs detected at key locations in and around Area B study area.

On-Going Area B Environmental Activities

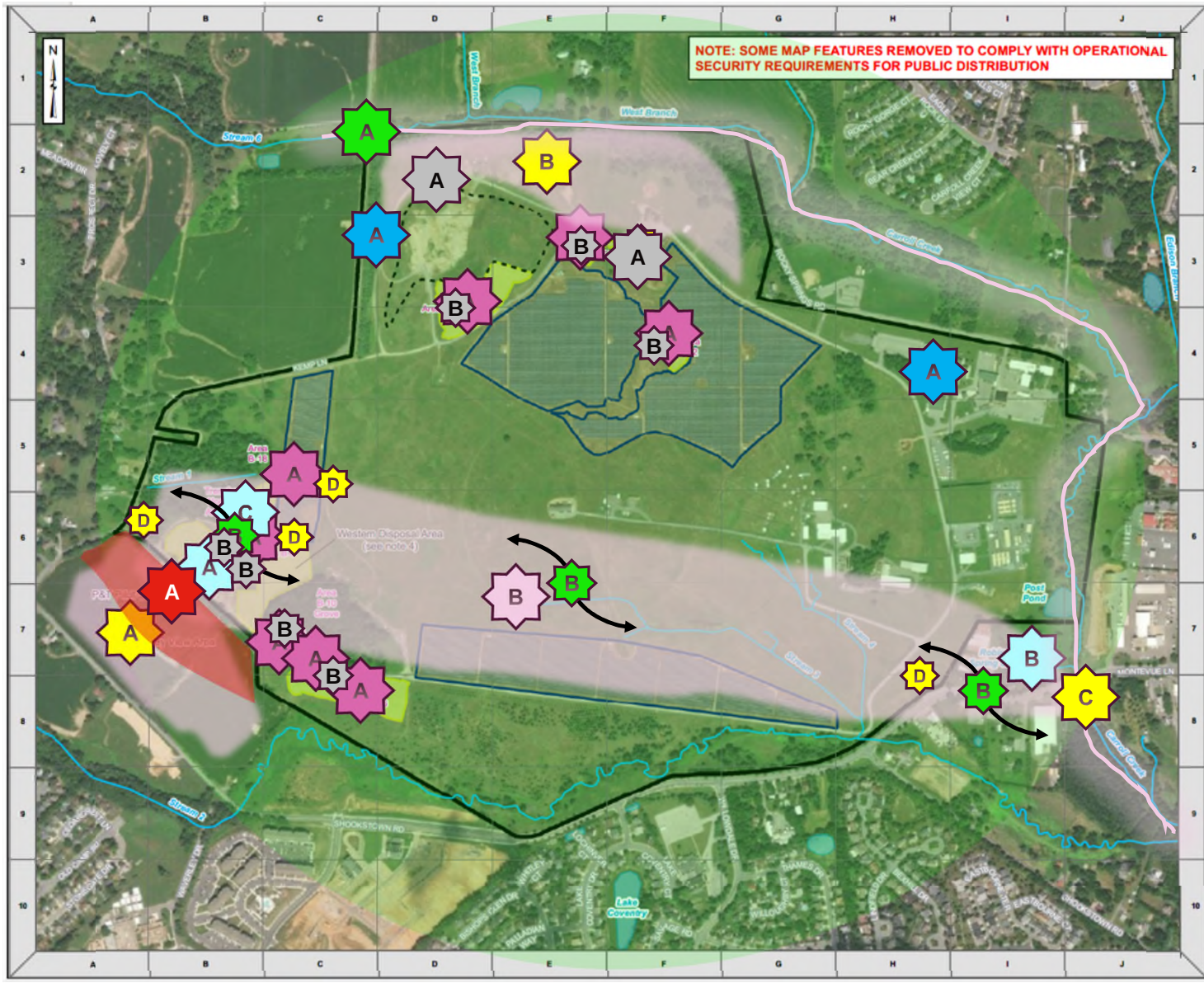
Area B Environmental Activities

List of On-Going Environmental Activities in & around the Area B Study Area

1. Groundwater & Surface Water Pilot Study
2. Landfill Support & Groundwater Monitoring
3. RI Drilling & Field Investigation
4. Expanded SI at Area B & Area A
5. USGS Hydrogeological Study
6. USACE Waverley View Property Groundwater Investigation
7. PFAS Remedial Investigation

On-Going Area B Environmental Activities

- Numerous overlapping phases of work being implemented on different schedules by different contractors and agencies.
- Following slides provide a summary of each the on-going environmental activities.

