Fort George G. Meade

Military Munitions Response Program
Mortar Range Munitions Response Area

Public Meeting
July 19, 2012

Public Meeting Purpose

- U.S. Army is inviting the public to comment on the proposed environmental actions for the Mortar Range Munitions Response Area (MRA)

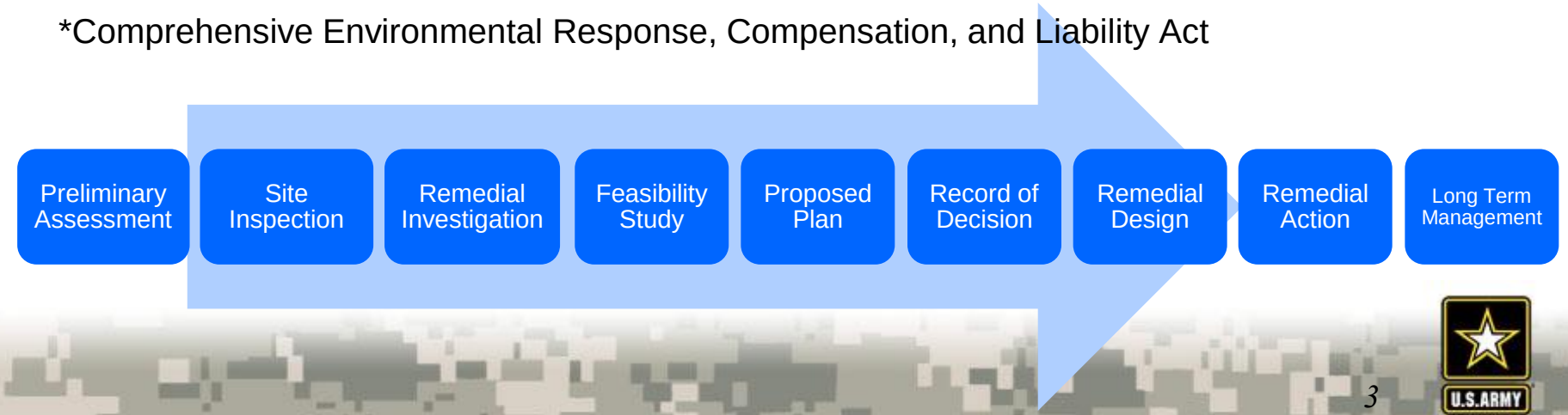
- Comments may be submitted during the 30-day comment period (July 19th to August 18th, 2012)

- Additional information on how to submit comments will be provided at the conclusion of this presentation

Status of CERCLA* Process

- ✓ Remedial Investigation (RI) - characterization of site
- ✓ Feasibility Study (FS) - assessment of possible remedies
- ✓ Proposed Plan (PP) - solicit public input on preferred remedy
- ❑ Record of Decision (ROD) - legal documentation of remedy selection
- ❑ Remedial Design (RD) - remedy implementation plan
- ❑ Remedial Action (RA) - remedy implementation

*Comprehensive Environmental Response, Compensation, and Liability Act



Presentation Agenda

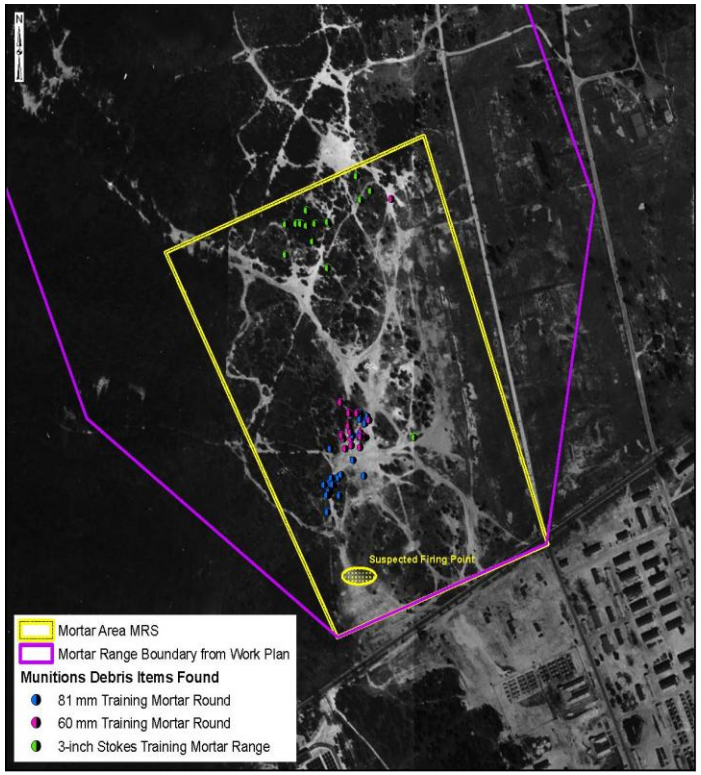
- Site Information
  - Location
  - History
- Field Investigations
  - Summary of Findings
- Remedial Alternatives
- Preferred Alternative
- Public Comment Period Information

