



Naval Weapons Station Yorktown
Cheatham Annex

Environmental Restoration Advisory
Board Meeting
November 10, 2022

Meeting Agenda



- **Logistics And Remarks From The Moderator**
- **Welcome/Introductions**
- **Co-chair Opening Remarks**
- **CAX Environmental Restoration Program Update**
- **CAX Site 7 Field Work Update**
- **CAX AOC 8 Field Work Update**
- **Co-chair Closing Remarks**
- **Final Comments/Closing Remarks**

Meeting Agenda

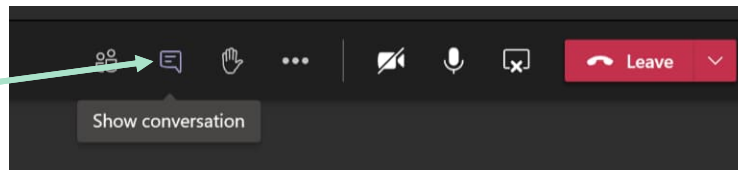


- **Logistics And Remarks From The Moderator**
 - **Megghan Smith/CH2M**
- Welcome/Introductions
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- Final Comments/Closing Remarks

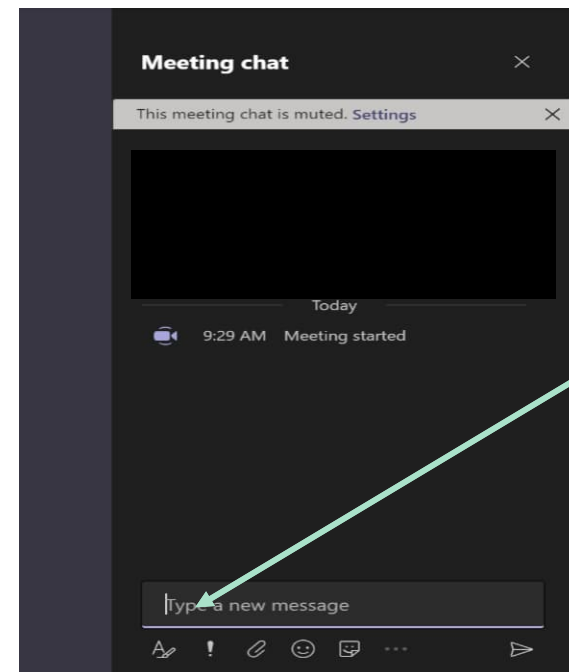
Meeting Logistics

- Please mute your phones and/or microphones
- Please do not interrupt the presentations, there will be time for questions following each presentation
- If connecting through the computer, questions may also be asked through the chat function

Click here to show the Chat Window



- Electronic copies of this presentation are available on the public website
- This is being recorded



Type your question here and press Enter

Meeting Agenda



- Logistics And Remarks From The Moderator
- **Welcome/Introductions**
 - **Bryan Peed/CAX Remedial Project Manager for the Navy**
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- Final Comments/Closing Remarks

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- **Co-chair Opening Remarks**
 - **Captain Horgan/NWS Yorktown CAX Commanding Officer**
 - **Steven Oyer/RAB Community Co-Chair**
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- Final Comments/Closing Remarks

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- Co-chair Opening Remarks
- **CAX Environmental Restoration Program Update**
 - **Bryan Peed/CAX Remedial Project Manager for the Navy**
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- Final Comments/Closing Remarks



Cheatham Annex Environmental Restoration Program Overview and Update

Program Overview

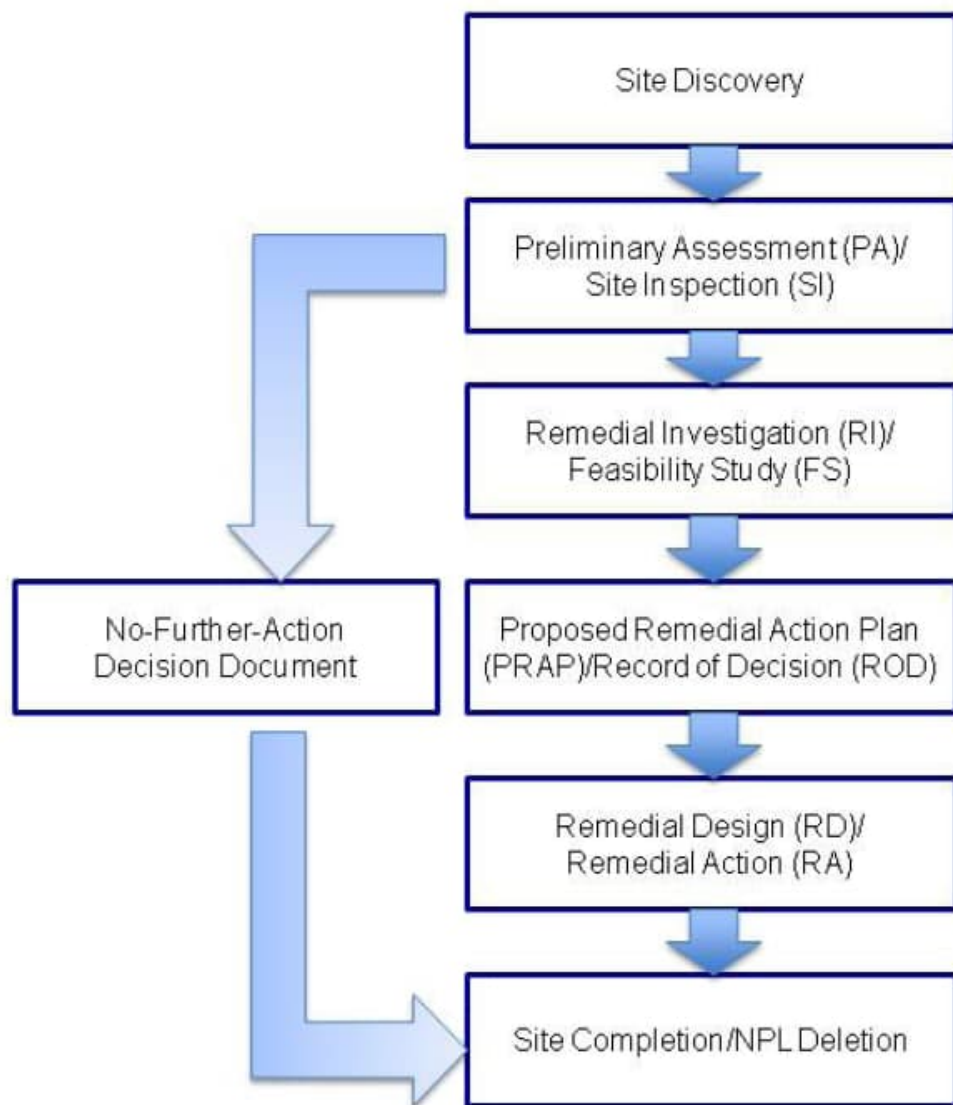


Cheatham Annex (CAX) Environmental Restoration Program (ERP)

