

# US Army Corp of Engineers Public Meeting

Former Allegheny Arsenal Burial Pits Munitions  
Response Site - Phase 1 Remedial  
Investigation

**April 2, 2025**

**6:00 – 8:00 pm**

**Carnegie Library of Pittsburgh  
Hill District**



US Army Corps  
of Engineers ®



Pennsylvania  
Department of  
Environmental Protection

# Meeting Agenda

- 1 Welcome and Introductions**
- 2 Project Purpose and Overview**
- 3 Historical Background & Site Review**
- 4 Data Collection Activities and Schedule**
- 5 Open Forum, Q&A**
- 6 Closing Remarks**



# Meet the Project Team

## USACE (Baltimore District)

- Julie Kaiser, Project Manager
- David King, Technical Manager/Geophysicist

## Pennsylvania Department of Environmental Protection (PADEP)

- Gretchen Montebello
- Mike Tomei

## AECOM

- Brandon Puttroff, Project Manager
- Molly Tuttle, Community Outreach Specialist
- Scott Bawcom, Unexploded Ordnance Safety Officer



# Acronyms and Definitions

| Acronyms | Definitions                                                                    |
|----------|--------------------------------------------------------------------------------|
| AGC      | Advanced Geophysical Classification                                            |
| CERCLA   | Comprehensive Environmental Response Compensation and Liability Act            |
| DoD      | Department of Defense                                                          |
| EM       | Electromagnetics                                                               |
| FUDS     | Formerly Used Defense Site                                                     |
| GPR      | Ground Penetrating Radar                                                       |
| MEC      | Munitions and Explosives of Concern (e.g., bombs, cannonballs, grenades, etc.) |
| MMRP     | Military Munitions Response Program                                            |
| MR       | Munitions Response                                                             |
| USACE    | United States Army Corps of Engineers                                          |



# Historical Photo – Cannonball Stacks





# Project Overview (Why)

**What are we doing and why?** - The U.S. Army Corps of Engineers, Baltimore District is investigating the former Allegheny Arsenal because of the safety hazards related to cannonballs found in the past that may still be present.

**Goal of Phase I study:** To determine if additional cannonballs or other military munitions possibly remain underground, either as single items or within burial pits.



# Project Overview



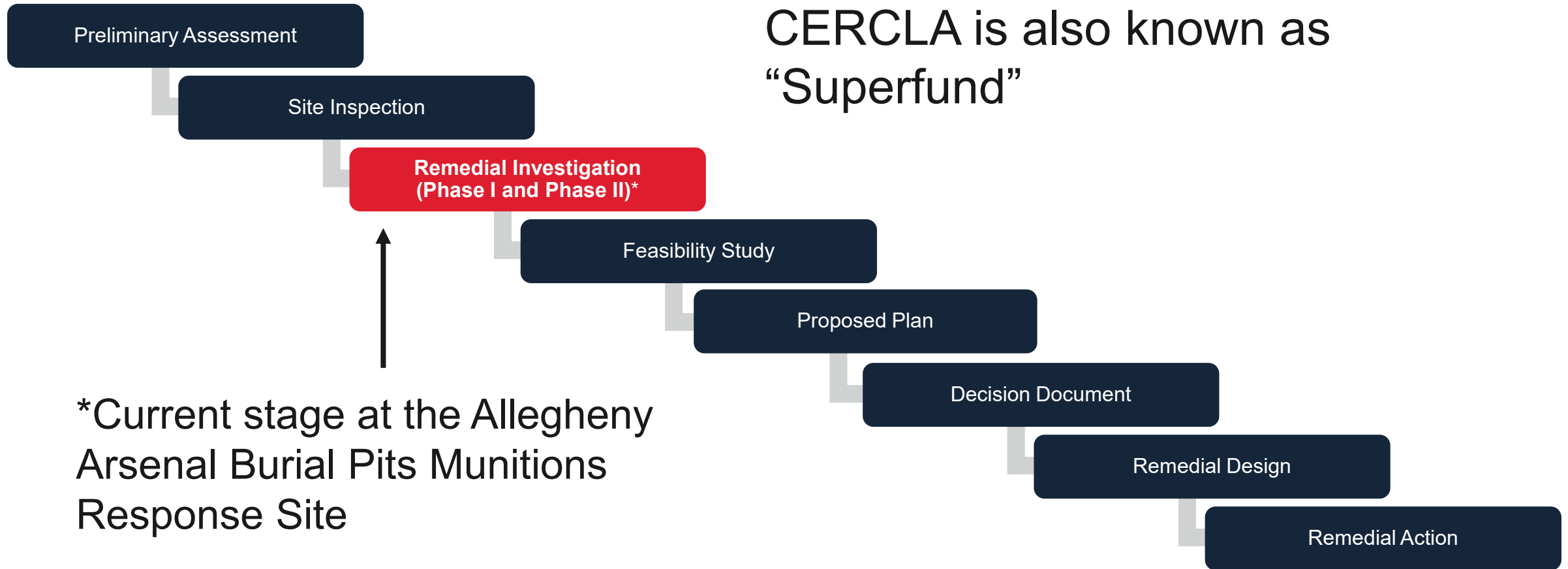
The Phase I Remedial Investigation (RI) includes:

- Historical Data / Records Review
- Cut and Fill Analysis
- Conceptual Site Model Update
- Advanced Geophysical Classification Survey
- EM-31 Survey
- Ground Penetrating Radar Survey

**There will be no digging activities during the Phase I RI. Suspect anomalies, if found, will be dug up by hand during a Phase II RI, if conducted.**



# Comprehensive Environmental Response, Compensation, and Liability Action (CERCLA) Process



# Military Munitions Response Program (MMRP)

- In 2001, the U.S. Congress established the MMRP under the Defense Environmental Restoration Program to address explosive safety hazards associated with munitions and explosives of concern (MEC) and munitions constituents (MC).
- Investigation and cleanup is done using the same procedures outlined in CERCLA and the National Contingency Plan
- Additional DoD Policy and safety regulations related to explosive hazards.
- If unacceptable risk is identified at the site, cleanup (remedial action) will occur.



# Formerly Used Defense Sites (FUDs)

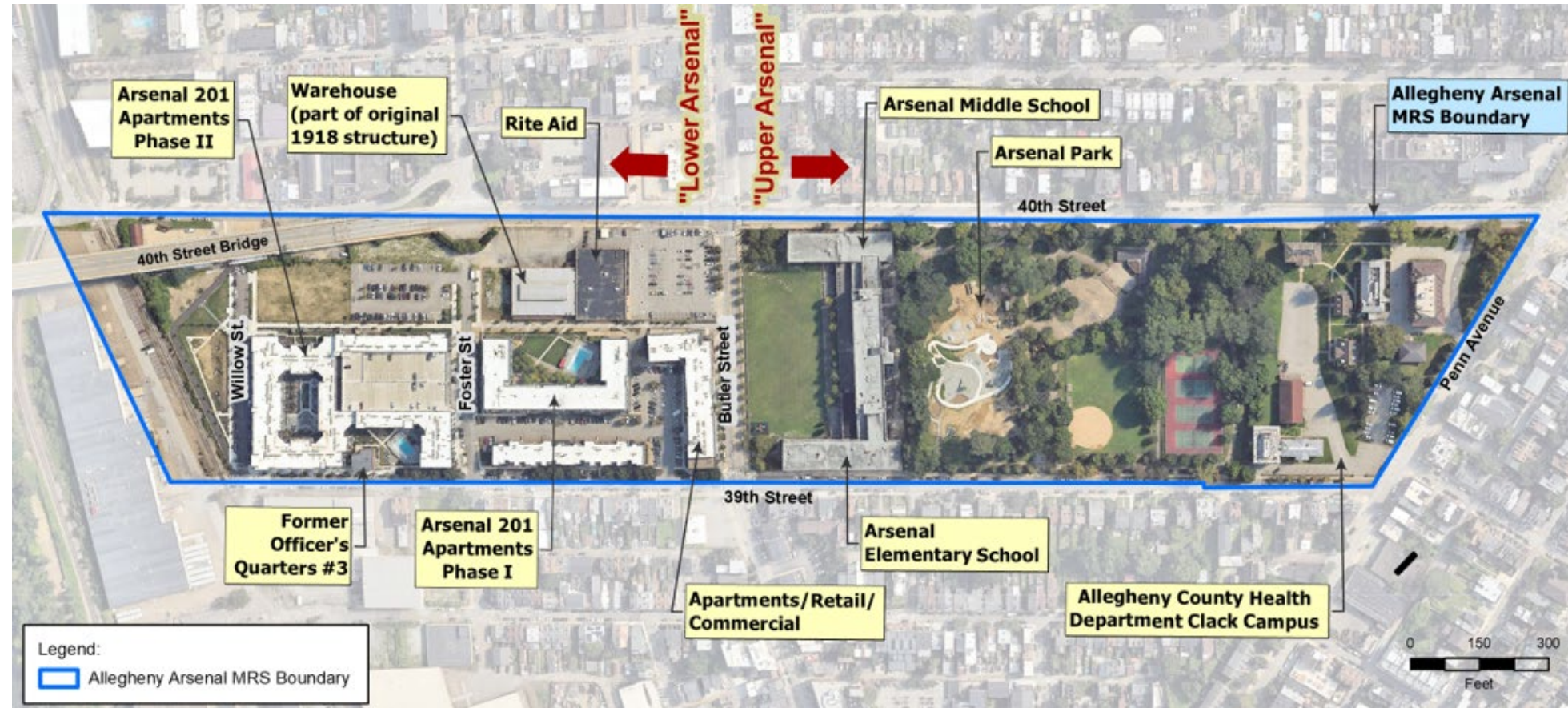
- Addresses environmental contamination at former military properties that were transferred to other property owners prior to October 1986.
- The Army is the DoD executive agent for FUDS, and USACE is responsible for carrying out the program.
- Environmental investigations and cleanup at FUDS properties are conducted in accordance with CERCLA.