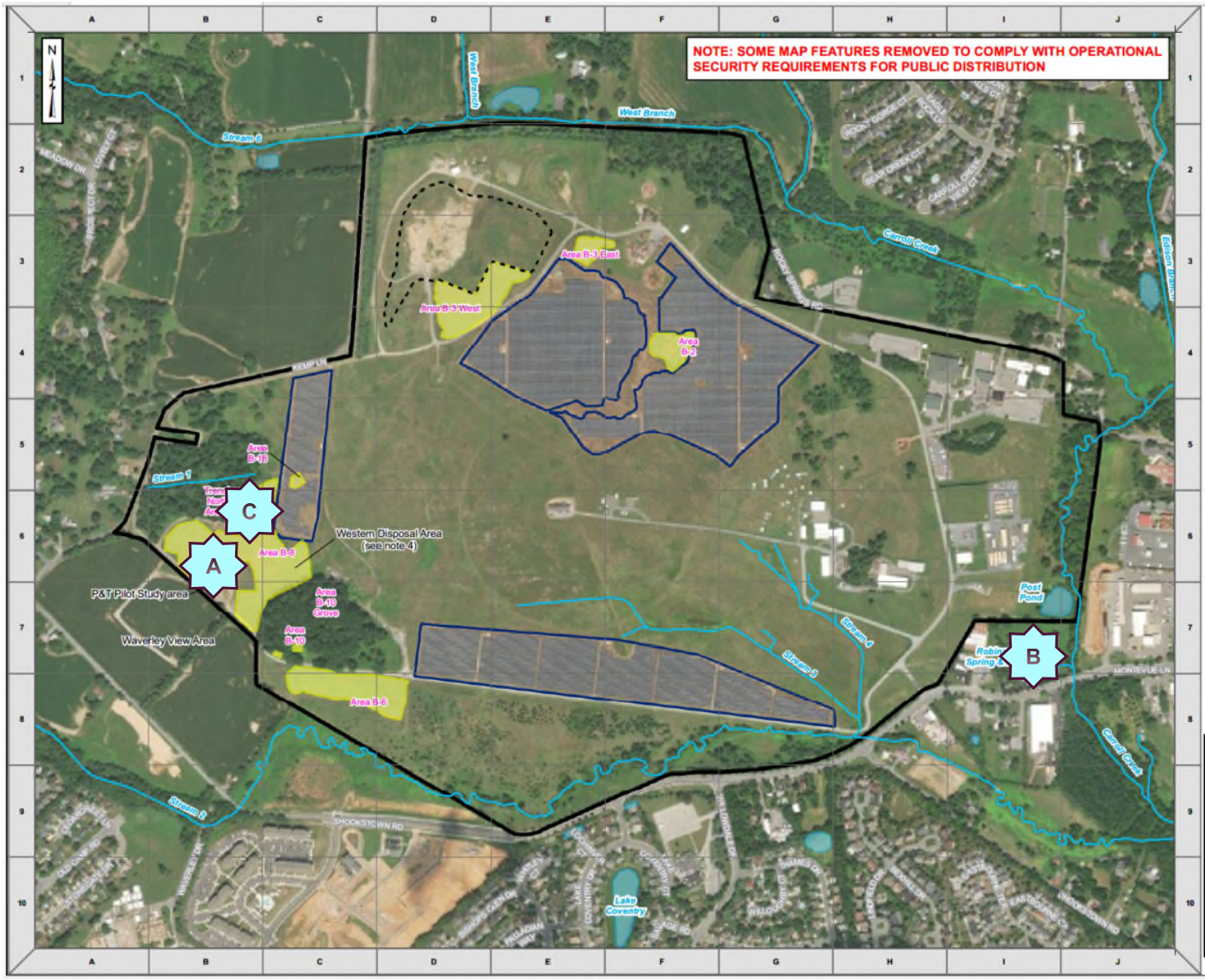


Groundwater Pilot Study Contract

Who is doing the work? Arcadis

Media: **Groundwater, Surface Water**

- **A** Groundwater pump & treat pilot study area (~2019 to 2021)
- **B** Surface water pond aeration pilot study area (2019 to 2020)
- **C** Second planned pilot study involving injection of molasses to stimulate biological degradation is on-hold to evaluate presence of possible biological agents.



Groundwater Pilot Study Contract

Task(s): Complete pilot studies to evaluate possible treatment alternatives for TCE (trichloroethene) & other volatile organic compounds (VOCs) in groundwater and surface water.

Status: (1) A pump & treat groundwater pilot study was completed in the Western Disposal Area; (2) Surface water pilot studies were completed in Robinson Pond

Future: (1) Arcadis to prepare a pilot study report discussing the results of the tests for the Army's future consideration when evaluating potential remedial options at Area B; (2) A second groundwater pilot study to inject a molasses solution to stimulate microbiological degradation of VOCs is on hold. The Army will be developing a plan to address stakeholder questions regarding the potential presence of biological agents and potential impacts that could result from injection of a molasses solution if the Army is allowed to proceed with the pilot study.

Contract Details:
5 yr contract from 9/2018 through 9/2023.

Landfill Support & Groundwater Monitoring Contract

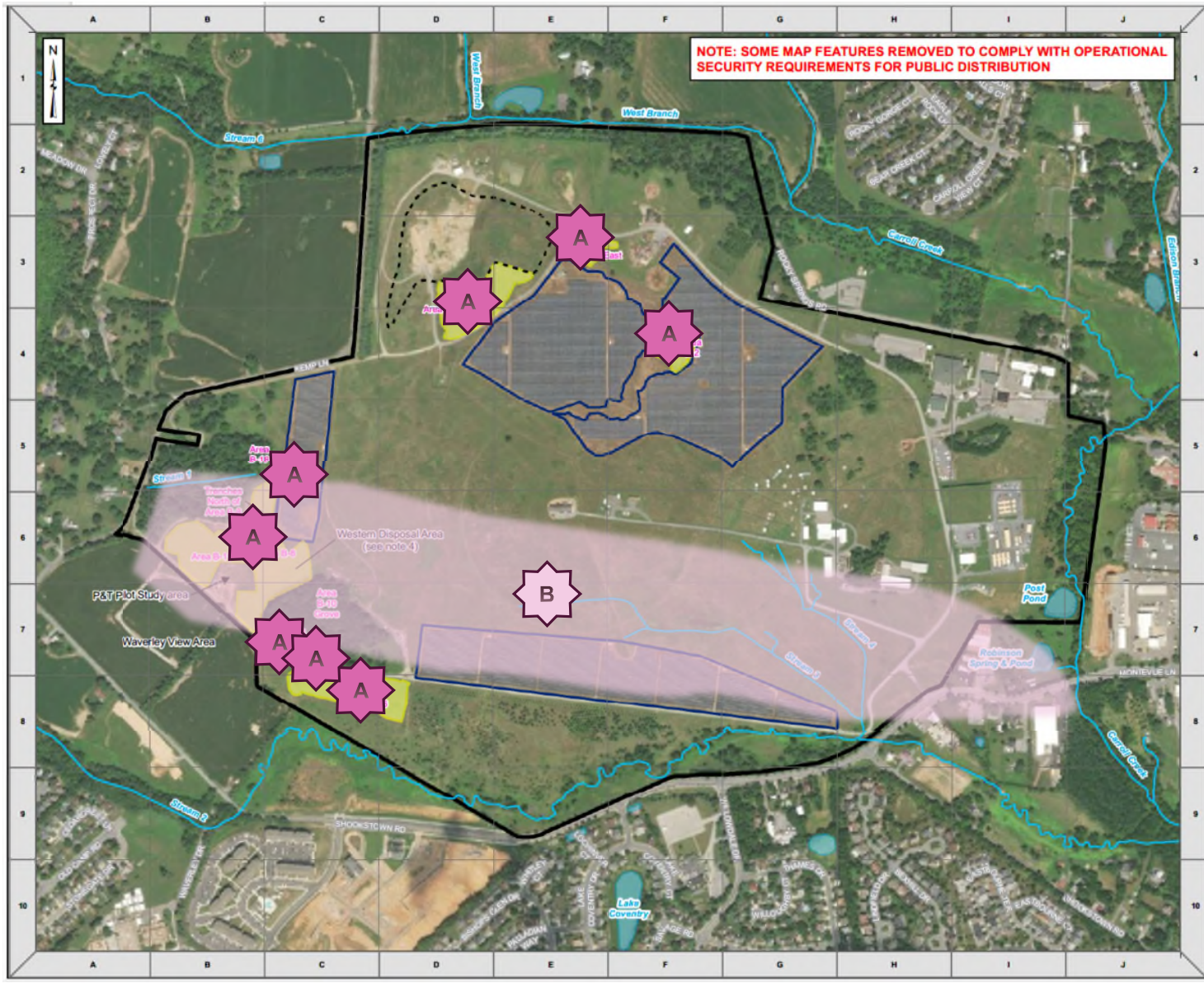
Who is doing the work? Seres-Arcadis Joint Venture

