



Installation Restoration Program



Air Force Civil Engineer Center

Military Munitions Response Program

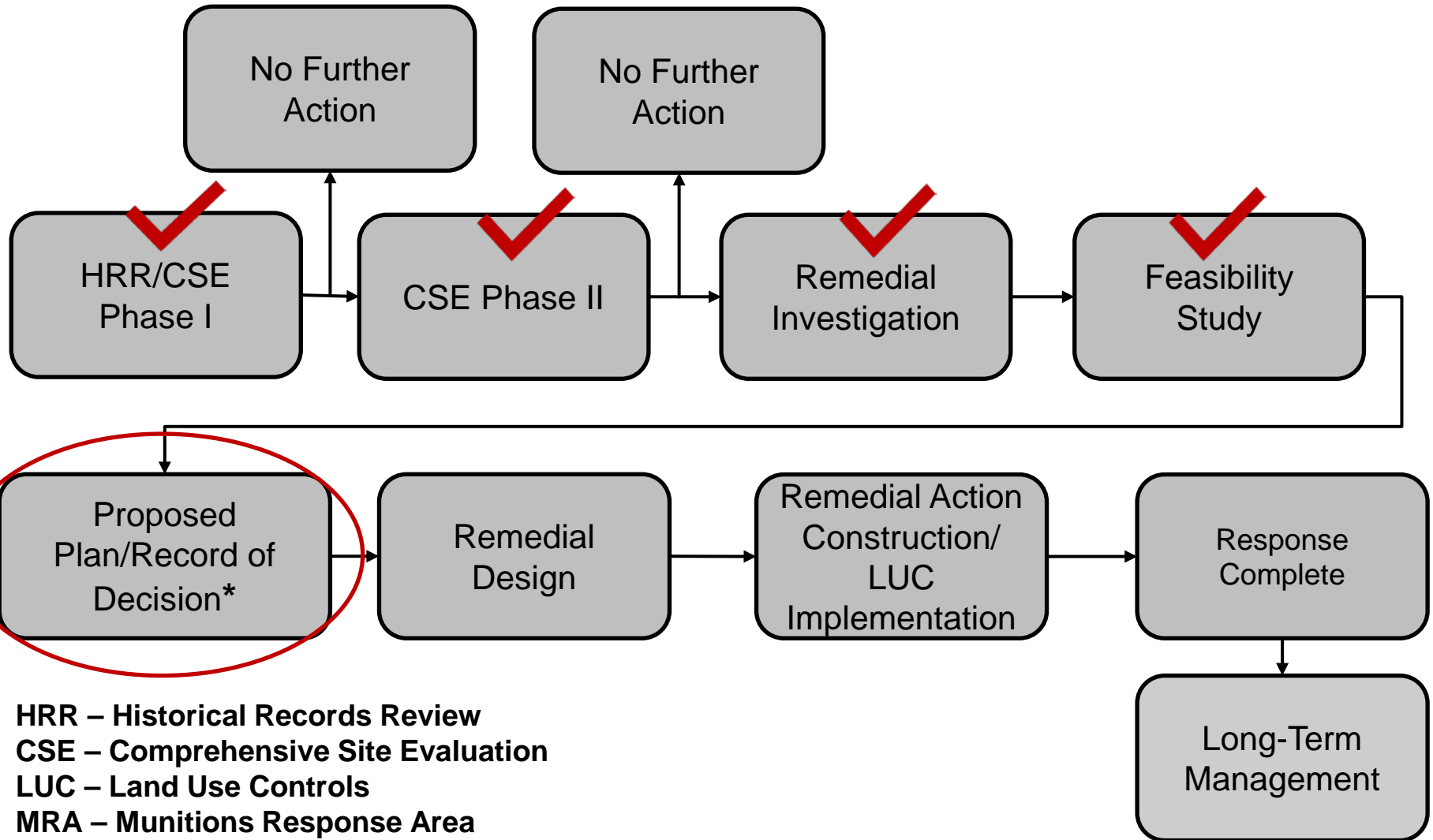
Mock Village Munitions Response Site Proposed Plan Presentation and Public Hearing Joint Base Cape Cod, Massachusetts

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EA Engineering, Science, and Technology, Inc., PBC

**Joint Base Cape Cod Cleanup Team Meeting
24 March 2021**

Where are we in the process?