**EOD and Bomb Squad digging cannonballs**

# Site Map

- Located on east side of the Allegheny River
- Lawrenceville neighborhood between 39<sup>th</sup> and 40<sup>th</sup>, Penn Ave and Butler Street
- Total acreage: 37.9
- North of Butler is “Lower Arsenal,” generally flat
- South of Butler is “Upper Arsenal,” slopes up to Penn Ave.



# Allegheny Arsenal Timeline

- 1814:** **Allegheny Arsenal founded.** Arsenal manufactured gun carriages, munitions (i.e., firearms cartridges and filled cannonballs), horse and infantry equipment, and leather accoutrements.
- 1867 (17 Sept):** A series of 3 explosions occurred in the arsenal's laboratory in the Upper Arsenal and killed 78 workers.
- 1868:** Manufacturing of cartridges and filling of cannonballs ceased. Allegheny used for the storage of surplus supplies including cannonballs.
- 1902 (01 May):** **Allegheny Arsenal closed.**
- 1904 (01 June):** Five acres transferred to Treasury Department for a Marine Hospital.
- 1906 (24 Feb):** Renamed the Pittsburgh Storage and Supply Depot.
- 1907 (6 Feb):** A total of 13.5 acres were transferred to City of Pittsburgh for the Arsenal Park.
- 1908 to 1909:** 11.5 acres in Lower Arsenal used by US Geological Survey – Bureau of Mines for investigations relative to the prevention of mine disasters.