Media: **Groundwater** **(limited surface water)**

A ~48 groundwater points sampled twice/year around each of the 8 capped disposal pits (shown in yellow)

B 15 groundwater points & 1 spring sampled quarterly

Current Contract Details:
5 yr contract from 8/2019 through 8/2024.



Landfill Support & Groundwater Monitoring Contract

Task(s):

Landfill Monitoring at 8 Capped Disposal Areas

Sample monitoring points around each of the capped landfills (former disposal pits) on a semi-annual basis (twice per year); for VOCs, Metals, SVOCs, Pesticides/Herbicides, and other parameters. Inspect & mow the eight landfill caps (soil cover & impervious top liner);

This semi-annual landfill monitoring & reporting is required in Maryland for the closed landfills and will continue at Area B for decades under MDE/EPA oversight to assess protectiveness of the capping remedy at these former disposal areas.

Quarterly Sampling at Sentinel Monitoring Network

Quarterly sampling at 16 additional monitoring points pertinent to the VOCs in groundwater and one surface water location at Robinson Pond Box Spring. Focuses on 'source area' points with elevated TCE in the Western Disposal Area as well as downgradient points.

This is voluntary sampling the Army has performed since approximately 1999 & plans to continue completing to evaluate VOC trends in groundwater over time.

Note: This contract also includes other tasks, such as semi-annual groundwater at Fort Detrick Area A.

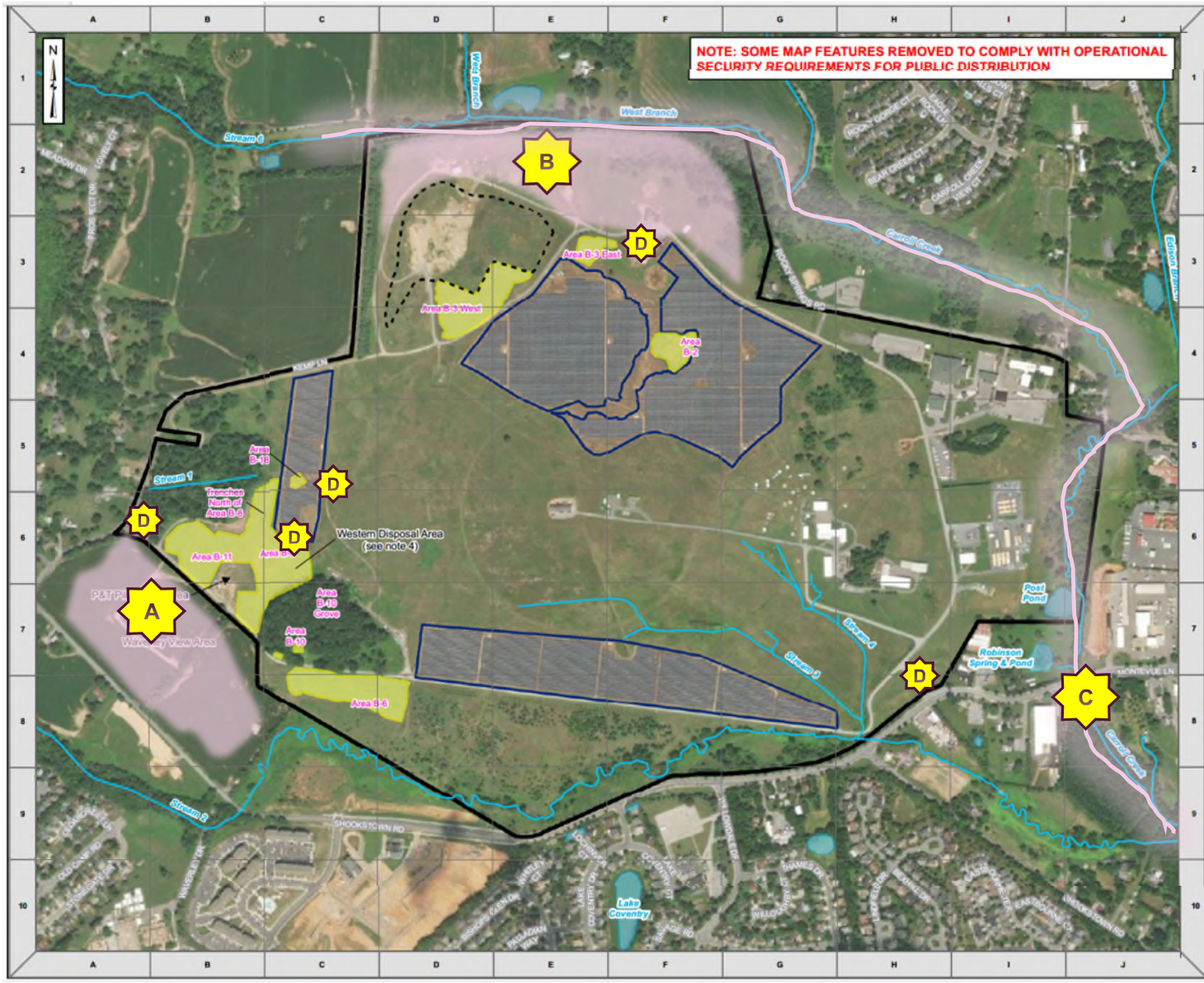
Area B Remedial Investigation (RI) & Environmental Support