Mortar Range MRA

- The former Mortar Range MRA is located in the west-central portion of Fort Meade.
- The MRA is made up of the Training Area and the Mortar Area Munitions Response Sites (MRSs).

Mortar Range MRA Background

- First identified in 2003
- Observed on a 1923 Special Military Map for Camp Meade (right)
- Size: 322 acres
- Direction of fire determined based on a 1943 aerial photo: NW from Mapes Rd
- Site was formerly used as:
  - Mortar range (training)
  - Training area
- Potential explosive risks due to past activities



1943 Aerial Photo

Current Land Use

- Majority of the site used as a golf course from 1956 through April 2012.
  - Currently the majority of the site is an active construction site as part of the expansion of the adjacent Department of Defense facility (DoD).
- The northwestern portion of the site is a DoD facility
  - Developed with buildings and associated paved surfaces (i.e., roadways, parking lots, and walkways).

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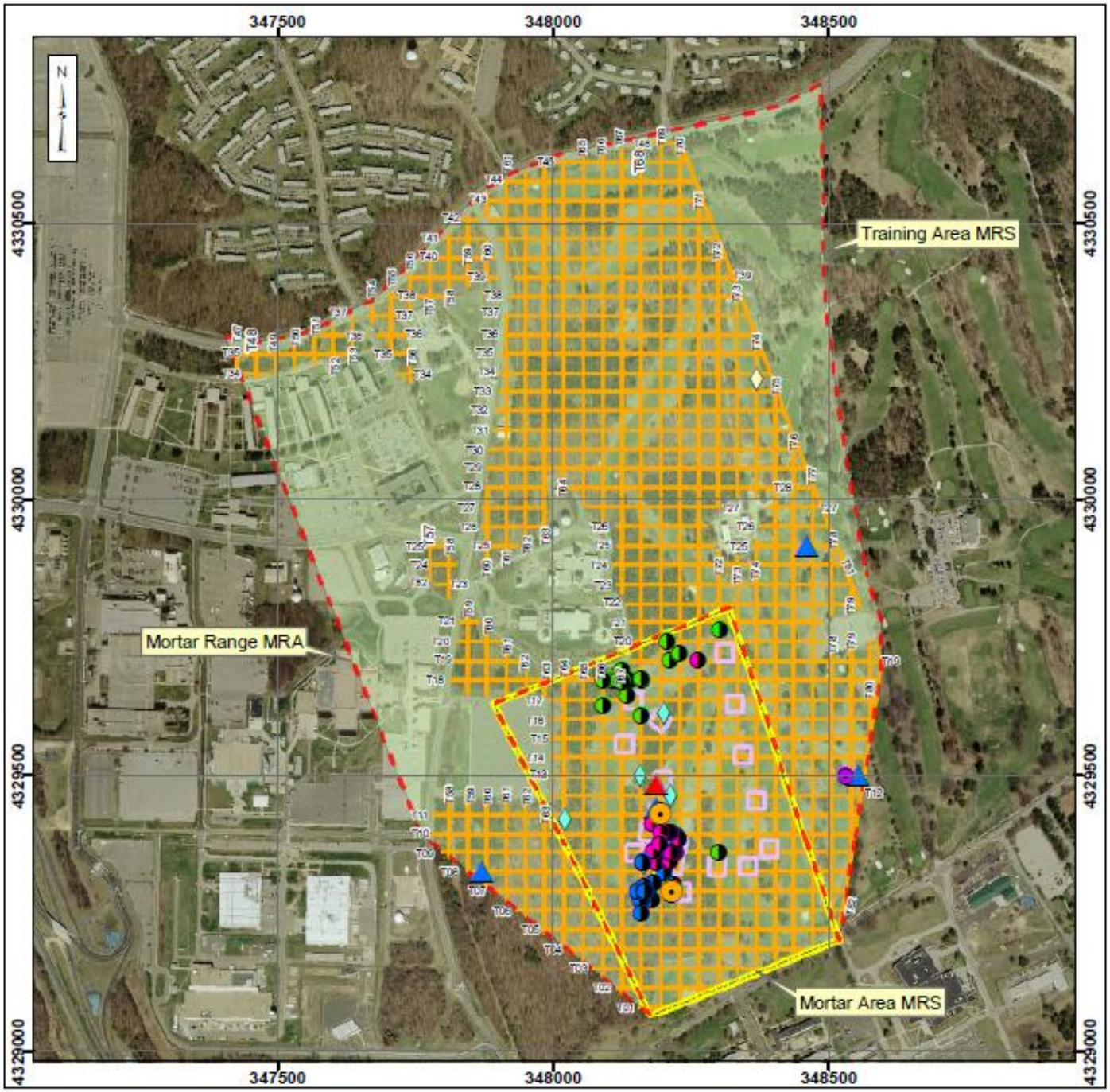
RI Field Investigation