- 21 Sites and Areas of Concern (AOC)
- 7 sites/AOCs currently under investigation
- 14 sites/AOCs no further action required



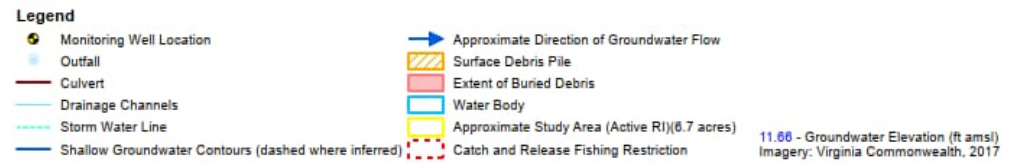
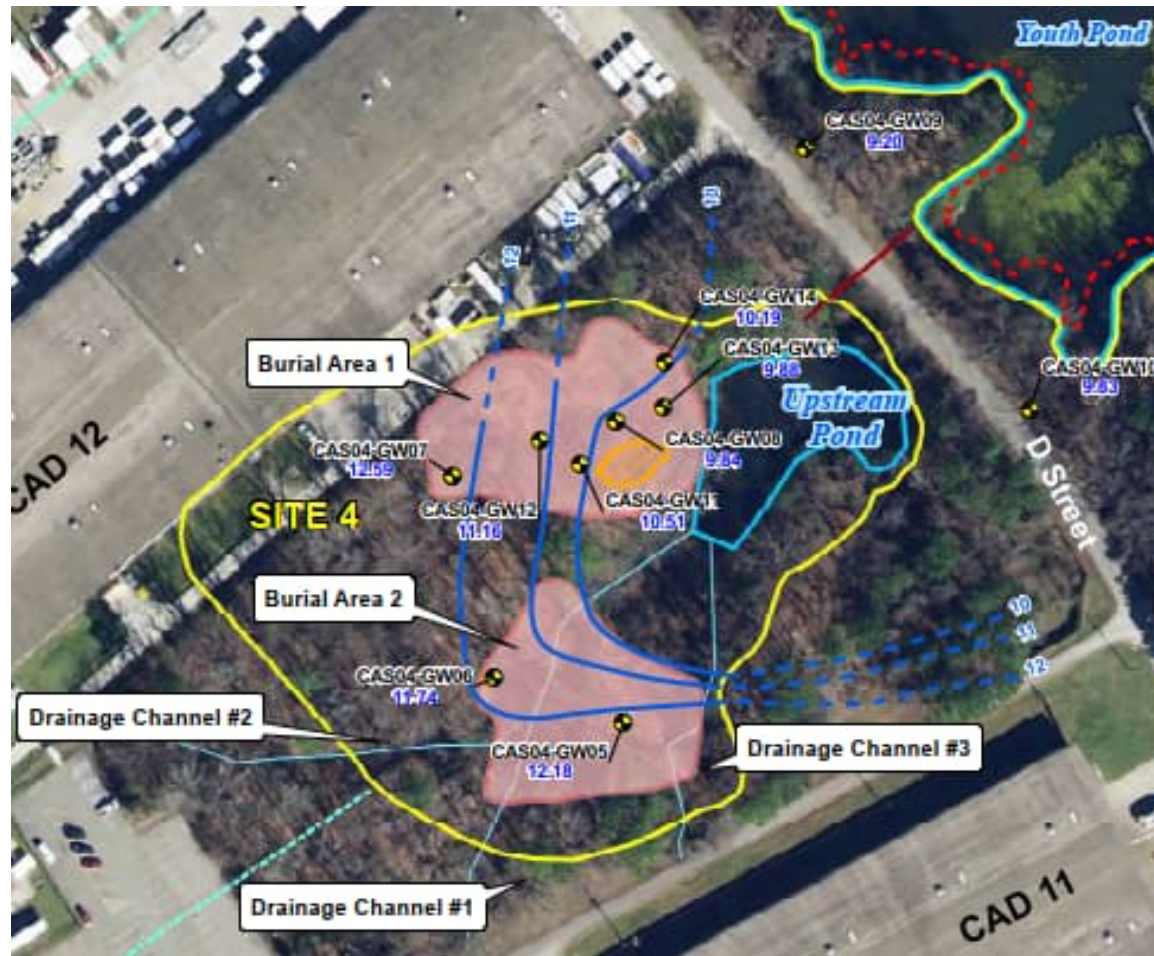
21 ERP Sites



- **SI (2 sites)**
- **RI/FS (4 sites)**
- **RA (1 site)**
- **Closed (14 sites)**

CAX ERP – Site 4

Outdated Medical Supply Disposal Area



Work Completed since last RAB:

- Continued work on drafting Feasibility Study (FS) for all site media

Work In Progress:

- Draft FS for all media

CAX ERP – Site 7

Old DuPont Disposal Area



Legend

- Site Boundary
- Cheatham Annex Boundary
- Buildings
- Former Buildings
- Monitoring Well Location
- Surface Water Elevation
- Roads
- Potentiometric Surface Contour (dashed where inferred)
- Approximate Direction of Groundwater Flow
- Excavation Boundary Site 7

Notes:
 Water levels taken on November 2, 2020 between 9:30 am and 11:30 am, during high tide.
 NR - Not Recorded
 2.53 - Groundwater Elevation (ft amsl)
 Imagery: Virginia Commonwealth, 2017

Work Completed since last RAB:

- Finalized a Vapor Intrusion (VI) Technical Memorandum (TM) summarizing VI Results
- Conducted Phase 1 groundwater delineation field activities.