Who is doing the work? APTIM (w/ Arcadis as a subcontractor)

Media: **Groundwater, Surface Water**

- **A** Deep drilling on the Waverley property
- **B** Drilling in BMW-77 area
- **C** Carroll Creek surface water/sediment sampling & ecological assessment
- **D** Replacement borings/ monitoring points

Current Contract Details:
3 yr contract from 9/2021 through 9/2024.



Area B Remedial Investigation (RI) & Environmental Support

Supplemental RI Fieldwork

- Waverley area drilling (install up to 6 new monitoring points)
- BMW-77 area drilling (install up to 12 new monitoring points)
- Sample new points quarterly for 2 years
- Replace 5 damaged monitoring points
- Surface water/sediment sampling along Carrol Creek

RI field work starts week of Jan 9, 2023…

Address Outstanding Regulatory Comments

- Complete comprehensive/updated human health and ecological risk assessments to incorporate new data
- Update conceptual site model to include results of on-going USACE & USGS hydrogeological investigation

…6+ months of drilling & other field work planned…

Finalize RI Report

- Prepare a final RI report that updates an earlier draft final RI report, addresses outstanding regulatory comments, and integrates data from more recent investigations over the last ~5 years.

…Final RI report in late 2024.

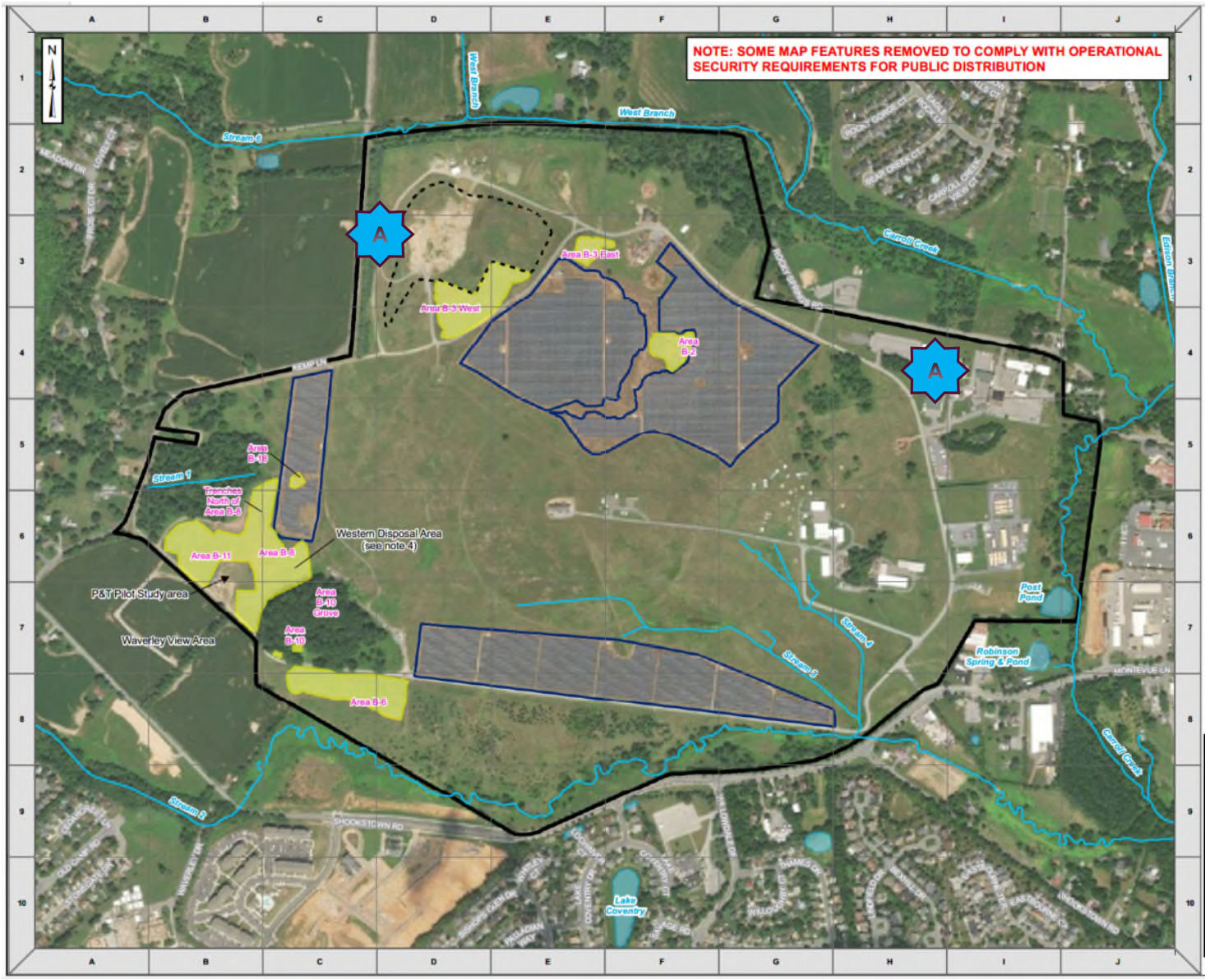
Expanded Site Investigations (SI) at Area B & Area A for Herbicide, Incinerator, Vehicle Maintenance, & General Disposal/ Storage/ Other Sites

Who is doing the work? Seres-Arcadis Joint Venture

Media: Primarily soil

- ✓ Follow-on to earlier SI work completed in 2016
- ✓ At Area B, seven possible SI sites of interest were evaluated in 2016, only 2 still need assessment under this current contract.