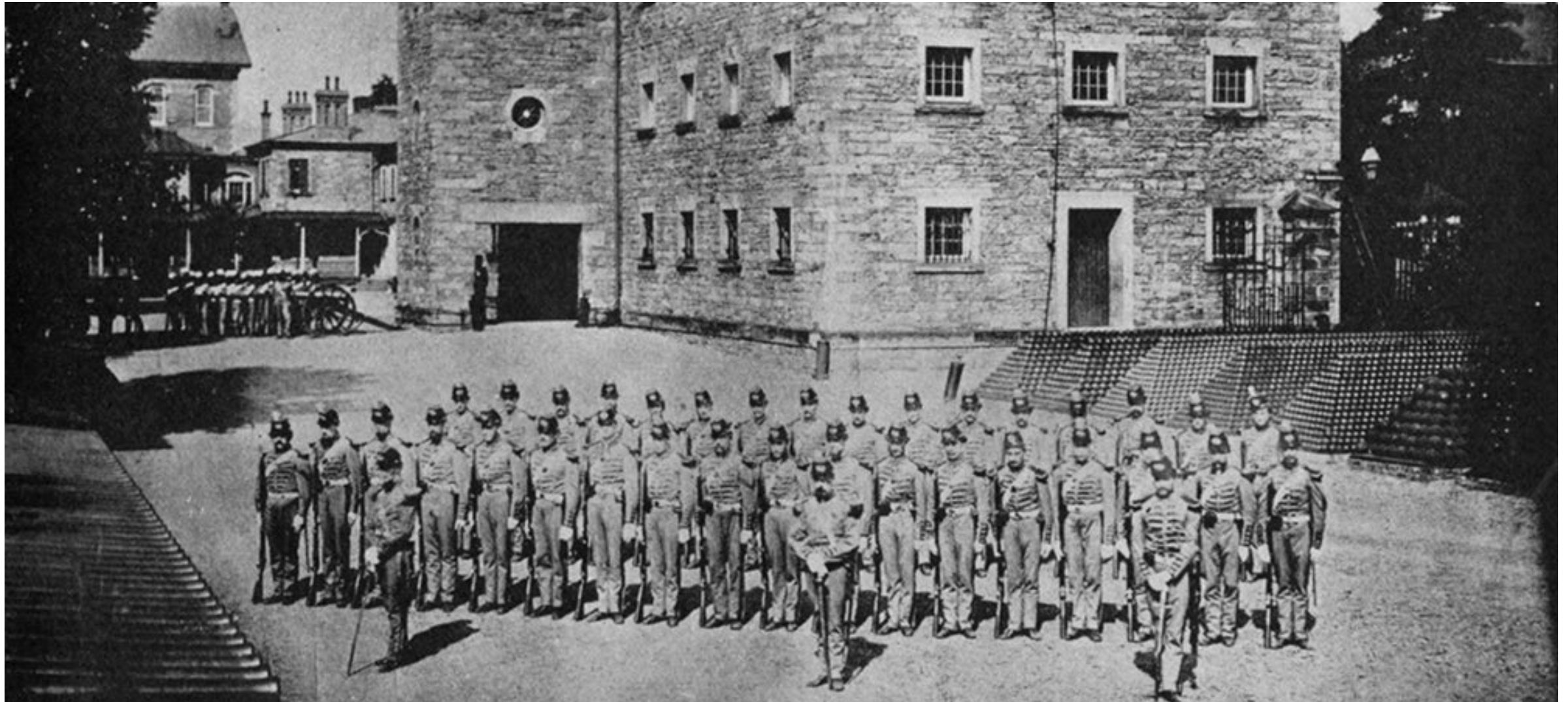


# Allegheny Arsenal Timeline

- 1913:** The Pittsburgh Storage and Supply Depot only occupied 19.75 acres in the Lower Arsenal.
- 1868 to 1917:** **Storage of cannonballs stacked outside.**
- 1917 to 1918:** In the Lower Arsenal, several structures were demolished, and **cannonballs** were buried in “trenches” according to The Allegheny Arsenal Handbook. Two new warehouses were constructed.
- 1918 (post WWI):** The Pittsburgh Storage and Supply Depot was used as the storage depot for quartermaster, engineering, and chemical warfare supplies.
- 1926 (10 Nov):** The War Department sold the Pittsburgh Storage and Supply Depot (Lower Arsenal) at a public auction to Mr. Howard Heinz.
- 1972:** **First known cannonball pit discovered in Lower Arsenal.**
- 2017:** The 1918 warehouses (except for a portion of one building) were demolished. Arsenal 201 Apartments Phase I construction began.  
**Two cannonball burial pits discovered in Lower Arsenal within construction footprint.**
- 2020:** Arsenal 201 Apartments Phase II construction began.  
**Two additional cannonball burial pits discovered within construction footprint.**

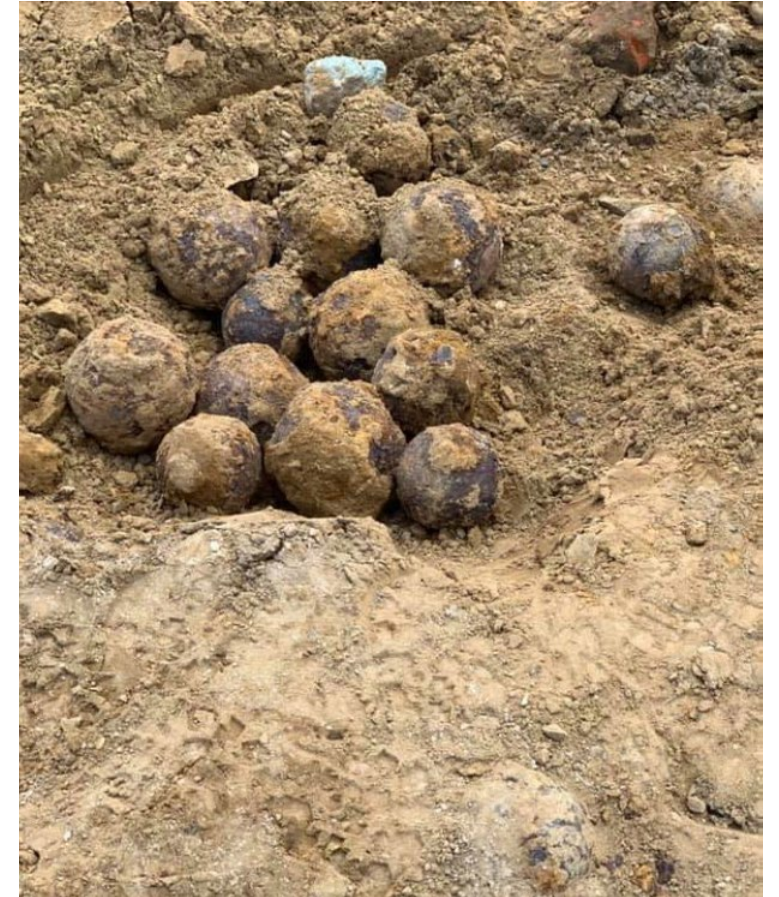


# Historical Photo – More Cannonball Stacks



# Current Land Use

- Heavily developed
- Residential (i.e., apartments)
- Commercial
- Railroad
- Recreational (Arsenal Park)
- School (Arsenal Grade and Middle Schools)
- Allegheny County Health Department (Clack Campus – formerly Marine Hospital)



Cannonballs from a 2020 pit

# Phase 1 RI Activities

- The investigation includes:
  - ✓ **Historical Data / Records Review - completed**
  - ✓ **Cut and Fill Analysis - completed**
  - ✓ **Conceptual Site Model Update – completed**, to be updated again upon completion of field work
  - Geophysical Surveys (Advanced Geophysical Classification, EM-31, and Ground Penetrating Radar) – Spring 2025
  - Identify anomalies potentially representing cannonballs or cannonball burial pits – Late 2025