Phase 1 Field Work Summary on Agenda for today

CAX ERP – AOC 1 South Scrap Metal Dump

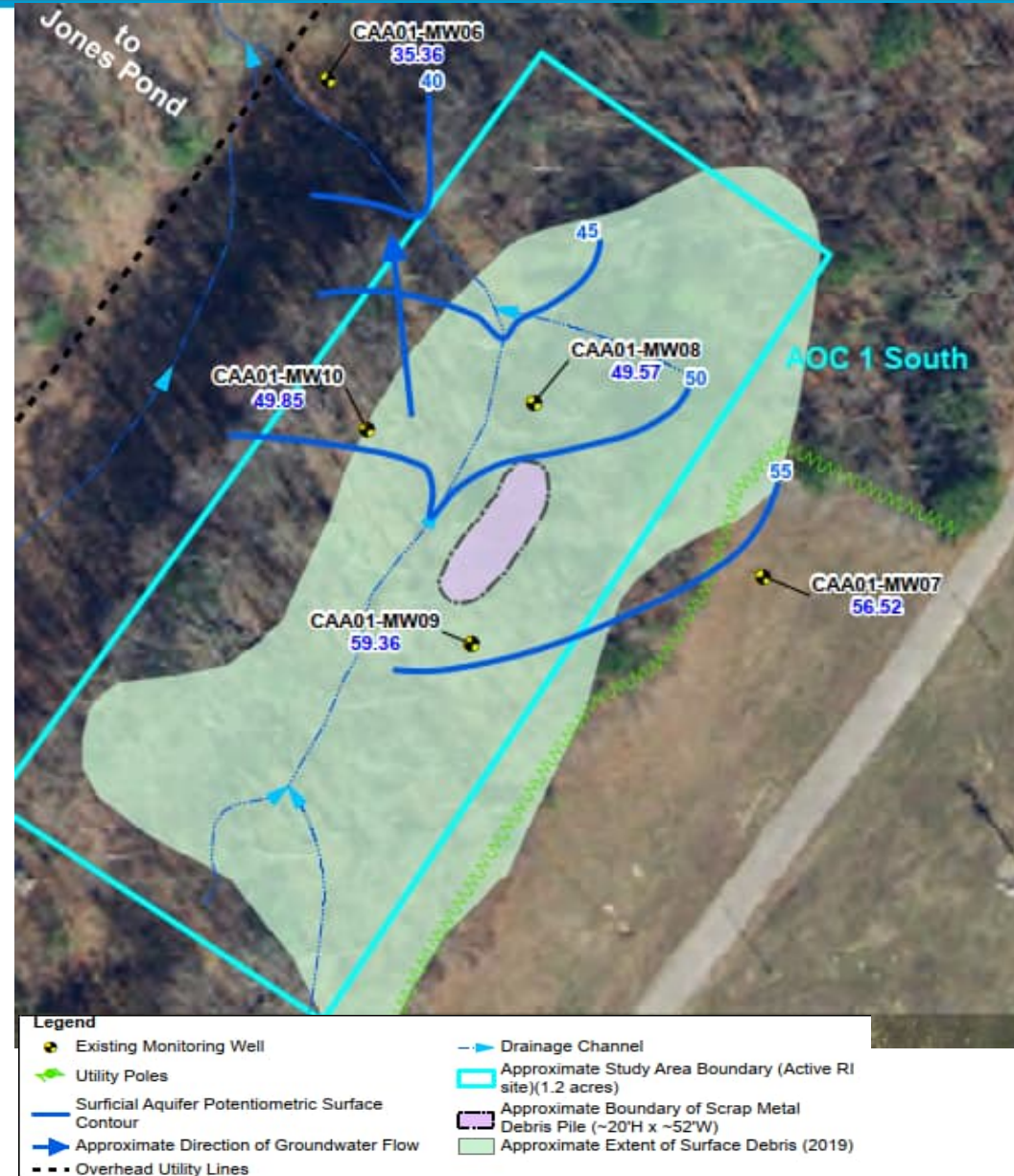


Work Completed since last RAB:

- Finalized RI report

Work In Progress:

- Began drafting FS report



CAX ERP – AOC 6

Trinitrotoluene (TNT)/Ammonia Settling Pits Subareas

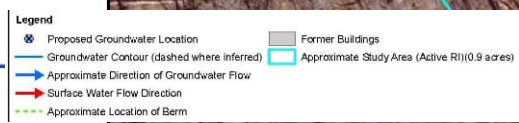


Work Completed since last RAB:

- Preparation for a Non-Time Critical Removal Action (NTCRA)

Work In Progress:

- Began NTCRA field activities



CAX ERP – AOC 8

Area South of Site 7



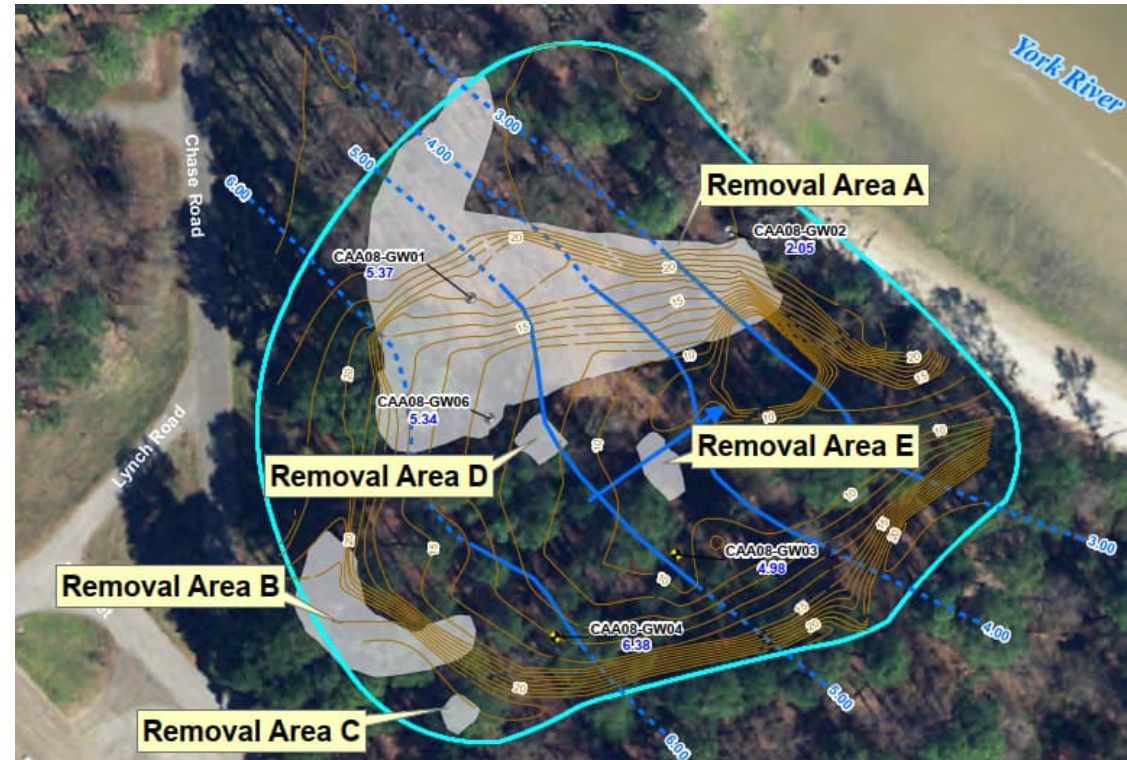
Work Completed since last RAB:

- Conducted Phase 2 groundwater sampling activities as outlined in the groundwater delineation and sampling SAP

Phase 2 Field Work Summary on Agenda for today

Work In Progress:

- Preparing an RI Addendum report documenting groundwater delineation field activities



CAX ERP – AOC 9

Penniman Lake Historical Industrial Areas

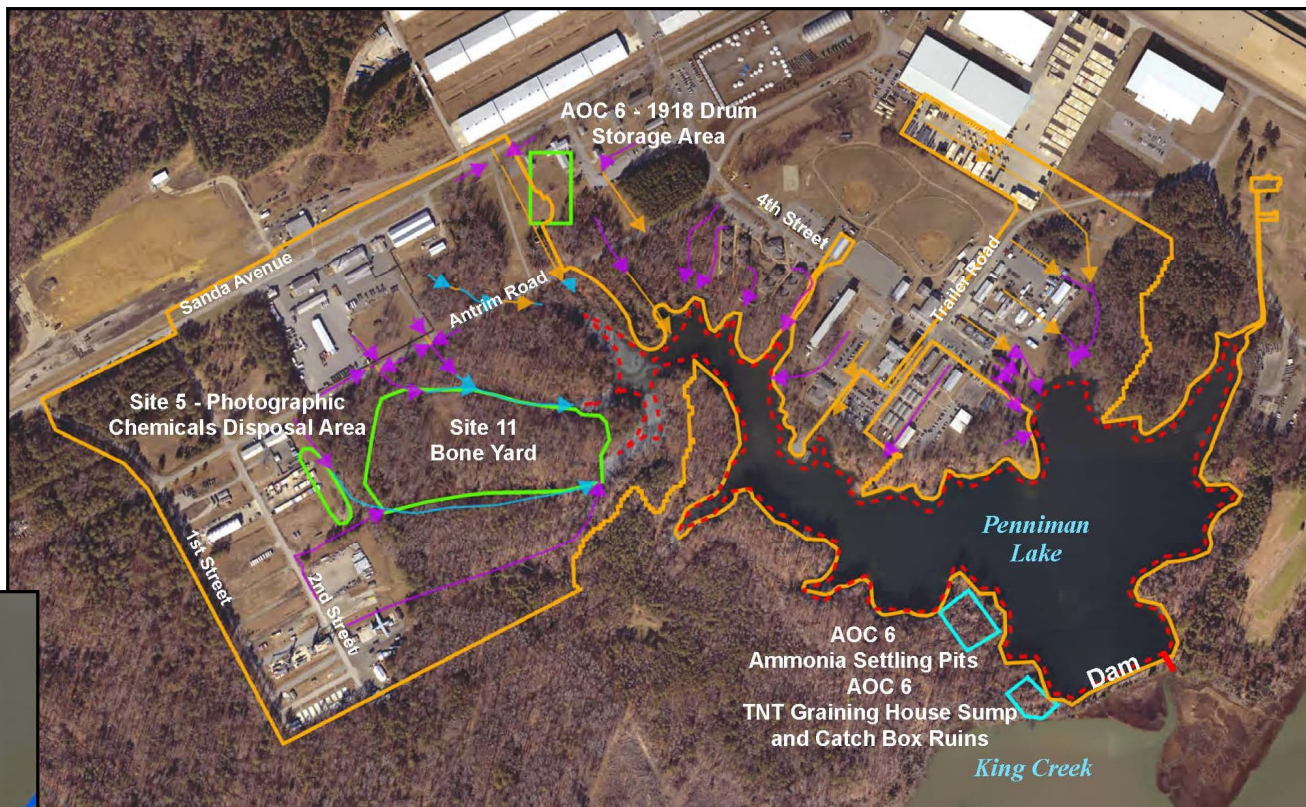


Work Completed since last RAB:

- Completed Phase 2 field investigation activities
- Completed explosives contamination field activities

Work In Progress:

- Preparation for USEPA and VDEQ discussions to determine a path forward for the site
- Began preparing an ESI Report to document field investigation activities.



Legend

- | | |
|-------------------------------------|----------------------------------------------------------|
| Grassy Stormwater Drainage Channels | Catch and Release Fishing Restriction |
| Intermittent Creek | No Further Action Site Adjacent to AOC 9(13.1 acres) |
| Underground Stormwater Pipe | Active SI Historic Study Area (approximate)(170.9 acres) |
| Overflow Pipe | Active RI Sites Adjacent to AOC 9(1.4 acres) |

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- **CAX Site 7 Field Work Update**
 - **Stephanie Sawyer/CH2M**
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- Final Comments/Closing Remarks



Cheatham Annex
Site 7 – Old DuPont Disposal Area
Field Work Update

Agenda



- **Background**
- **Environmental Investigation Objectives**
- **Field Investigation Approach, Activities, and Results**
- **Next steps**
- **Questions and Comments**