A Two possible herbicide sites at Area B, pending results of a soil background study



Expanded SI at Area B & Area A for Herbicide, Incinerator, Vehicle Maintenance, & General Disposal/ Storage/ Other Sites

Current Contract Details:
5 yr contract from 8/2019 through 9/2024

✓ Oct 2020: Completed background soil sampling across Area A & Area B to better understand background concentrations of metals, herbicides, & dioxins

Working with EPA & MDE to finalize the background data report. Based on these results, a new work plan for additional sampling at Area B & Area A SI sites will be prepared.

Minimal sampling at up to 2 Area B sites expected; Additional sampling at Area A sites will be necessary. Dates TBD, but likely in late 2023.

Low soil concentrations at the 2 Area B sites are similar to background concentrations; need for further sampling TBD.

For each Area B & Area A SI site, the Final Expanded SI reports will recommend either (1) No further action, or (2) Further investigation is necessary (e.g., CERCLA RI)

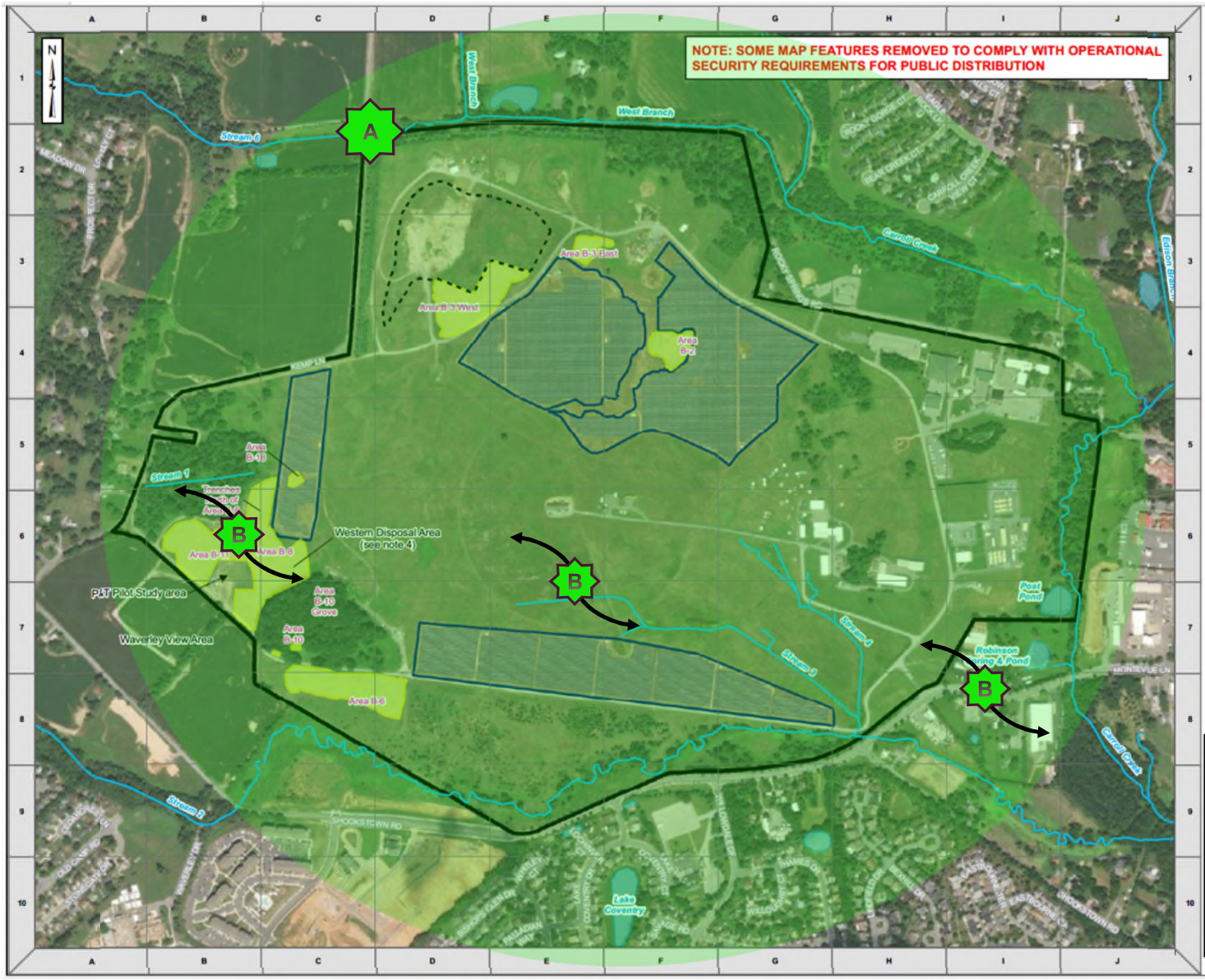
USGS Hydrogeological Investigation

Who is doing the work? USGS

Media: **Groundwater, Surface Water, Soil** (mostly water level measurements, rather than contaminant concentrations)

Timeframe:
Multi-year & multi-faceted hydrogeological investigation on-going since 2017

- A — Large regional water study encompassing Area B & surrounding watershed
- B — Biogeochemical evaluation (numerous locations across Area B, including groundwater monitoring points & surface water)



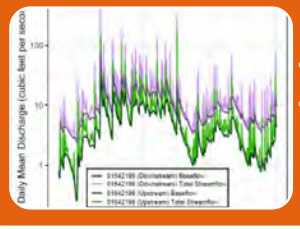
USGS Hydrogeological Investigation

Hydrogeological Analysis

- Hydrologic monitoring (2017-2020)
- Water budget analysis (2017-2020)
- Groundwater age dating (2019)
- Dye monitoring (2019-2020)

Geochemical Analysis

- Independent review of decades of existing geochemical data
- VOC & natural attenuation analysis (Fall 2019, Summer 2020)
- Carroll Creek pore water evaluation (Summer 2019, Fall 2020)
- Matrix (rock) diffusion analysis (2019-2020)