- RI field effort conducted to determine the nature and extent of munitions and of explosives concern (MEC) and munitions constituents (MC) at the Mortar Range MRA.
- Scope of the investigation developed in partnership with US Environmental Protection Agency (USEPA) and Maryland Department of Environment (MDE).

RI Field Investigation — MEC

- RI field effort was conducted in 2008 for MEC
  - Geophysical investigation of 29 linear miles
    - Transects spaced 34.5 meters (m) apart and oriented north-south and east-west.
    - Full clearance conducted on nineteen 30 m x 30 m grids (step-out boxes) where high anomaly concentrations were detected.
  - 6,228 anomalies identified
    - 1,805 cultural features (e.g., underground utilities)
    - 3,090 anomalies did not meet investigation criteria
    - 1,333 anomalies investigated
      - No MEC identified
      - 102 munitions debris items identified
      - 2,500 pounds of non-munitions related scrap



Fort George G. Meade
Former Mortar Range MRA
RI Report

ARCADIS MALCOLM PIRNIE

Map 3-3
Munitions Debris Locations

Legend

- Mortar Range MRA
- Training Area MRS
- Mortar Area MRS
- Transect
- Step-out-Box

Munitions Debris Items Found*

- 81 mm Training Mortar Round
- 60 mm Training Mortar Round
- 3-inch Stokes Training Mortar Range
- Expended 60 mm Illumination Mortar
- Dummy Grenade
- Practice Grenade
- Practice Landmine
- Expended Flare Trip M48
- Expended Flare
- Small Arms Ammunition Box
- Small Arms Ammunition Casing Disposal Pit**