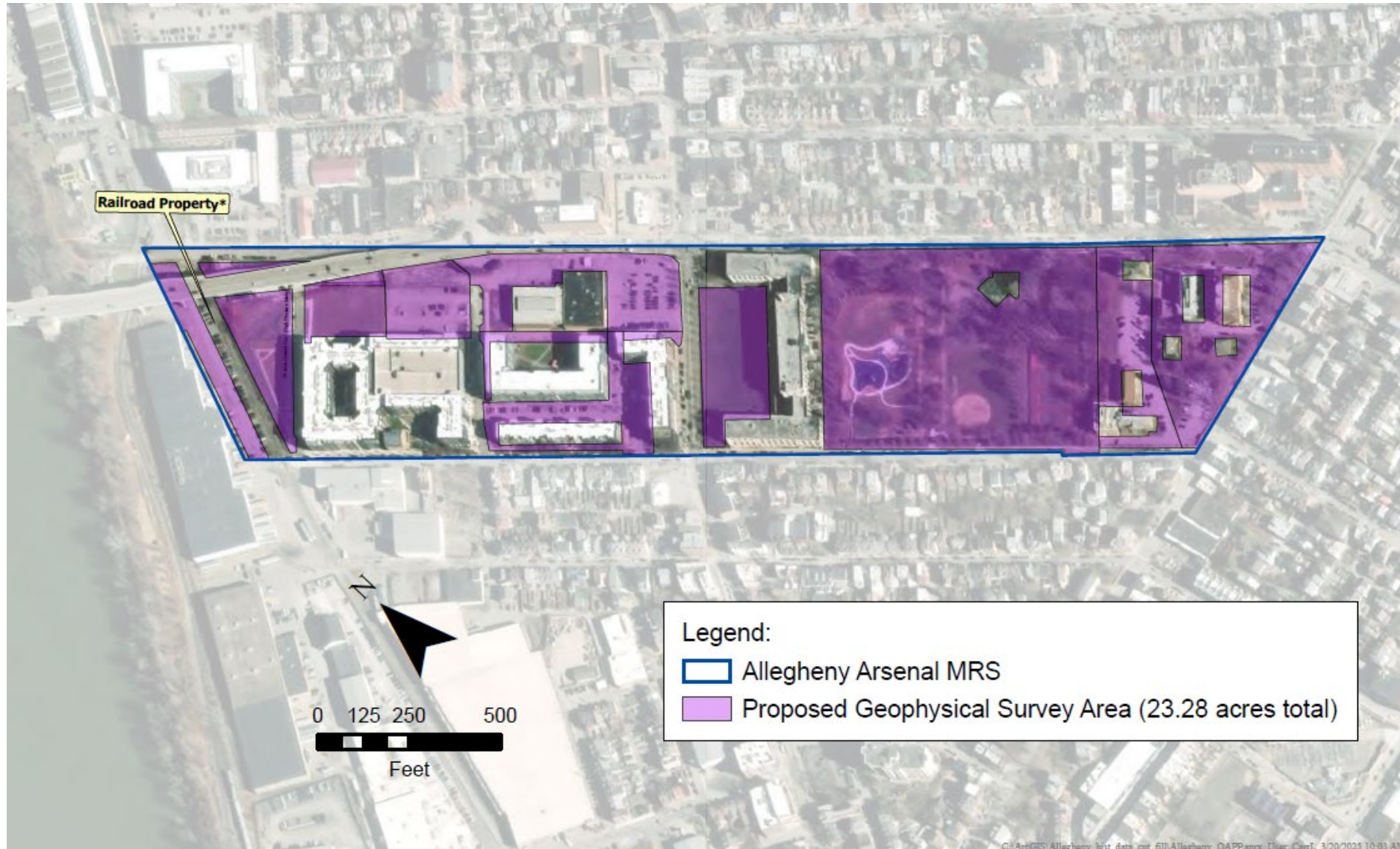


# Phase 1 RI Activities (Cont.)

- *There will be no intrusive activities (i.e., digging) during the Phase I RI. Intrusive investigation to identify items will be completed during a Phase II RI, if conducted.*
- Why – we need to complete the following:
  - Determine where and how many metallic signatures
  - Logistics - develop a plan for each location
  - Schedule – collaboration with stakeholders for the best time
  - Safety, proper exclusion zones, and engineering controls
  - Appropriate traffic control
  - Coordination



