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# Former Raritan Arsenal Remedial Investigation – Phase 2



***Presentation for Public Information Meeting – Centre Place at Edison – January 13, 2014***

*Formerly Used Defense Sites Program (FUDS)*

*Former Raritan Arsenal*

*Edison, New Jersey*

*Contract # W912DY-09-D-0060, Task Order 003*

# Update on the Munitions Remedial Investigation



This presentation provides information about Phase 2 of the work near Centre Place at Edison

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To  
Keeping  
The  
Public  
Informed**



# Focus of the Remedial Investigation (RI)



- Since 1989, numerous investigations and removal actions have been completed at the former Raritan Arsenal.
- This investigation focuses on 12 specific areas of the former Arsenal to:
  - Characterize *nature* (what is it) and *extent* (where is it) of munitions and explosives of concern (MEC), munitions constituents (MC), and other hazardous and toxic wastes that are specifically related to a known Department of Defense release.
  - Perform human health and ecological risk evaluations, as well as complete a MEC hazard assessment.
  - Collect sufficient data to define remedial alternatives in the Feasibility Study that will follow.



# A Phased Approach

## Phase 1

- Locate buried metallic objects that might be munitions

## Phase 2

- Dig up and identify metallic objects
  - *Are they unrelated objects (pipe, rebar, fence posts) or munitions?*

## Phase 3

- Sample soil for munitions compounds where munitions were found

November 2013

January 2014

June 2014



# Specific Areas of Focus

Area ID	Name of Area	Acreage
Area 1	Former Demolition Area	0.57
Areas 6, 6A, 6B	Former Burning Ground and Impoundment Area	130
Area 10	Former Wastewater Treatment and Magazine Area	140
Area 11	Former Dredged Material and Explosives Area	11
Area 12	Former Dredged Material and Explosive Detonation Area	82
Area 13	Submerged Dock Area	23
Area 16	Former Magazine Area	277
Area 18D	Trench of Shell Casings	31
Areas 9 and 19	Former Magazine Areas	294
DSA	Dredge Spoils Area	645





# Investigation Area near Centre Place at Edison

Area ID	Name of Area
Area 1	Former Demolition Area
Areas 6, 6A, 6B	Former Burning Ground and Impoundment Area
Area 10	Former Wastewater Treatment and Magazine Area
Area 11	Former Dredged Material and Explosives Area
Area 12	Former Dredged Material and Explosive Detonation Area
Area 13	Submerged Dock Area
Area 16	Former Magazine Area
<b>Area 18D</b>	<b>Area to be Investigated</b>
Areas 9 and 19	Former Magazine Areas
DSA	Dredge Spoils Area



# Investigation Area near Centre Place at Edison



*Property is owned/used by:*

- *Middlesex County/ Middlesex Community College*
- *General Services Administration (GSA)/U.S. Environmental Protection Agency (EPA)*





# History of Area 18D

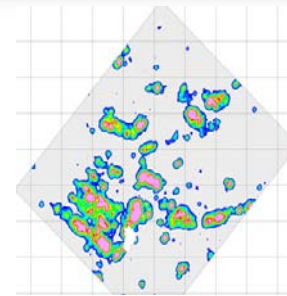
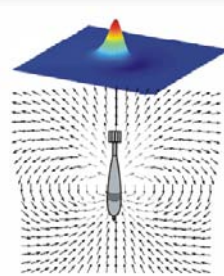
- Used heavily during operation of the former Arsenal
- Two removal actions during construction of Centre Place at Edison:
  - In October-November 2005, a total of 1,623 practice or inert bombs were removed from Area 18D. Several bombs were left in place, 25-30 feet below the ground.
  - In March 2006, 476 empty or inert bombs were removed from 20-25 feet below the ground.
- In 2012, the college found unknown anomalies under their parking lot, while conducting a utility survey using ground-penetrating radar. This is the area that will be intrusively investigated.