*Symbol may represent multiple munitions debris
**Left in place

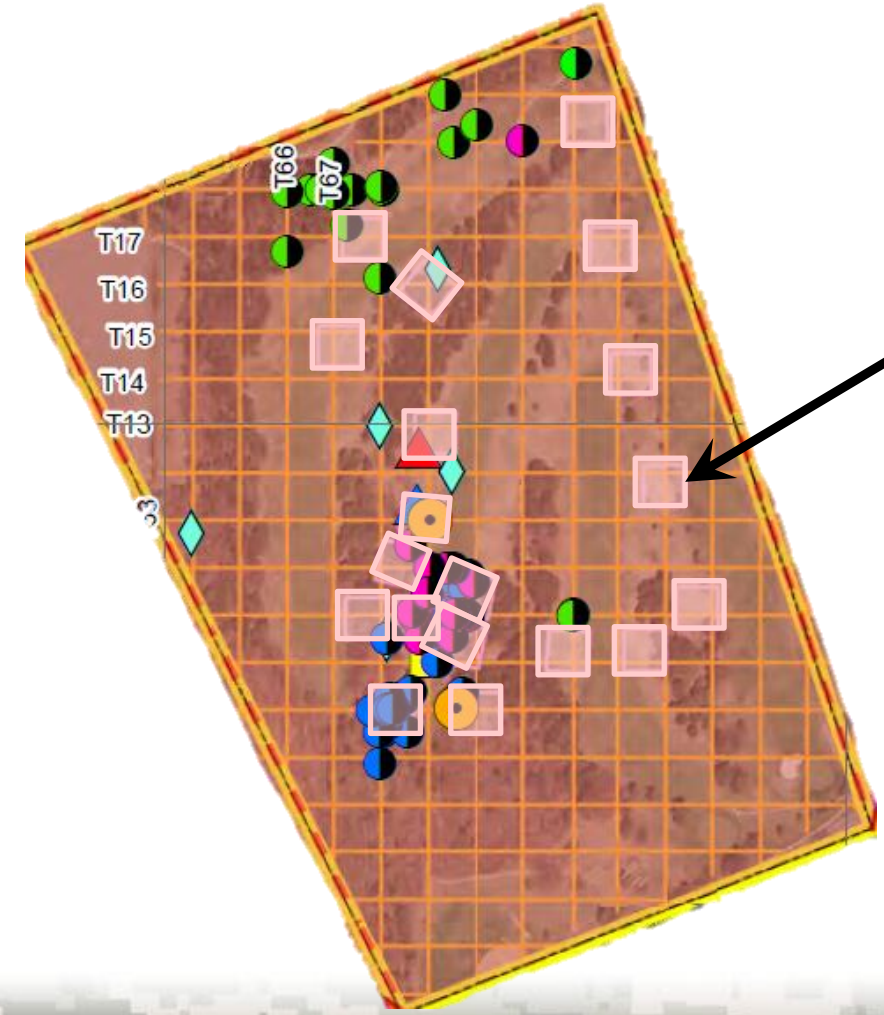
0 100 200 300 400 Meters

Data Sources: FGGM, Digital Orthophoto, 2003
FGGM, GIS Data, 2005
CTT Inventory Data, 2005

Coordinate System: UTM Zone 18
Datum: North American Datum 1983
Units: Meters

Contract: W912DR-05-D-0004
Date: September 2011

RI Field Investigation — MEC

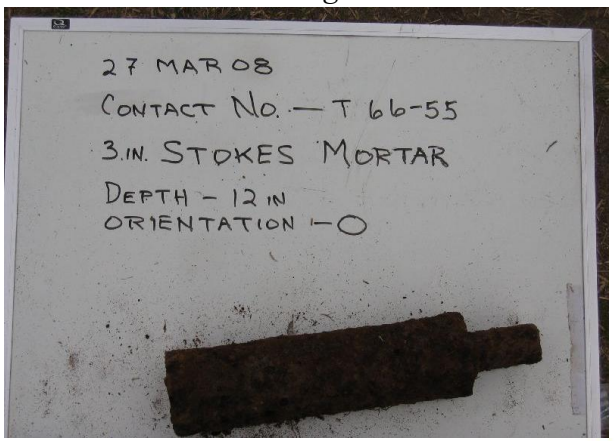


30 m x 30 m
step-out boxes

RI Field Investigation — MEC

- The following munitions debris was found on the MRA:
  - Expended 60 millimeter (mm) and 81mm training mortar rounds,
  - Expended 3-inch Stokes training mortar rounds,
  - Expended illumination mortars,
  - Expended training grenades,
  - An expended dummy grenade,
  - An expended training landmine,
  - Small arms ammunition,
  - Expended flares, and
  - A pit containing thousands of expended 0.22-caliber casings.

81-mm Training Mortar



3-inch Stokes Mortar

RI Field Investigation — MEC

- Training mortars were found within the range location on 1920s maps.
- The MRA was divided into two MRSs based on historical and physical evidence collected to date:
  - 62-acre Mortar Area MRS (training mortar rounds found)
  - 260-acre Training Area MRS (general troop training conducted)

RI Risk Assessments Results MEC

- The MEC field work findings included:
  - No MEC was identified,
  - Small arms ammunition (not presenting a unique explosive hazard), and
  - munitions debris.
- An MEC Qualitative Risk Assessment was performed and concluded:
  - **low probability** for humans to encounter MEC on the Mortar Range MRA.