Reporting

- Conceptual site model evaluation
- Two published reports pending:
  - Hydrogeology Report
  - Biogeochemistry Report

The results of USGS' multi-year studies will be integrated into the future Final RI to be prepared by APTIM & Arcadis as part of the RI contract

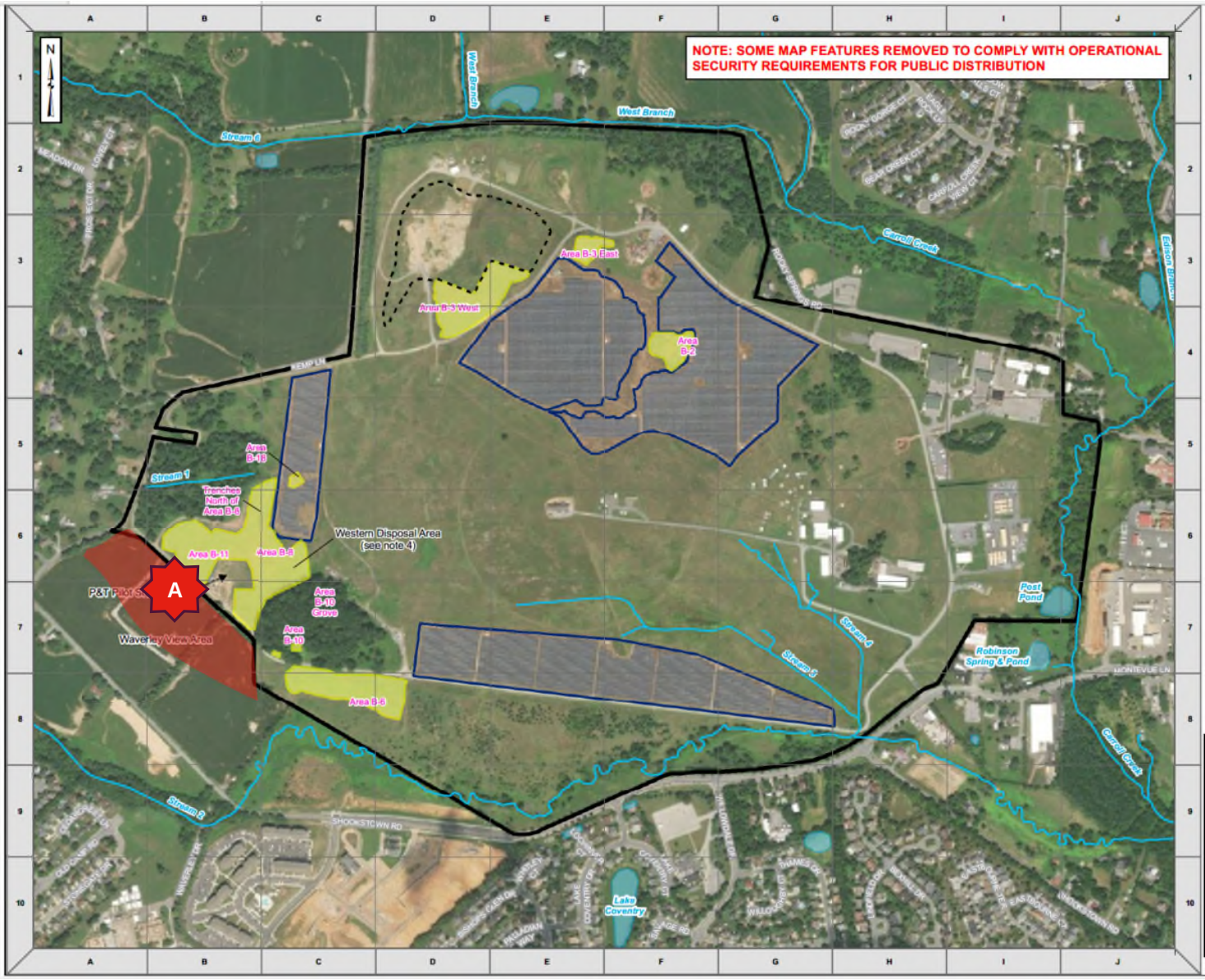
USACE Waverley View Property Groundwater Investigation

Who is doing the work? USACE

Media: Groundwater (for evaluating vapor intrusion potential)

A 33 new monitoring points drilled & sampled (2021-2022) to supplemental existing sampling points

USACE collected groundwater samples at the Waverley property in July 2020, August 2021, May/June 2022, August 2022, & December 2022



U.S. Army Corps of Engineers, Baltimore District

USACE Waverley View Property Groundwater Investigation

OBJECTIVE: The Army is completing this investigation to assess potential risk to future human receptors at the Waverley View property from vapor intrusion. Construction of single-family residences is planned at this property.

APPROACH: Numerous new groundwater monitoring points have been installed west/southwest of Fort Detrick on the Waverley Property & sampled multiple times for VOCs.

The Army is using the USEPA Vapor Intrusion Screening Level (VISL) Calculator to assess the results.

The Army will use the data results to ensure protection of human health as the Waverley View property is developed.

NEXT: An additional round of groundwater samples is planned for March 2023. The VISL model projections will be updated and used to ensure protection of human health at the development.