*World War I Practice Bomb (MK 1, 25-lbs):  
The casing was thin and it was suitable for  
practice only. They were stored empty. A  
spotting charge would have been added  
shortly before the bomb was used.*





# Phase 1 Work is Complete (Nov – Dec 2013)



## ■ Surface preparation

- Vegetation was cut and cleared to allow for surface clearance.
- Teams walked over the area and picked up metallic objects on the surface.

## ■ Digital Geophysical Mapping (DGM)

- Electromagnetic induction (EMI) instruments were used to electronically record and create a digital map the locations of subsurface “anomalies” (metallic objects).
- *Anomalies may be any metallic objects, not necessarily munitions, for example pipes and fence posts*

## ■ Data Analysis

- Skilled geophysicists and munitions experts evaluated the data collected in Phase 1
- Selected subsurface anomalies that might be munitions for further investigation



# Phase 1 Results – Area 18D (College Property)

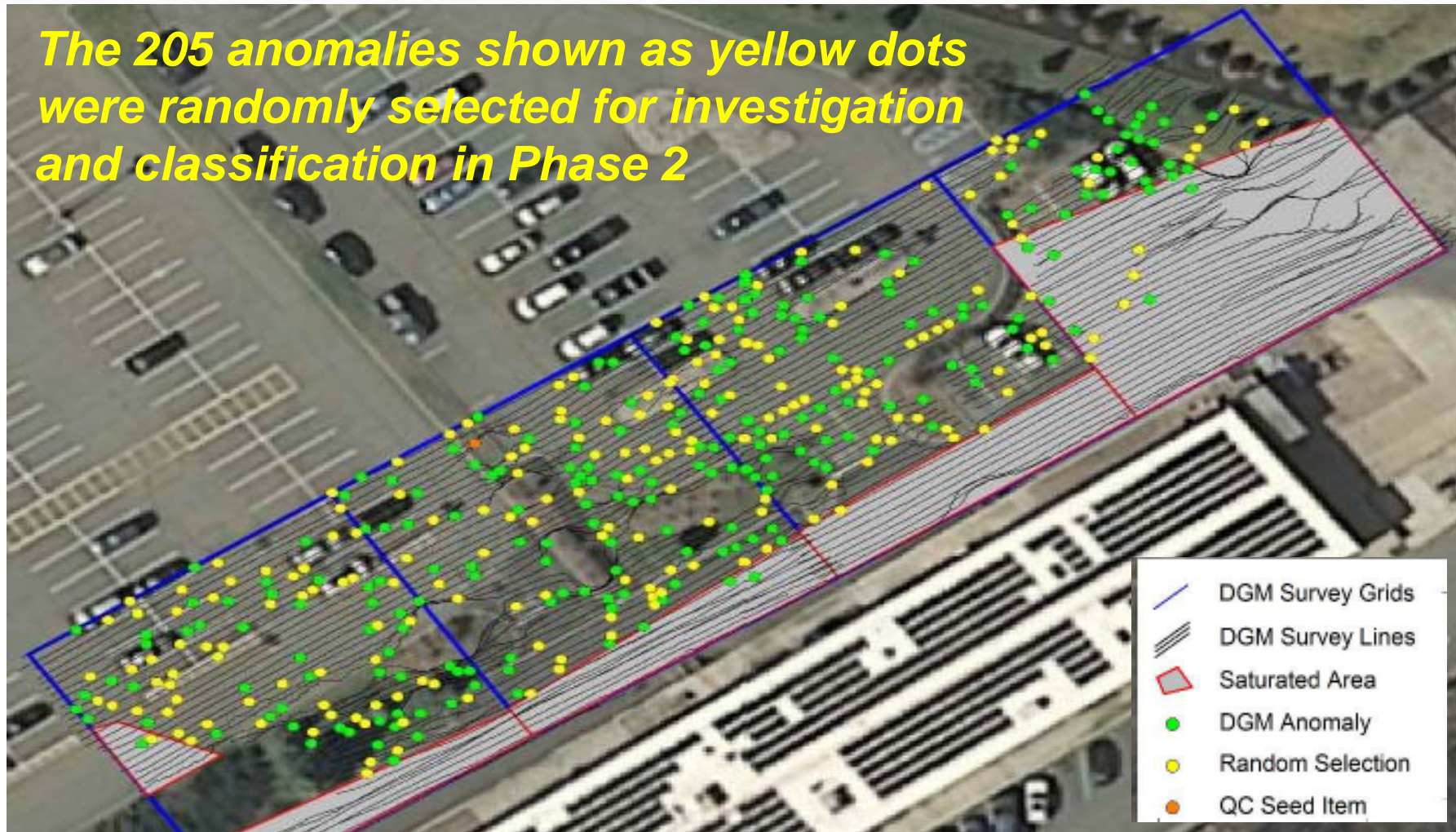
- The DGM survey in Area 18D was conducted on December 18th, 2013, along 1-meter wide transects.
- A total of 432 anomalies (unknown metallic objects) were detected beneath the parking lot.
- A total of 205 anomalies were randomly selected for further investigation and classification.