RI Field Investigation — MC

- MC fieldwork January 2010:
  - Approach based on results of MEC fieldwork and regulatory partnering
  - MC selection based on munitions used and included:
    - metals (antimony, copper, lead, magnesium, mercury, zinc),
    - explosives, and
    - propellants (nitrocellulose and nitroglycerin).
  - Data compared to USEPA residential Regional Screening Levels

RI Field Investigation — MC

- MC fieldwork January 2010:
  - Phased approach including surface and subsurface soil sample collection
  - Surface soil analytical results led decisions on subsurface soil and groundwater analysis
  - Mortar Area MRS
    - 27 sample locations
    - Locations were statistically random based on Visual Sample Plan
  - Training Area MRS
    - 5 sample locations
    - Collected from locations where munitions debris was identified

RI Field Investigation — MC

- Other analytical data considered
  - 2003 Limited Site Investigation
  - 2004 Environmental Baseline Survey Site M
  - 2007 Military Munitions Response Program Site Inspection

RI Risk Assessments Results MC

- The MC field work findings included:
  - MC (metals, explosives, propellants) were either not detected or below applicable screening levels.

- Human Health Risk Assessment and Screening Level Ecological Risk Assessment concluded:
  - **No unacceptable human health or ecological risks** were associated with the Mortar Range MRA.

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Feasibility Study

- An FS was conducted in 2012 to evaluate possible actions to be taken at the MRA.
- The goal of the potential action evaluated during the FS
  - Control and minimize the potential for human contact with possible MEC at the surface and within the subsurface.

Feasibility Study

- The following Alternatives were developed:
  - Alternative 1 – No Action;
  - Alternative 2 –Land Use Controls (LUCs) with Long Term Management (LTM); and
  - Alternative 3 – Surface and Subsurface Removal, LUCs, and LTM.

Remedy Evaluation

As required by law, the alternatives were evaluated against nine criteria:

1. **Overall protection of human health and the environment**. Determines if the alternative provides adequate protection and describes how the alternative eliminates, reduces or controls risks.
2. **Compliance with applicable or relevant and appropriate requirements (ARARs).** Determines if the alternative meets all Federal and State environmental laws.
3. **Long-term effectiveness and permanence.** Determines the alternative's ability to provide reliable protection of human health and the environment over time.
4. **Reduction of toxicity, mobility, and volume through treatment.** Refers to the preference for an alternative that reduces health hazards, the movement of harmful substances, or the quantity of harmful substances at the site.

Remedy Evaluation

5. **Short-term effectiveness.** Addresses time needed to complete the alternative, and any adverse effects to human health or the environment during implementation.
6. **Implementability.** Addresses the technical and administrative feasibility of an alternative, including the availability of materials and services.
7. **Cost effectiveness.** Evaluates the estimated capital, operating and maintenance costs of each alternative in comparison to other, equally protective alternatives. (30 years)
8. **State/Support agency acceptance. [The Army is the lead regulatory agency]** Indicates whether the State agrees with, opposes, or has no comment on the preferred alternative.
9. **Community acceptance.** Assessed after the public comment period. Includes components of the alternatives that the public supports, has reservations about, or opposes.

Remedy Evaluation

- Alternative 1 - No Action
  - Not protective,
  - No ARARs identified,
  - No long-term effectiveness or permanence,
  - No reduction of explosive hazard,
  - No short-term effectiveness,
  - High implementability, and
  - No cost.

Remedy Evaluation

- Alternative 2 – LUCs with LTM
  - Protective of human receptors based on RI findings and future land use,
  - Complies with ARARs identified (action-specific),
  - Long-term effectiveness as LUCs prevent exposure to MEC,
  - Reduces effective explosive hazard by controlling access to MEC,
  - No short-term risks associated with implementation (human or ecological),
  - High implementability, and
  - Relatively low cost.

Remedy Evaluation

- Alternative 3 - Surface and Subsurface Removal, LUCs, and LTM
  - Protective to human health (but impacts ecological receptors),
  - Complies with ARARs identified (action-specific),
  - Long-term effectiveness and permanence,
  - Reduces volume of MEC on the MRA,
  - Significant short-term risks during implementation,
  - Implementation challenges (volume/timing), and
  - Not cost effective.