# Planned Geophysical Survey Areas





# Data Collection Activities & Schedule

## Geophysical Surveys

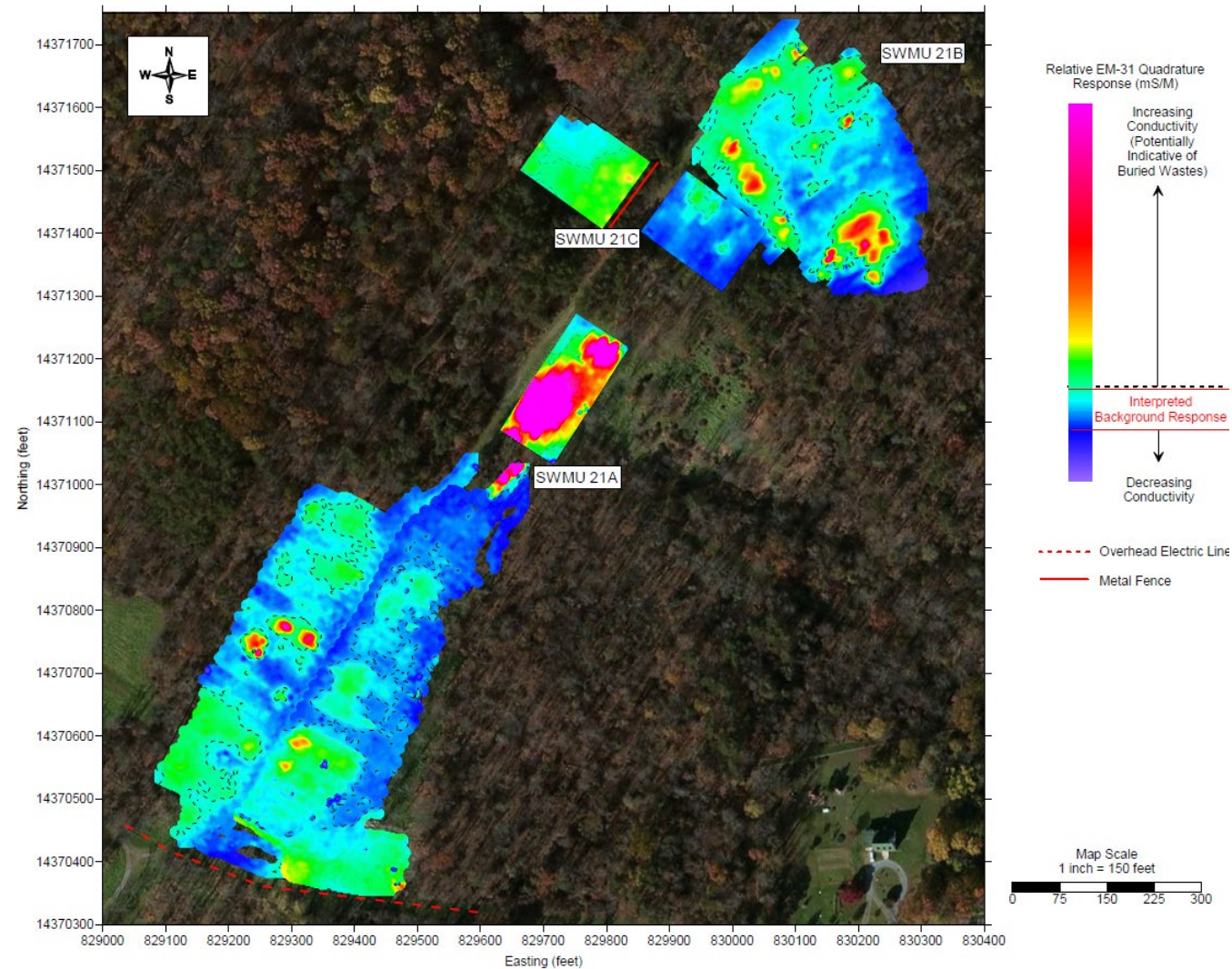
- Digital Geophysical Mapping with Advanced Geophysical Classification
- EM-31 Survey
- Ground Penetrating Radar

## Proposed Schedule

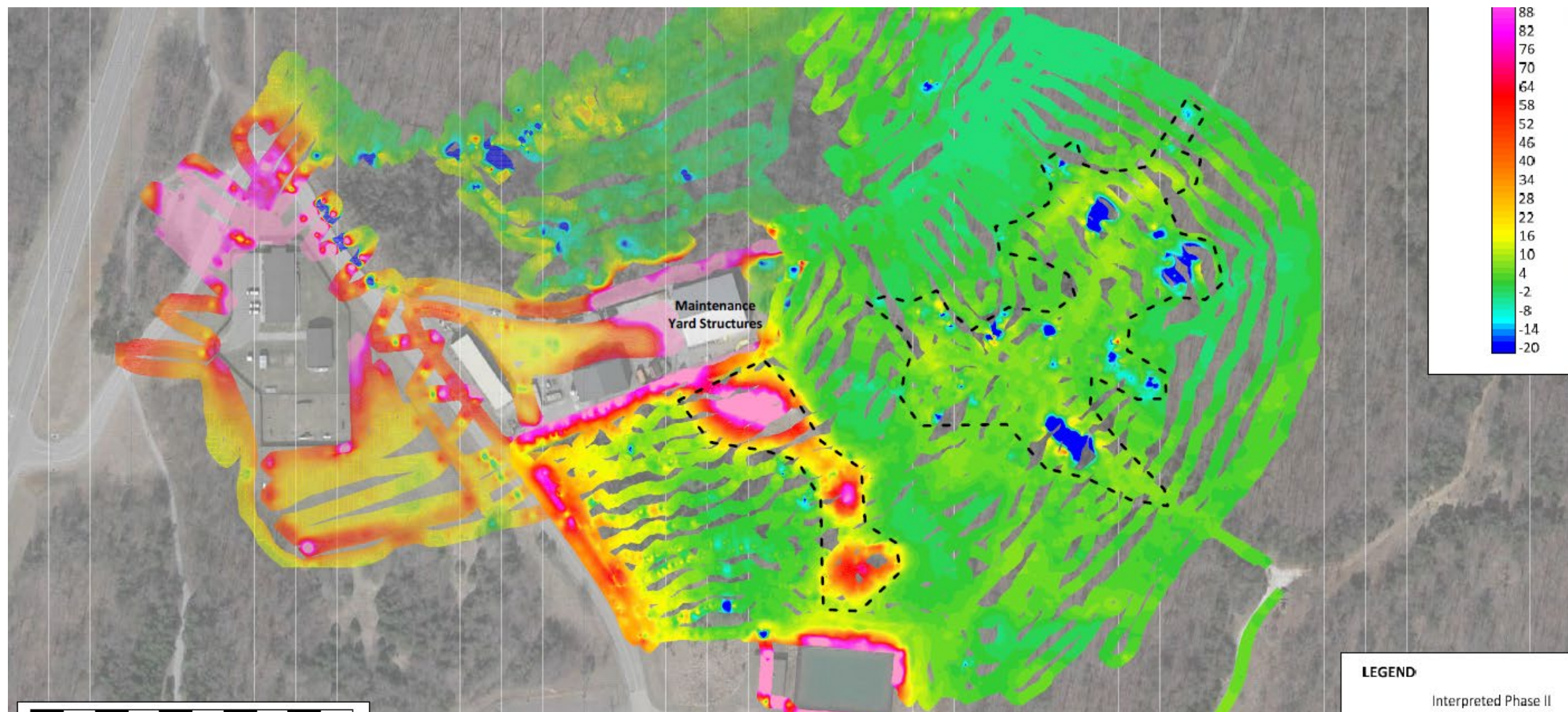
- Spring 2025 – Conduct field work (mid to late April)
- Late 2025 - Review data
- Early 2026 - Finalize report