## Phase 2 – Area 18 D (College) Anomalies for Investigation.

*The 205 anomalies shown as yellow dots were randomly selected for investigation and classification in Phase 2*



# Phase 2 – Intrusive Investigation (Jan – March 2014)



- Phase 2 is scheduled to start in January 2014. Unexploded ordnance technicians will:
  - Re-locate the mapped anomalies using surveying equipment.
  - Carefully excavate anomalies using a combination of hand tools (*shovels, trowels*) and heavy equipment (*tracked excavators, backhoes*).
  - Identify the anomalies and determine whether they are munitions or unrelated metal objects such as pipes, fence posts, marine debris, etc.
  - Inspect munitions and determine whether they can be moved safely:
    - If an item is deemed safe to move, it will be moved to a remote location where it will be destroyed.
    - If it is not safe to move, engineering controls such as sandbags or soil will be used to conduct a safe controlled detonation.
    - Nearby residents may hear a muffled explosion.





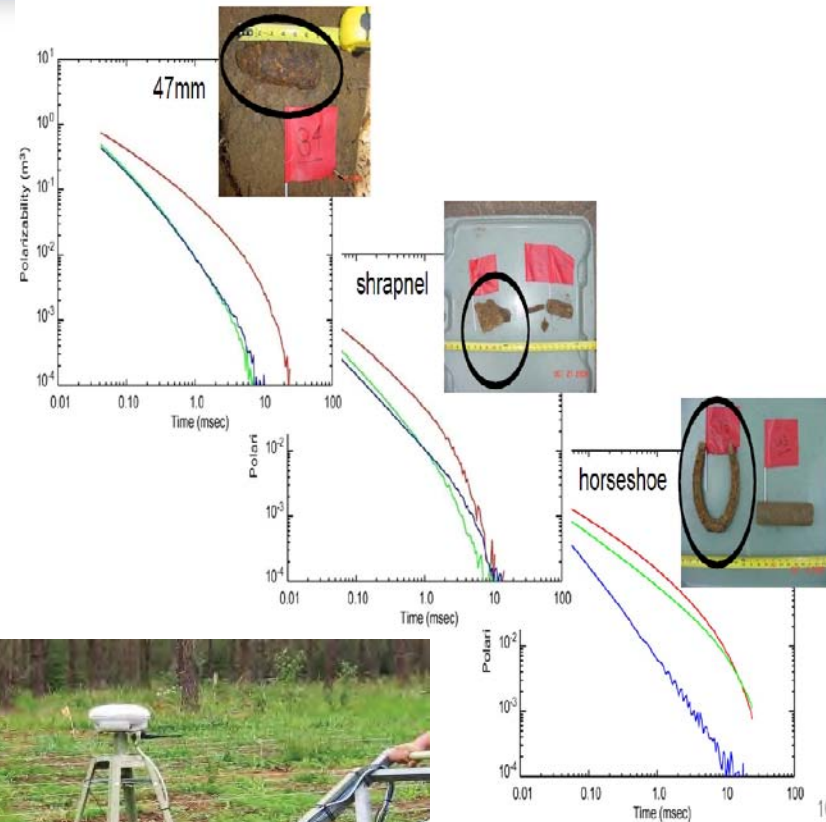
# Exclusion Zones

- For safety reasons, **exclusion zones** are established to keep “non-essential personnel” out of the areas where active digging and handling of munitions is being conducted.
  - Mostly in unpopulated areas