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Preferred Alternative

- Alternative 2 –LUCs with LTM
  - Institutional Controls
    - Updates to Master Plan
    - Maintain Geographic Information System database
    - Revise dig permit to include Unexploded Ordnance (UXO) construction support for construction and anomaly avoidance for other intrusive activities
    - No residential land use allowed
    - Education program
  - Engineering Controls
    - Installation of signs throughout MRA
  - Long Term Management
    - Annual sign inspection and surface sweep for MEC
    - Five year review process

Example of Successful LUC Implementation

- Construction support activities currently in use
  - Construction is underway on Mortar Range MRA
  - On-site construction support by USACE UXO technicians implemented for safety and to avoid costly delays.
  - Two munitions encounters have occurred to date
  - Supports need to further the MRA through CERCLA
  - Demonstrates effectiveness of the Preferred Alternative

Munitions Encounter 1

- 3-inch Stokes mortar (training / no fuze)
  - Encountered on Mortar Area MRS in shallow subsurface during tree removal
  - Consistent with RI findings and history
  - Item assessed (not MEC) and removed by USACE UXO technician onsite performing construction support

3-inch Stokes Training Mortar

16 December 2011

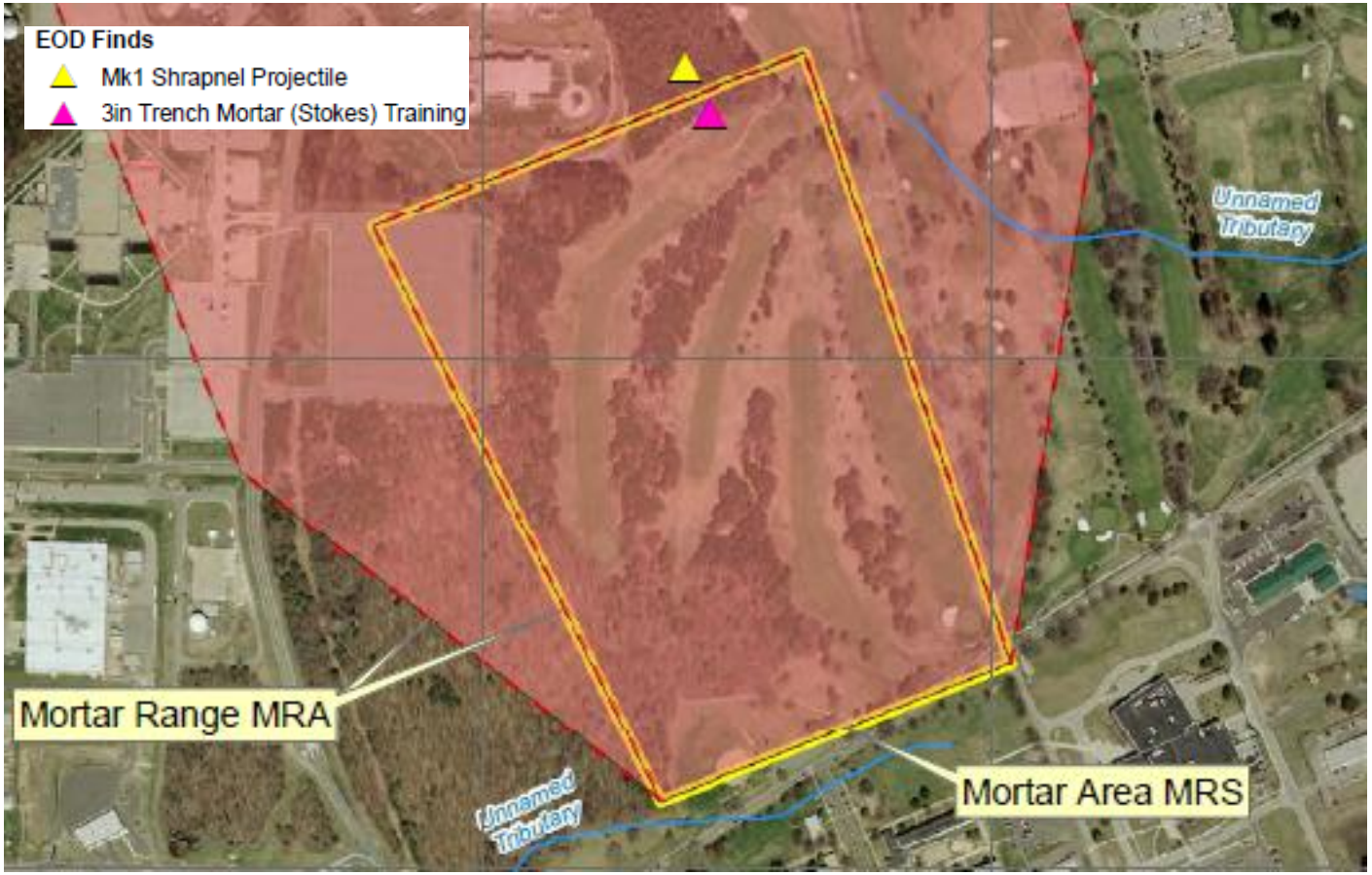
Munitions Encounter 2

- 75-mm Mk1 shrapnel projectile (Mk3A1 fuze)
  - Encountered on Training Area MRS, ~6 feet below ground surface during the installation of a fence post
  - Consistent with MRA timeline but inconsistent with historical use
  - Never fired and highly degraded (likely discarded)
  - Item assess (MEC) by USACE UXO technician onsite performing construction support
  - Item blown in place by Andrews AFB Explosive Ordinance Disposal