Site 7 Location



Background



- CAX consists of 2,300 acres of land on the York-James Peninsula and was the location of the former Penniman Shell Loading Plant, a large powder and shell loading facility operated by E.I. DuPont de Nemours & Co. during World War I.
- Site 7 was 1-acre disposal area for wastes from the former City of Penniman and the former DuPont facility
- Environmental investigations at the site that started in 2004 found that soil and groundwater were impacted
- Soil and debris were removed in 2007 and 2008, site was backfilled, and shoreline regraded to a lesser slope

Site Pictures



Shoreline facing north - 2006



Shoreline facing south - 2008



Site facing west - current



Site facing west - 2008



Shoreline facing south - 2013

Environmental Investigation Objectives



- **After the debris and contaminated soil were removed, the NAVY, USEPA and VDEQ determined that an additional groundwater investigation was needed to evaluate groundwater contamination at the site**
- **The investigation objectives were to:**
 - **determine the horizontal and vertical extents of the volatile organic compounds tetrachloroethene (TCE) and its degradation products in groundwater**
 - **Determine if these constituents were present at concentrations posing potential risks to human health and ecological receptors.**
 - **Collect geochemical and geophysical data* to support the evaluation of remedial alternatives, if needed.**

*grainsize, total oxygen demand, alkalinity, chloride, nitrate, nitrite, sulfate, sulfide, methane, ethane, ethene

Field Investigation Approach



- **Investigation is conducted in two phases:**
 - Phase I: Collected Direct Push Technology (DPT) groundwater samples and Hydraulic Profiling Tool (HPT) data to understand groundwater contamination and site hydrogeology (2021 and 2022)
 - Phase II: Install and sample groundwater monitoring wells to confirm DPT results (2023)

Phase I Field Activities (Nov 2021 and May 2022)



- HPT advanced at 8 locations (see Site 7 Groundwater Contaminant Distribution Figure)
- One shallow and one deep groundwater samples collected at 35 locations and analyzed for site contaminants



Hydrogeological data collection with HPT tooling



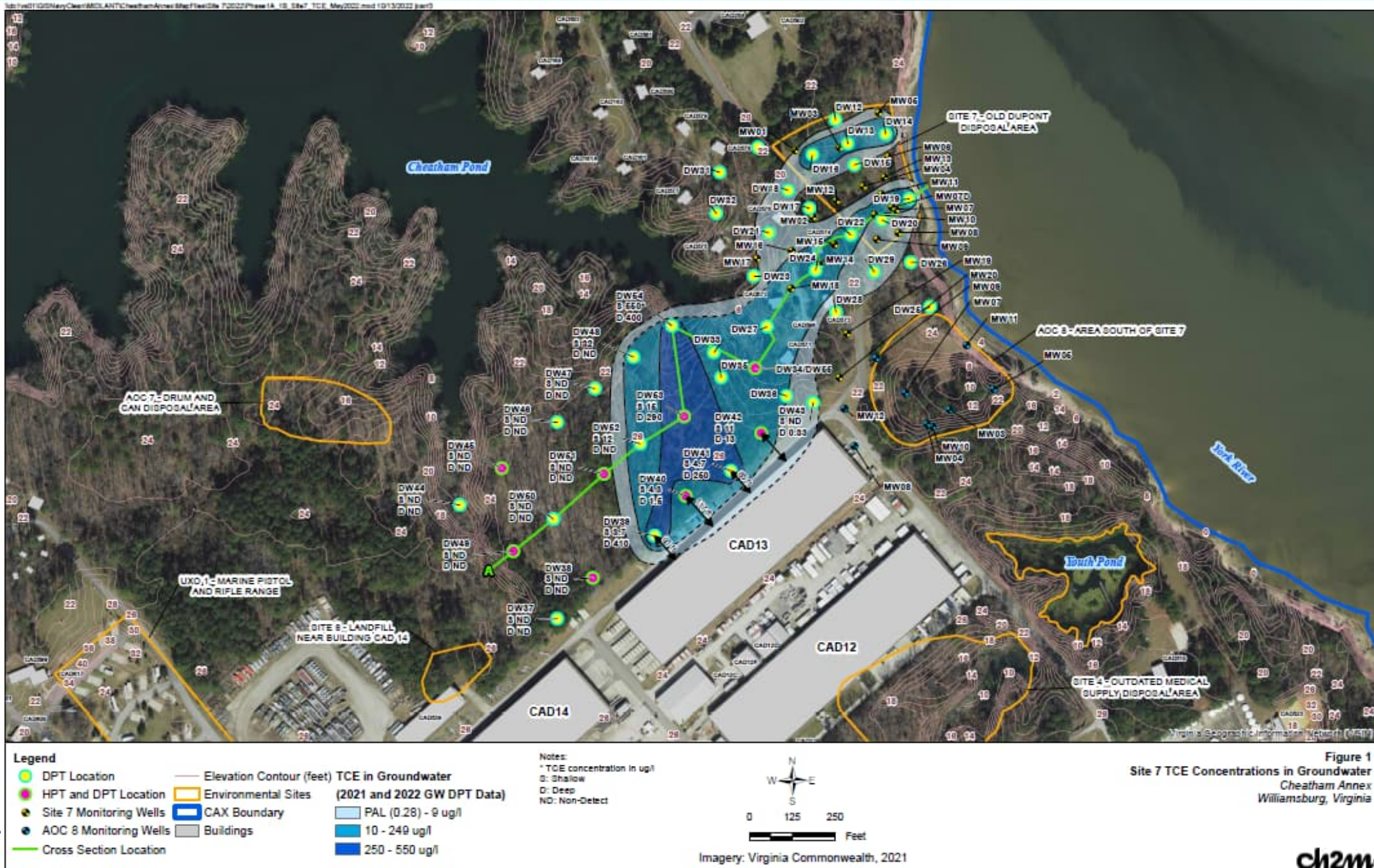
Groundwater sample collection with DPT rig