  - May also include temporary road closures, interruptions of river traffic, and any homes that are adjacent to digging areas
- To date, Phase 1 work has been non-intrusive and thus has not required any residential evacuation or road closures
- Every attempt will be made to minimize the duration of impacts on community members during Phase 2.



# TEMTADS: Minimizing disruption to the public

- An advanced detection system called TEMTADS will be used to help determine if these anomalies are munitions or unrelated metallic objects.
  - TEMTADS is not intrusive, so the exclusion zone is not active during that work.
- This will *minimize the number of anomalies* that need to be dug up for identification and thereby *minimize the disruption* to the public.





# Exclusion Zones- Area 18D

- The **HFD** or Hazardous Fragmentation Distance (purple line) is based on the type of munitions expected at a site: **287 feet for Area 18D.**
- This represents a **maximum exclusion zone** calculated from the boundary of **Area 18D.**
- During the investigation, active exclusion zones will be established around the specific anomalies being investigated at a given time.
- Thus, the active exclusion zone on any given day may include only a portion of the area shown.



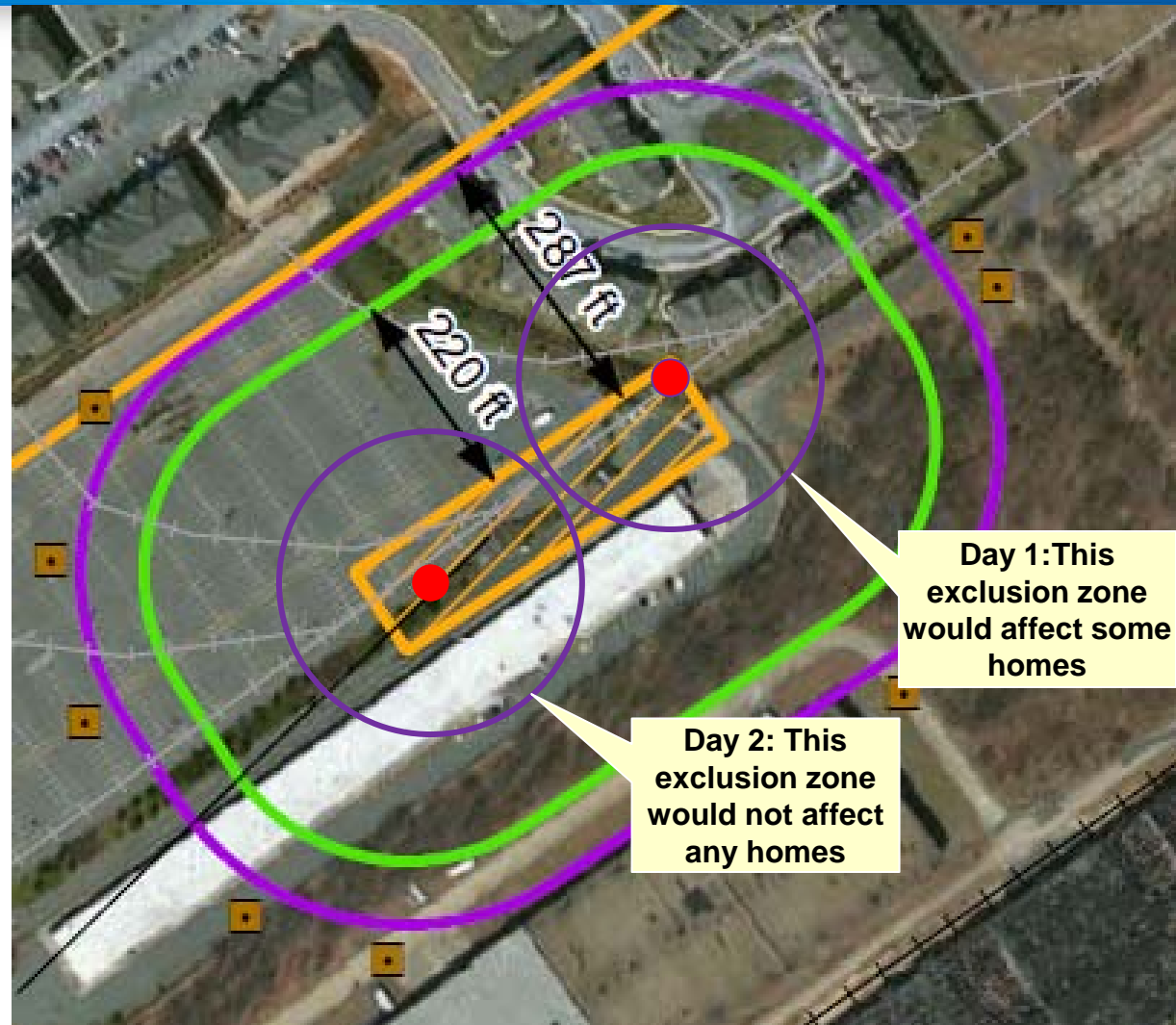
- Area 18D Boundary
- Area 18D Munitions Response Operations
- ESQD - 220 ft
- HFD - 287 ft
- Entry Control Point