75-mm Mk1 Shrapnel Projectile

8 February 2012

Location
Munitions Encounters



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Proposed Plan

- PP will be available for public review from July 19th to August 18th. Administrative Record located:

Fort Meade Environmental Division
Building T-239
Fort Meade, MD 20755

Anne Arundel County West County Area Public Library
1325 Annapolis Rd
Odenton, MD 21113

- Public comments will be reviewed and considered before remedy is selection is finalized and documented in the ROD.
- The ROD for the MRA will be finalized in September 2012.

Written Comments

- Comments will be accepted until August 18th, 2012.

- Send comments to any one of the following:

Mary Doyle
U.S. Army Garrison- Fort George G. Meade
Public Affairs Office
4409 Llewellyn Ave.
Fort Meade, MD 20755

Mr. John Burchette
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Dr. Elisabeth Green
Maryland Department of Environment
1800 Washington Blvd, Suite 625
Baltimore, MD 21230-1719

Questions?

Acronyms

ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DoD	Department of Defense
FS	Feasibility Study
LTM	Long Term Management
LUC	Land Use Control
m	meter
mm	millimeter
MC	Munitions Constituent
MDE	Maryland Department of the Environment

Acronyms (Cont'd)

MEC	Munitions and Explosives of Concern
MRA	Munitions Response Area
MRS	Munitions Response Site
RI	Remedial Investigation
ROD	Record of Decision
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded Ordnance

Glossary

Administrative Record: This is a collection of documents (including plans, correspondence and reports) generated during site investigation and remedial activities. Information in the Administrative Record is used to select the preferred remedial alternative and is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs): The requirements found in federal and State environmental statutes and regulations that a selected remedy must attain. These requirements may vary among sites according to the remedial actions selected.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): This federal law was passed in 1980 and is commonly referred to as the Superfund Program. It provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety or the environment.

Feasibility Study (FS): This CERCLA document reviews the risks to humans and the environment at a site, and evaluates multiple remedial technologies for use at the site. Finally, it identifies the most feasible Response Actions

Glossary (Cont'd)

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Land Use Controls (LUCs) – LUC are physical, legal, or administrative mechanisms that restrict use of or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to real property, such as fences or signs.

Long Term Management (LTM) – The period of site management (including maintenance, monitoring, record keeping, 5-year reviews, etc.) initiated after response (removal or remedial) objectives have been met (i.e., after the final remedy has been implemented)

Munitions and Explosives of Concern (MEC) – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, includes: unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5); DMM, as defined in 10 U.S.C. 2710(e)(2); and munitions constituents (e.g., trinitrotoluene [TNT], cyclotrimethylenetrinitramine [RDX]) present in high enough concentrations to pose an explosive hazard.

Glossary (Cont'd)

Munitions Constituents (MC) – Any materials originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris – Remnants of munitions (e.g. fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions Response Area (MRA) – Any area on a defense site that is known or suspected to contain unexploded ordnance, DMM, or MC. Examples include former ranges and munitions burial areas. An MRA is composed of one or more munitions response sites.

Munitions Response Site (MRS) – A discrete location within an MRA that is known to require a munitions response.

Operation and Maintenance (O&M): Annual post-construction cost necessary to ensure the continued effectiveness of a Response Action

Preferred Remedy– The MEC remediation approach that appears to best meet acceptance criteria; the remedial option proposed for implementation in the ROD.

Glossary (Cont'd)

Record of Decision (ROD): This legal document is signed by the Army and the USEPA and will be reviewed by the MDE for concurrence. It provides the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

Remedial Investigation (RI): An investigation under CERCLA that involves sampling environmental media such as air, soil, and water to determine the nature and extent of contamination and human health and environmental risks that result from the contamination.