See slides from 10/14/22 RAB Meeting

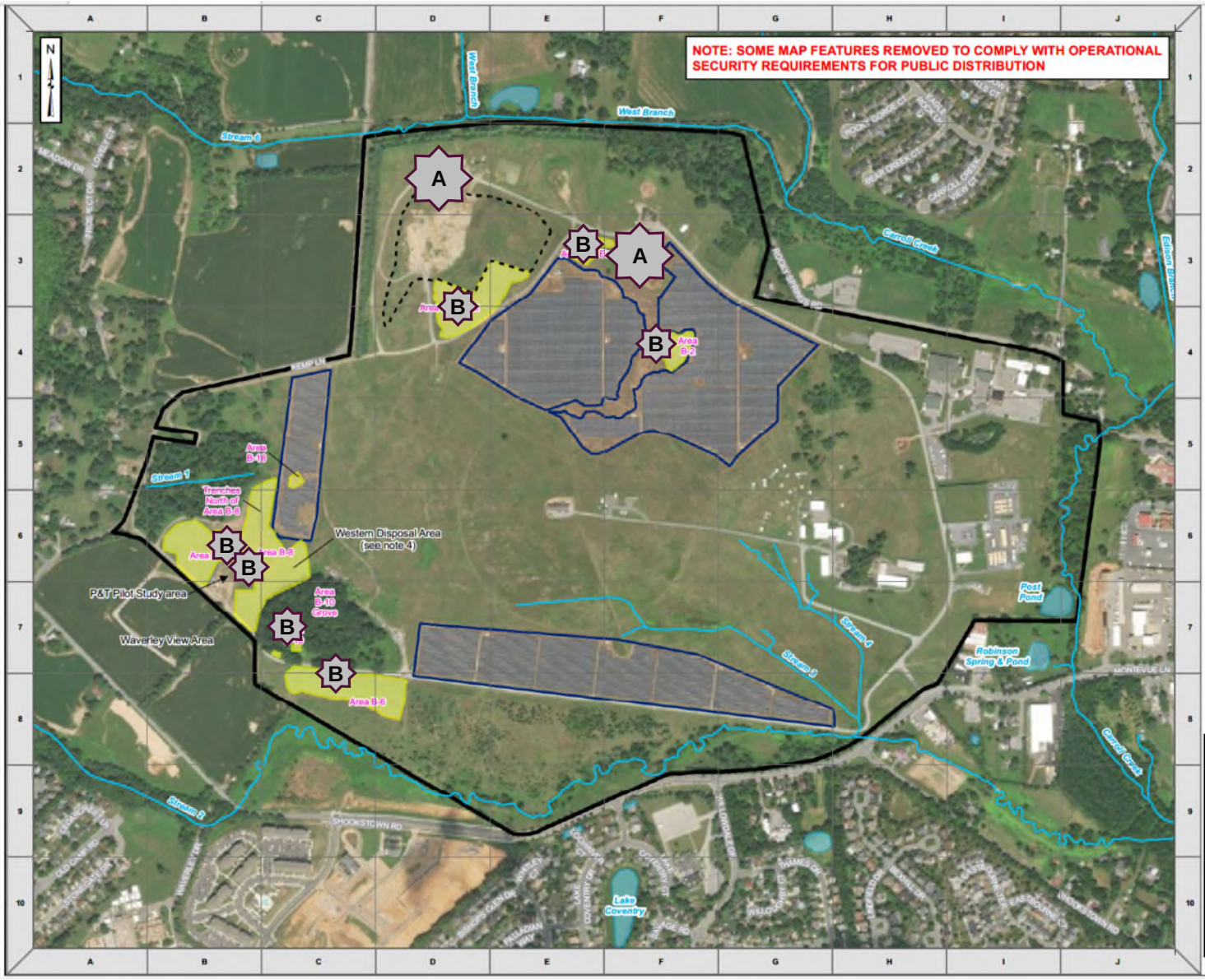
PFAS Site Investigation & Remedial Investigation

Who is doing the work? Seres-Arcadis Joint Venture

Media: Soil, Groundwater, Surface Water for PFAS

- **A** Two possible AFFF release areas identified at Area B
- **B** Baseline PFAS testing at the existing landfill monitoring program points

Current Contract Details:
5 yr contract from 2/2022 through 2/2027.



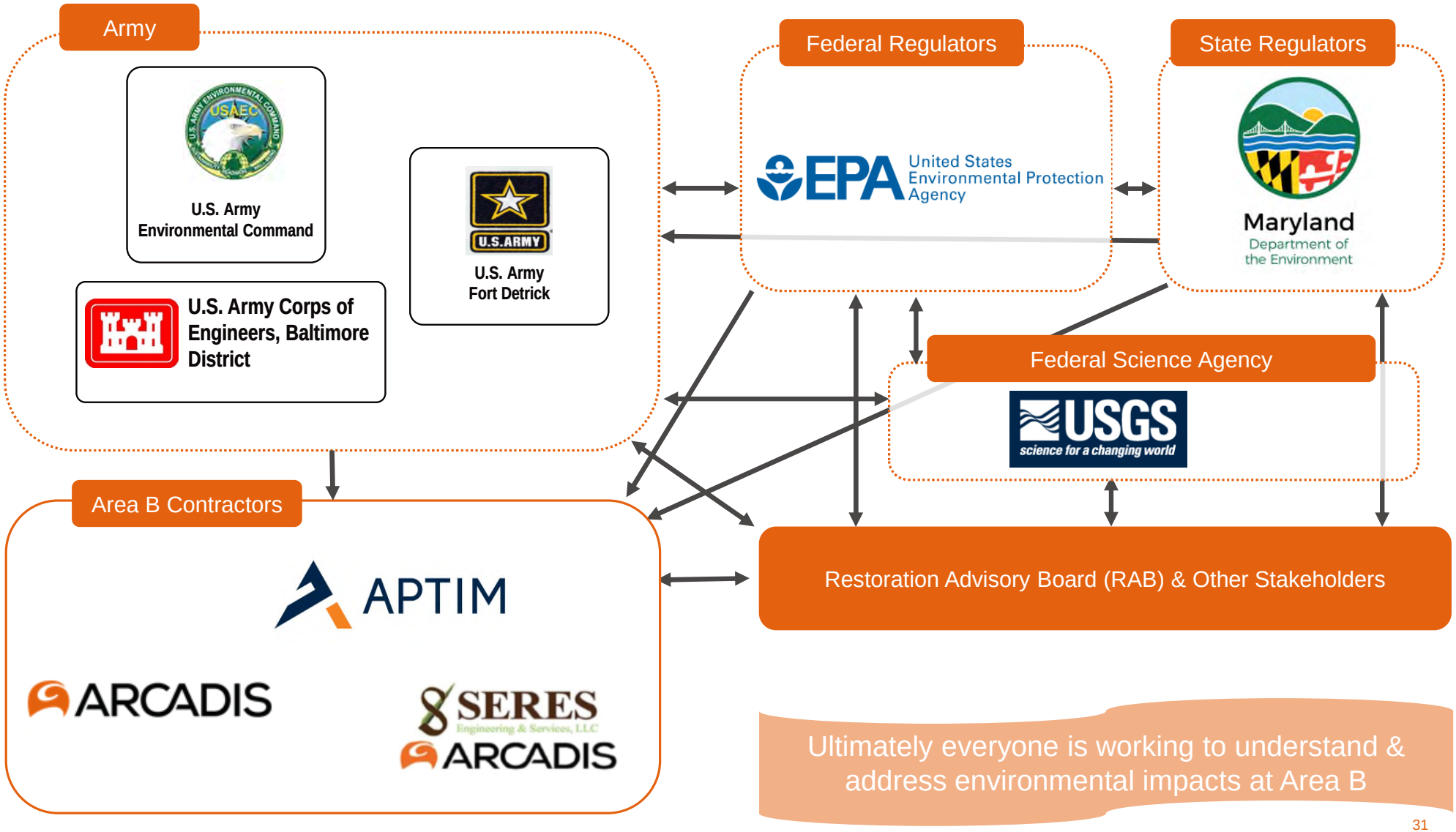
PFAS Site Investigation & Remedial Investigation