# Exclusion zones would be limited in size

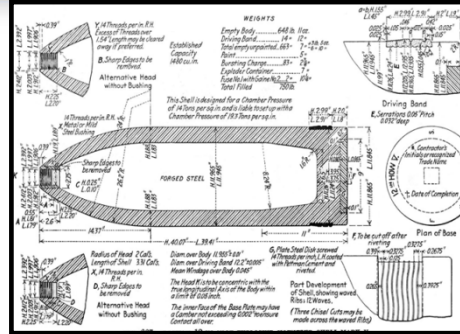
- Only the anomalies that TEMTADS data show as possible munitions will be dug up. Exclusion zones will center on those and only be active for a brief period.

*(NOTE: for illustration only, not based on actual data.)*



## Phase 3 – Sampling & Analysis (June – July 2014)

- Phase 3 will begin after identifying and classifying any munitions that are recovered during Phase 2.
- Munitions experts and scientists will identify the types of compounds (*specific metals and explosives*) that make up those recovered munitions.
- Environmental samples will be collected and analyzed for those specific compounds, to ensure that they have not been released into the environment.





# Schedule

Phase	Task	Duration
Phase 1	Vegetation Reduction, Surface Clearance, and Digital Geophysical Mapping (DGM)	November – December 2013
Phase 2	Reacquisition of Anomalies, TEMTADS, and Intrusive Investigation.	January – February 2014
Phase 3	Environmental Sampling & Analysis	June – July 2014



# Safety and Coordination

- The US Army Corps of Engineers is committed to
  - Investigating these areas with the utmost concern for the safety of the public.
  - Keeping the general public, property owners, local government, and other interested parties informed about what is happening, and when it will be happening.



# Questions

- If you have questions that were not answered tonight, please contact:

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- For more information about investigations at Raritan Arsenal, see the project website:

[www.nan.usace.army.mil/Raritan](http://www.nan.usace.army.mil/Raritan)



- To sign up for future mailings and public meetings:

- Make sure you signed the sign-in sheet tonight
- Send an email to [Sandra.L.Piettro@usace.army.mil](mailto:Sandra.L.Piettro@usace.army.mil)
- Sign up for Edison Township's e-mail/cell phone alerts at [www.edisonnj.org](http://www.edisonnj.org)



*Thanks for your participation!*