HRR – Historical Records Review

CSE – Comprehensive Site Evaluation

LUC – Land Use Controls

MRA – Munitions Response Area

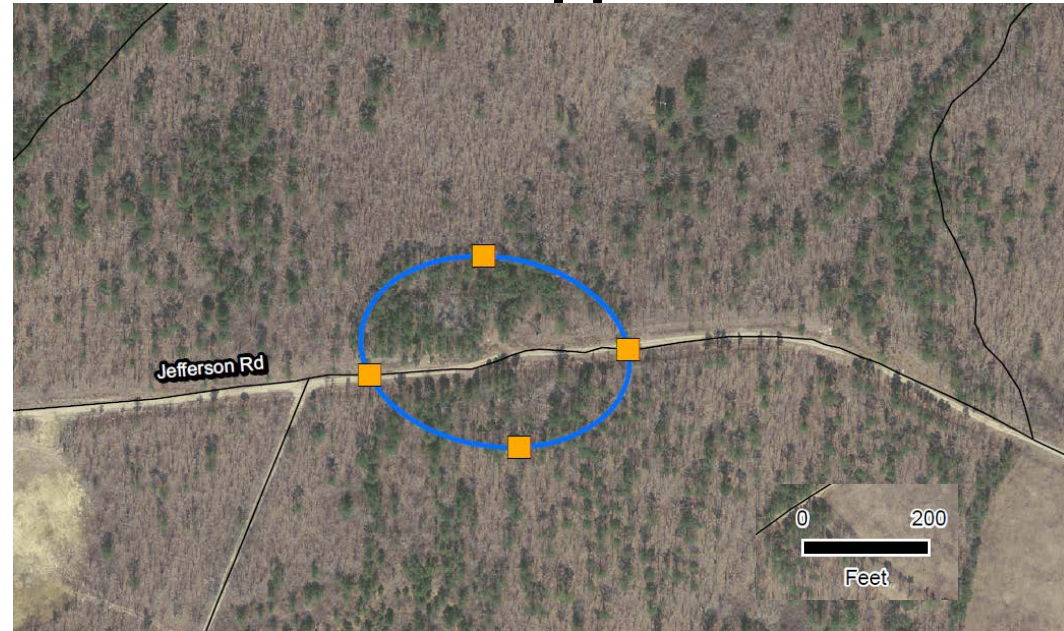
*** Includes opportunity for public involvement**

Mock Village MRS

Preferred Remedy Alternative 2: LUCs with UXO Construction Support

- The Air Force with concurrence from EPA has selected Alternative 2: LUCs with UXO Construction Support for MEC as the preferred remedy, based on the following:

- The site is currently undeveloped forest with no recreational use. However, the potential remains for MEC in uninvestigated portions of the site and in the shallow subsurface throughout the MRS.



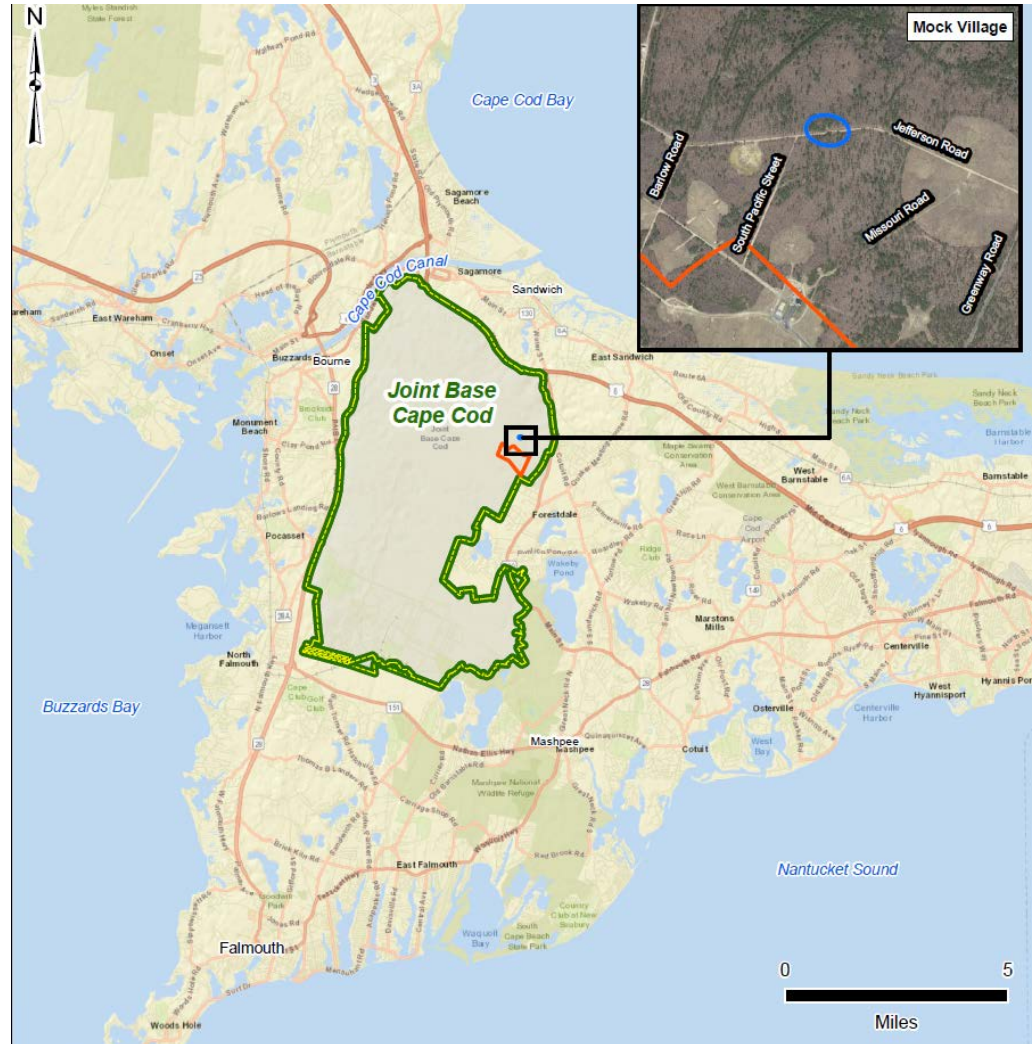
Mock Village MRS Boundary
Road
Proposed Sign Location