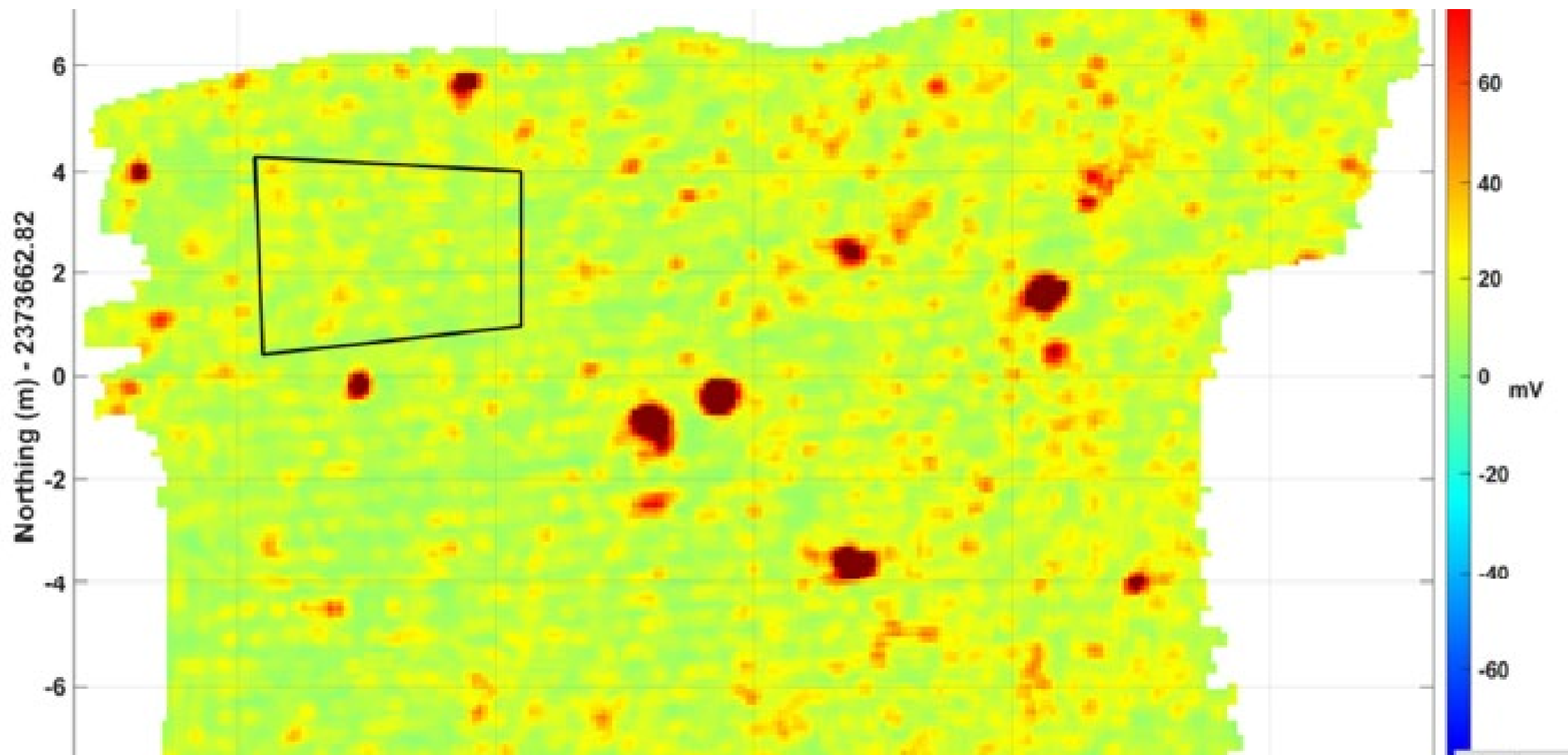
# Geophysical Data – Burial Pit Example 1