- ✓ PA/SI completed in March 2022 at Fort Detrick identified a total of 4 PFAS areas of potential interest (AOPI).
- ✓ At Area B, two potential sites were identified that may have had small volumes of AFFF releases as part of unit certification exercises.
- ✓ At Area A, two fire stations are present that required testing for AFFF.
- ✓ Sampling in 2020 confirmed PFAS detections in groundwater and/or surface water requiring further PFAS RI investigation for all 4 PFAS AOPI sites.

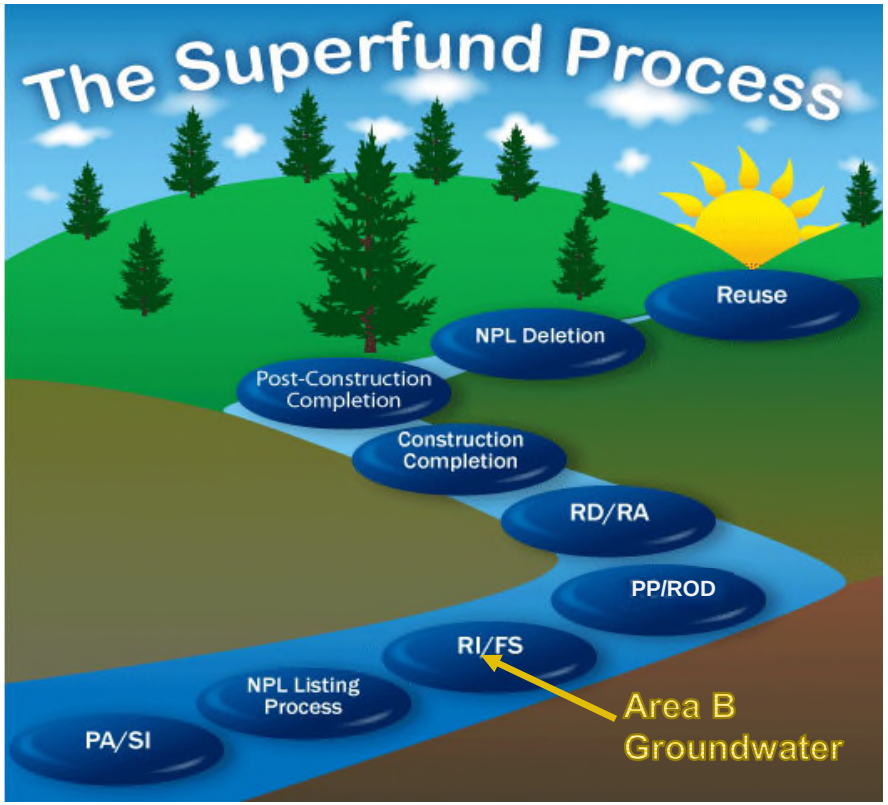
Path Forward (2023):

- Additional RI sampling activities will be conducted as the AOPI sites, including soil sampling, groundwater monitoring point installation, sampling of new and existing groundwater monitoring locations, and spring sampling.
- Additionally, baseline PFAS sampling around the capped disposal areas is anticipated.

AFFF = Aqueous Film Forming Foam (fire suppressant used to extinguish flammable liquid fires)


Army
U.S. Army Environmental Command
U.S. Army Fort Detrick
U.S. Army Corps of Engineers, Baltimore District
Federal Regulators
EPA United States Environmental Protection Agency
State Regulators
Maryland Department of the Environment
Federal Science Agency
USGS science for a changing world
Area B Contractors
APTIM
ARCADIS
SERES Engineering & Services, LLC
ARCADIS
Restoration Advisory Board (RAB) & Other Stakeholders
Ultimately everyone is working to understand & address environmental impacts at Area B

Where is Area B within the CERCLA/Superfund Process?



Remedial Action (RA)-Implement selected remedy

Remedial Design (RD)- Work plan and design of selected remedy

Record of Decision (ROD)- Final legal document selecting remedy

Proposed Plan (PP)- public document to solicit input on preferred remedy

Feasibility Study (FS)- Assessment of possible remedies

Remedial Investigation (RI)- Thorough investigation; develop conceptual site model, complete risk assessment

Site Investigation (SI)- Initial sampling to test for a release of hazardous substances to the environment

Preliminary Assessment (PA)- Initial review to identify sites that may pose a threat to the environment

On-going Area B Environmental Activities & where each falls within the CERCLA Process (colors correspond to following slides discussing these activities)

- Capped Landfill Inspections & Landfill GW monitoring
- Pilot Study
- Expanded SI sites
- RI & Envir. Support
- Quarterly GW Sampling
- USGS Hydro Study
- USACE Drilling & VI
- Area B PFAS RI

Questions?