- This remedy will include the implementation of LUCs (physical, administrative, and legal measures) to limit access to or use and annual inspections
- Since the probability of encountering MEC is low, the LUCs response action relies on the education program and access control strategies to reduce the exposure to the potential MEC hazard. It would also provide on-call UXO construction support when any potential MEC hazard is identified.
- Annual inspections (including geophysical surface sweeps) and five-year reviews will be conducted to ensure that the remedy continues to remain protective of human health and the environment

Mock Village Munitions Response Site (MRS)

Site Description

- The 1.9-acre Mock Village MRS is located northeast area of JBCC on Jefferson Road midway between Greenway and Barlow Roads
- Located on property currently owned by the Commonwealth of Massachusetts that is leased to the U.S. Coast Guard
- MRS was used to simulate a mock German village and used as an urban training complex from 1943 through the early 1950s
- No munitions and explosives of concern (MEC) or munitions constituents (MC) have been found at the MRS



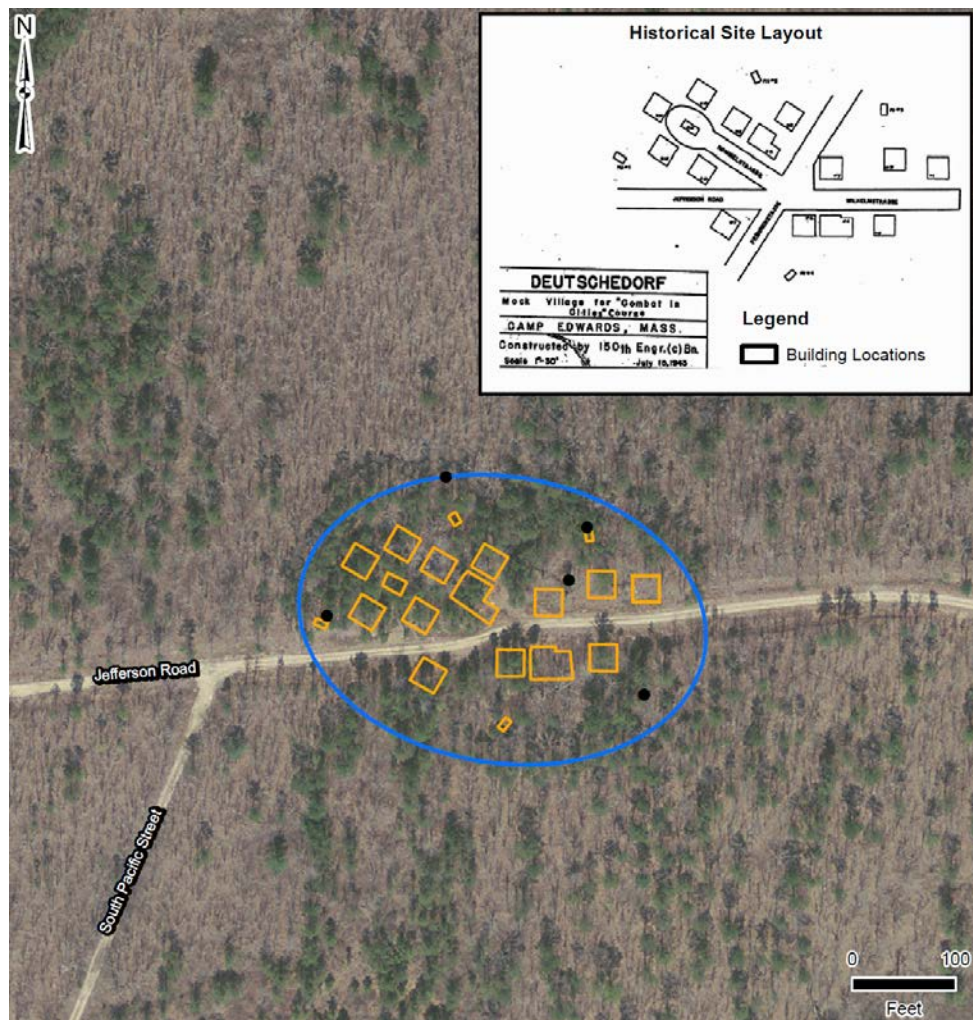
Legend

- Installation Boundary
- Mock Village MRS Boundary
- Old K Range MRA Boundary

Mock Village Munitions Response Site (MRS)

Historic Site Use

- Soldiers trained in street reconnaissance, urban fighting techniques, and clearing houses and villages
- The MRS consisted of 15 buildings that simulated a town, and dugouts were constructed where operators would hide and deploy targets as soldiers approached
- Munitions permitted for use at the MRS included:
 - Blocks of trinitrotoluene (TNT) (non-MEC) (requires detonator to ignite)
 - Pyrotechnics (booby traps) (non-MEC)
 - Fragmentation hand grenades (live grenades) for advanced demonstrations; however, no indication of use. Since personnel were raising and lowering the targets during training, it is unlikely that live ordnance would have been used
 - Practice hand grenades
 - Machine guns with blank ammunition



- Mock Village MRS Boundary
- Approximate Former Building Location
- Approximate Location of Observation Pits

Mock Village MRS

Current Site Status

- Former buildings were demolished prior to 1966
- Remnants of the timber-reinforced and earthen dugouts remain onsite
- The MRS is currently forested with dense trees and thick underbrush