# Geophysical Data – Burial Pit Example 2



# Geophysical Data – AGC Example



# Are Cannonballs Dangerous?

## Types of Cannonballs

- Solid Shot
- Exploding Shell

## Components of Exploding Shells

- Cannonball itself
- Fill – Black Powder
- Fuze



Items from the 1972 burial pit on display at the Heinz History Center

# Public Safety and Community Impacts During Phase I

- Safety (am I safe?)

- Yes – No digging or interaction with munitions (Crews will place inert “seed” items at depth in various locations simply to test equipment.)
- Geophysical survey equipment poses no safety concerns.
- *There is an explosives safety concern for construction and utility workers that may dig and encounter cannonballs. If that happens, they should recognize the hazard, secure the area, retreat to a safe distance, and call the police.*

- Community Impacts

- Parking – portions of parking lots will be closed off during normal working hours until surveys are completed
- No impacts to actual traffic

- What to expect

- 4 Geophysicists with 3 different sensors – wearing high visibility clothing



# Community Involvement (Cont.)



Attend Public Meetings



Review the Administrative Records which contains publicly available project and site documentation located at:

Carnegie Library of Pittsburgh –Lawrenceville  
279 Fisk Street  
Pittsburgh, PA 15201



Reach out the USACE Public Affairs office at  
[NAP-PAO@usace.army.mil](mailto:NAP-PAO@usace.army.mil)



# Community Involvement



Fact Sheet is located at the following address:

<https://www.nab.usace.army.mil/missions/environmental/formerly-used-defense-sites/former-allegheny-arsenal-fuds/>



Please feel free to send us your thoughts at the following:



# Remember the 3 Rs



**Recognize:** Recognize when you may have encountered a munition and the potential danger.

**Retreat:** Do not touch, move or disturb it, but carefully leave the area the way you entered.

**Report:** Call 911! Immediately notify local law enforcement of what you saw and where you saw it.



# Open Forum

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# Closing

Public Affairs Office: [NAB-PAO@usace.army.mil](mailto:NAB-PAO@usace.army.mil)



**US Army Corps  
of Engineers** ®



Pennsylvania  
**Department of  
Environmental Protection**

# Background Slides

Data Collection Techniques

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# Proposed General Field Activities

- Geophysical Investigation
  - Systematic testing of the instruments prior to and during the investigations
  - Electromagnetic (EM) survey using APEX Advanced Geophysical Classification (AGC) instrument – goal is to detect burial pits and single cannonballs, if present
  - EM survey using Geonics EM31MK II (EM31) – goal is to detect potential burial pits at greater depth than is possible with APEX
  - Ground Penetrating Radar (GPR) Survey – goal is to more precisely define the horizontal and vertical boundaries of burial pits



# Advanced Geophysical Classification

- AGC offers the advantage of being able to tell the difference between metal objects in the subsurface that look like cannonballs and those that don't
- AGC Method
  - Requires firms performing AGC to demonstrate expertise in the method and receive government accreditation every two years
  - Firms performing AGC operate similar to a laboratory with regular system checks and performance criteria that must be met throughout the project.
- AGC Implementation
  - Test items will be buried in the field area to demonstrate that the method is working
  - Location data will be collected using either GPS or laser range finding
  - EM data will be compared to a library of signatures from known cannonballs to look for matches
  - Final reporting will include an assessment of the effectiveness of the method and a list of potential locations for future investigation



# EM31 Mapping

- The objective of the EM31 survey is to evaluate the potential for burial pits and Trenches
- EM Survey Method
  - Uses larger, more widely-spaced EM sensors to investigate to a greater depth than the AGC sensor
  - Likely to detect burial pits
  - Unlikely to detect a single cannonball in the subsurface
- EM31 Implementation
  - Instrument will be tested prior to and during the survey to establish confidence in the data
  - Data will be collected using two instrument orientations to provide a more complete analysis of the subsurface conditions
  - Will collect and analyze two different sets of EM data simultaneously at each of the orientations
  - Location data will be collected using either GPS or laser range finding
  - Reporting will include maps showing the locations of any interpreted burial features



# Ground Penetrating Radar (GPR)

- GPR will be used to help identify the precise boundaries of any interpreted burial pits and trenches.
- GPR Implementation:
  - Prior to collecting field data, different antenna frequencies will be tested to determine the one that provides the best depth penetration at the site
  - GPR data will be collected in two directions to provide a more detailed picture of the subsurface
  - Results of the GPS survey will be presented as time, or depth, slices to illustrate how any interpreted burial features change with depth



# Administrative Records

The Administrative Record contains publicly available project and site documentation.

The Administrative Record will be available at the:

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Pittsburgh PA 15201