Phase I Preliminary Results

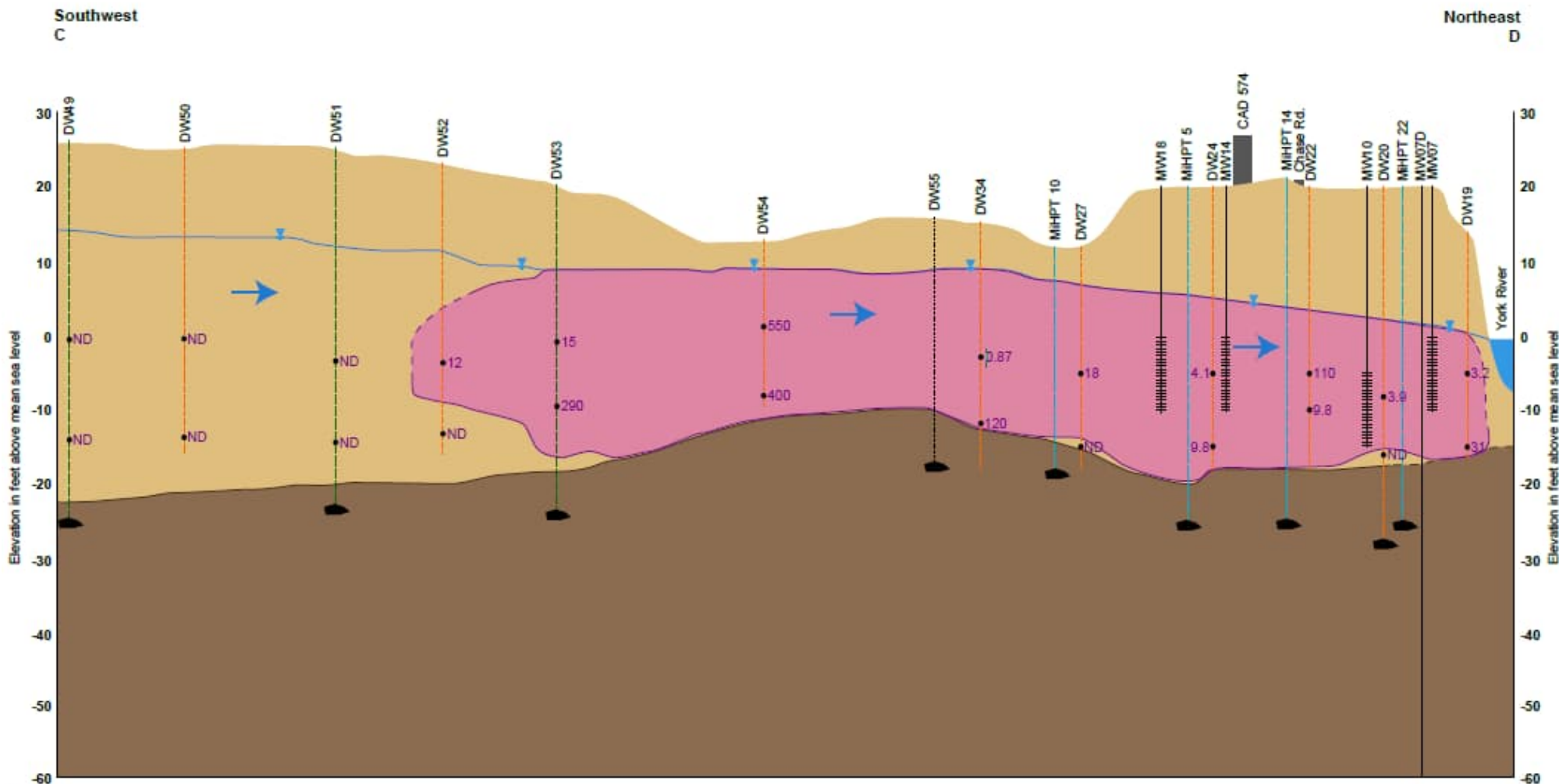


- **Highest TCE concentration was found at DW54 (550 ug/l) (see Site 7 Groundwater Contaminant Distribution Figure)**
- **TCE degradation products also found in groundwater (notably cis-1,2-DCE)**
- **Groundwater contamination present mostly in the deeper portion of the aquifer**
- **Presence of a high conductivity zone from the ground surface to approximately 45 feet below ground surface, which transitions into a low conductivity zone beyond 45 feet deep (see Site 7 Cross Section)**

Site 7 Groundwater Contaminant Distribution

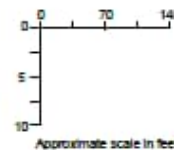


Site 7 Cross Section



- LEGEND**
- Approximate Extent of Dissolved TCE
 - High Hydraulic Conductivity Zone
 - Low Hydraulic Conductivity Zone
 - Refusal
 - General Groundwater Flow Direction
 - Groundwater Table
 - HFT Sample Location
 - DPT Sample Location
 - HFT and DPT Sample Location
 - MIHFT Sample Location
 - Monitoring Well
 - Approximate Elevation of Groundwater Sample

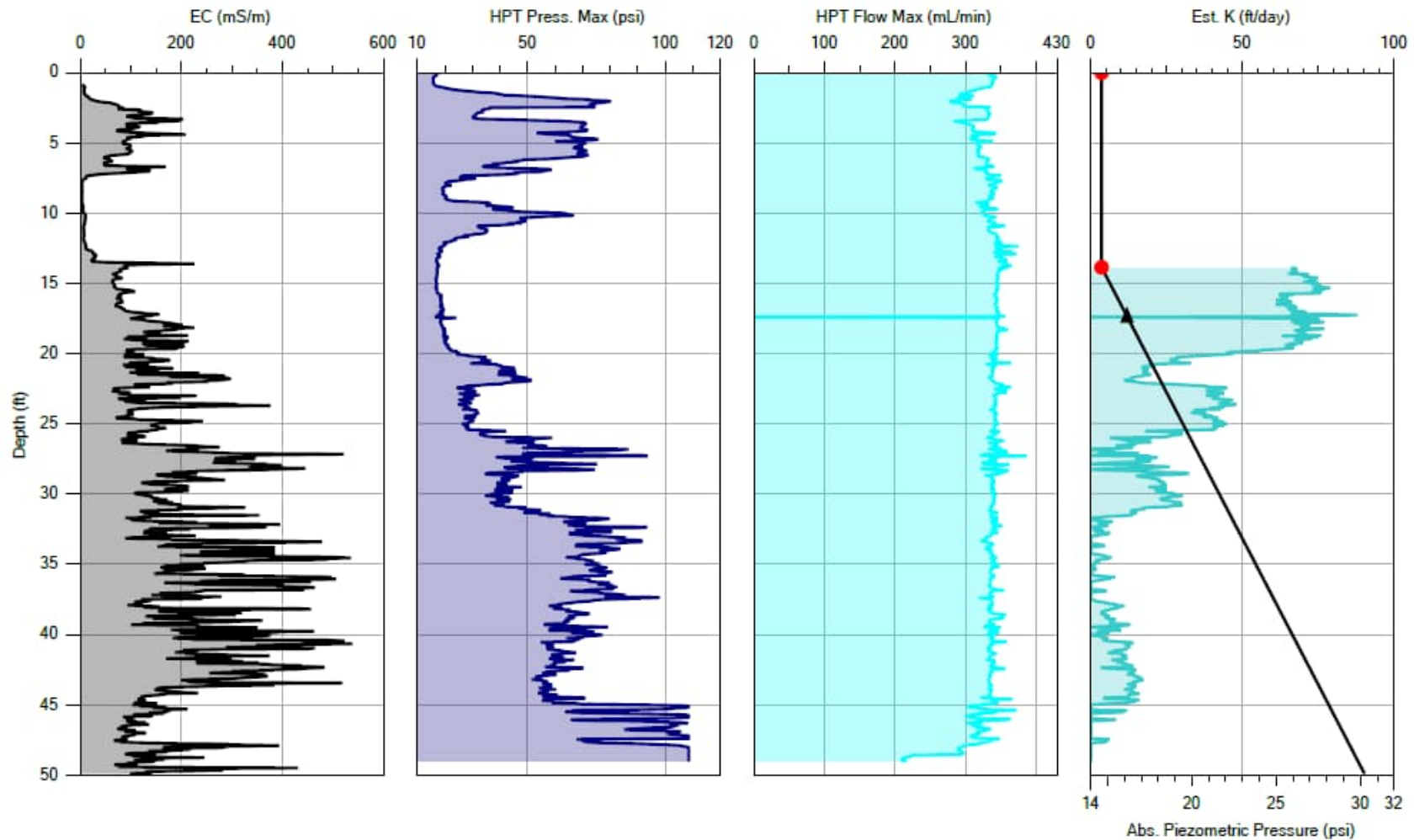
- Notes:**
1. Dashed where inferred.
 2. All concentrations in $\mu\text{g/l}$
 3. ND: Non Detect
 4. NR: No Results



Site 7 TCE Concentrations Cross Section Cheatham Annex Williamsburg, Virginia



HPT Log Example



Company:	Eagle Synergistic	Operator:	HJ	File:	CAS07-DW51.HPT
Project ID:	21.143	Client:	Jacobs	Date:	5/4/2022
				Location:	Cheatham Annex

Next steps



- **Install, gauge and sample permanent groundwater monitoring wells (2023)**
- **Prepare a risk assessment based on monitoring well groundwater data to determine if contaminant concentrations in groundwater represent a potential risk to human health (2024)**
- **Prepare a report to document findings (2024)**

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- **CAX AOC 8 Field Work Update**
 - **Stephanie Sawyer/CH2M**
- Co-chair Closing Remarks
- Final Comments/Closing Remarks



Cheatham Annex
AOC 8 – Area South of Site 7
Field Work Update

Agenda





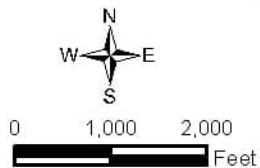
- **Background**
- **Environmental Investigation Objectives**
- **Environmental Investigation Activities and Results**
- **Next steps**
- **Questions and Comments**





Legend

-  Site Boundary
-  Cheatham Annex Boundary



Imagery Source: Commonwealth of Virginia, 2017

Figure 1
Base Location Map
AOC 8 Remedial Investigation Addendum SAP
Cheatham Annex
Williamsburg, Virginia



Background



- **CAX consists of 2,300 acres of land on the York-James Peninsula; it was the location of the former Penniman Shell Loading Plant, a large powder and shell loading facility operated by DuPont de Nemours & Co. during World War I.**
- **AOC 8 is a 1.5-acre site that was used as a borrow pit and then as a debris disposal once the borrow pit was no longer in use.**
- **Environmental investigations at the Site which started in 1999 found that soil and debris should be removed and that groundwater may be impacted**
- **17.56 tons of debris (concrete, asphalt, wood/lumber, metal debris, bricks, and other inert debris) and 22,873 tons of nonhazardous soil were removed between 2017 and 2019**
- **Site was regraded and replanted with native species**

Site Pictures



AOC 8 facing northeast



AOC 8 shoreline facing north



AOC 8 facing west

Environmental Investigation Objectives



- **After the debris and contaminated soil were removed, the NAVY, USEPA and VDEQ determined that an additional groundwater investigation was needed to evaluate the potential presence of lingering groundwater contamination**
- **The investigation objectives were to:**
 - **Determine the horizontal and vertical extents of residual tetrachloroethylene, a volatile organic compound (VOC) in groundwater**
 - **Determine if this constituent was present at concentrations posing potential risks to human health and ecological receptors.**
 - **Collect geochemical and geophysical data* to support the evaluation of remedial alternatives, if needed.**

*grainsize, total oxygen demand, alkalinity, chloride, nitrate, nitrite, sulfate, sulfide, methane, ethane, ethene

2021 Environmental Investigation Activities and Results (Phase I)



- Phase I activities and results were presented during the November 2021 RAB Meeting
- Collected Hydraulic Profiling Tool (HPT) data and Direct Push Technology (DPT) groundwater samples to understand site hydrogeology and groundwater contamination
- Groundwater was delineated, and hydrogeology characteristics were defined



Hydrogeological data collection with HPT tooling



Groundwater sample collection with DPT rig

2022 Environmental Investigation Activities (Phase 2)



- Installed and developed 6 permanent groundwater monitoring wells
- Collected groundwater samples and analyzed for VOCs
- Collected water quality, geochemical, and geophysical parameters
- Measured water level in existing and new monitoring wells
- Described and logged subsurface soil lithology during monitoring well installation



Installation of groundwater monitoring well

2022 Environmental Investigation Results



Only tetrachloroethene exceeded the project action limits in one groundwater monitoring well, all other analytes were not detected.

Sample ID	PAL	CAA08-GW03-0622	CAA08-GW04-0622	CAA08-GW05-0622	CAA08-GW07-0622	CAA08-GW08-0622	CAA08-GW09-0622	CAA08-GW10-0622	CAA08-GW10P-0622	CAA08-GW11-0622	CAA08-GW12-0622
1,1-Dichloroethene	280	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	36	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Tetrachloroethene	11	0.91 J	0.8 J	2 U	20	4.3	2 U	2 J	1.7 J	2 U	2 U
trans-1,2-Dichloroethene	68	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trichloroethene	0.49	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Vinyl chloride	0.019	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

Notes:

Data is unvalidated

All data in micrograms per liter

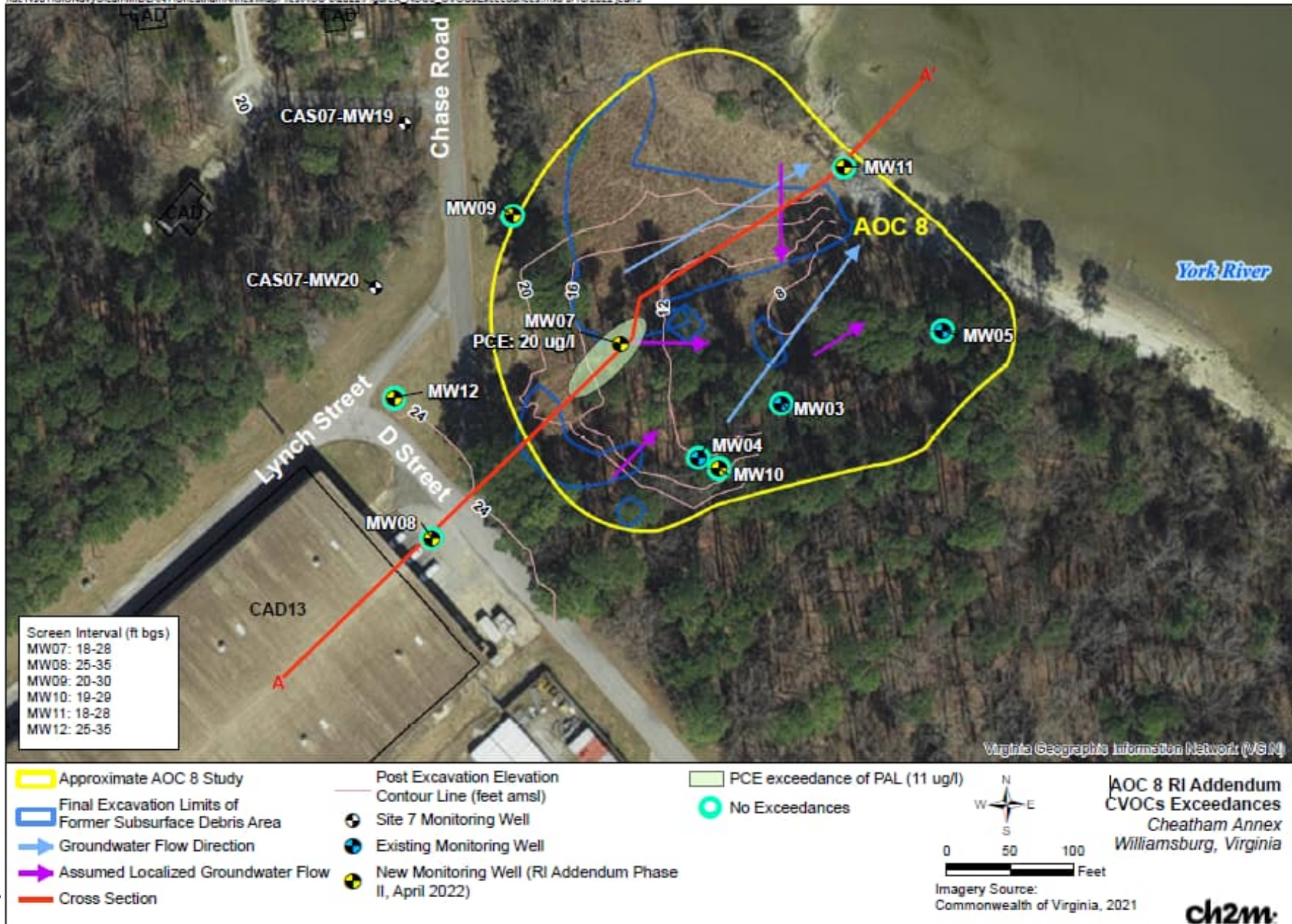
J - Analyte present. Value may or may not be accurate or precise

U - The material was analyzed for, but not detected

Groundwater Sampling Results



\\dc1vs21\GIS\Navy\Clean\MIDLANT\Cheatham\Annex\MapFiles\AOC 8\2022\FigureK_AOC8_CVOCsExceedances.mxd 8/10/2022 jcar3



Next Steps



- **Prepare a risk assessment to determine if residual tetrachloroethene concentrations in groundwater represent a potential risk to human health (currently under preparation)**
- **Prepare a Remedial Investigation Addendum Report to document the 2021 and 2022 field activities and risk assessment results (2023)**

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- **Co-chair Closing Remarks**
 - **Captain Horgan/NWS Yorktown CAX Commanding Officer**
 - **Steven Oyer/RAB Community Co-Chair**
- Final Comments/Closing Remarks

Meeting Agenda



- Logistics And Remarks From The Moderator
- Welcome/Introductions
- Co-chair Opening Remarks
- CAX Environmental Restoration Program Update
- CAX Site 7 Field Work Update
- CAX AOC 8 Field Work Update
- Co-chair Closing Remarks
- **Final Comments/Closing Remarks**
 - **Bryan Peed/CAX Remedial Project Manager for the Navy**

Questions or Comments?



For additional Information regarding the Naval Weapons Station Yorktown ERP at CAX, please contact:

Bryan Peed - Navy's ERP manager for CAX
(757) 341-0480 or bryan.peed@navy.mil

Jeff Kissler – Environmental Director for Naval Weapons Station Yorktown
(757) 887-4086 or john.j.kissler1@navy.mil

Naval Weapons Station Yorktown Public Affairs Officer
(757) 887-4939

Visit CAX's ERP Public Web Page at:
<https://go.usa.gov/xSvFA>