- The MRS has become non-operational and there has been no development



**Timber-reinforced dugout
remnant**



Mock Village MRS

Previous Investigations

- **Phase IIB Investigation:** Visual reconnaissance of MRS and soil sampling at three locations for explosives, semivolatile organic compounds (SVOCs), metals, and dyes.

Findings:

- Several earthen structures and timber-reinforced pits or tunnels
- No range-related features were identified on the south side of Jefferson Road
- No ordnance, pyrotechnics, or evidence of TNT use
- Three shallow pits were discovered and presumed to be the remnants of pyrotechnic pits
- Rusted 5-gallon containers located near the pits were thought to be the remnants of smoke pots used during training exercises
- No explosives or dyes were detected in soil samples
- SVOCs were detected in soil samples but did not exceed site-specific background concentrations or site screening values

Mock Village MRS

Previous Investigations (continued)

Findings (continued):

- Metals were detected above background concentrations in soil samples but did not exceed screening values (EPA's industrial or residential regional soil screening levels [RSLs] or MassDEP S-1 soil standards)
 - Arsenic was the exception; however, it is naturally occurring in soils, was detected at levels similar to JBCC background, and is not considered a MC of concern
- No further action was recommended

Mock Village MRS

Previous Investigations (continued)

- **Comprehensive Site Evaluation (CSE):** AFCEC's process to obtain sufficient data to support informed decision-making to effectively manage areas where munitions were formerly used, stored, or disposed of. The CSE consists of two phases.

CSE Phase I (equivalent to CERCLA Preliminary Assessment): The CSE Phase I evaluated risks to human and ecological receptors from MEC and MC. The CSE Phase I indicated potentially impacted surface and subsurface material and recommended a CSE Phase II be conducted.

CSE Phase II (equivalent to CERCLA Site Inspection): Conducted to determine the presence or absence of MEC and MC associated with historical military munitions use. Included a magnetometer-aided visual inspection of the surface to assess the presence of MEC and surface soil (0-3 inches below ground surface) incremental sample (IS) collection from two decision units (DUs) (footprints of the former building locations and observation pits) for MC (explosives constituents)

Mock Village MRS

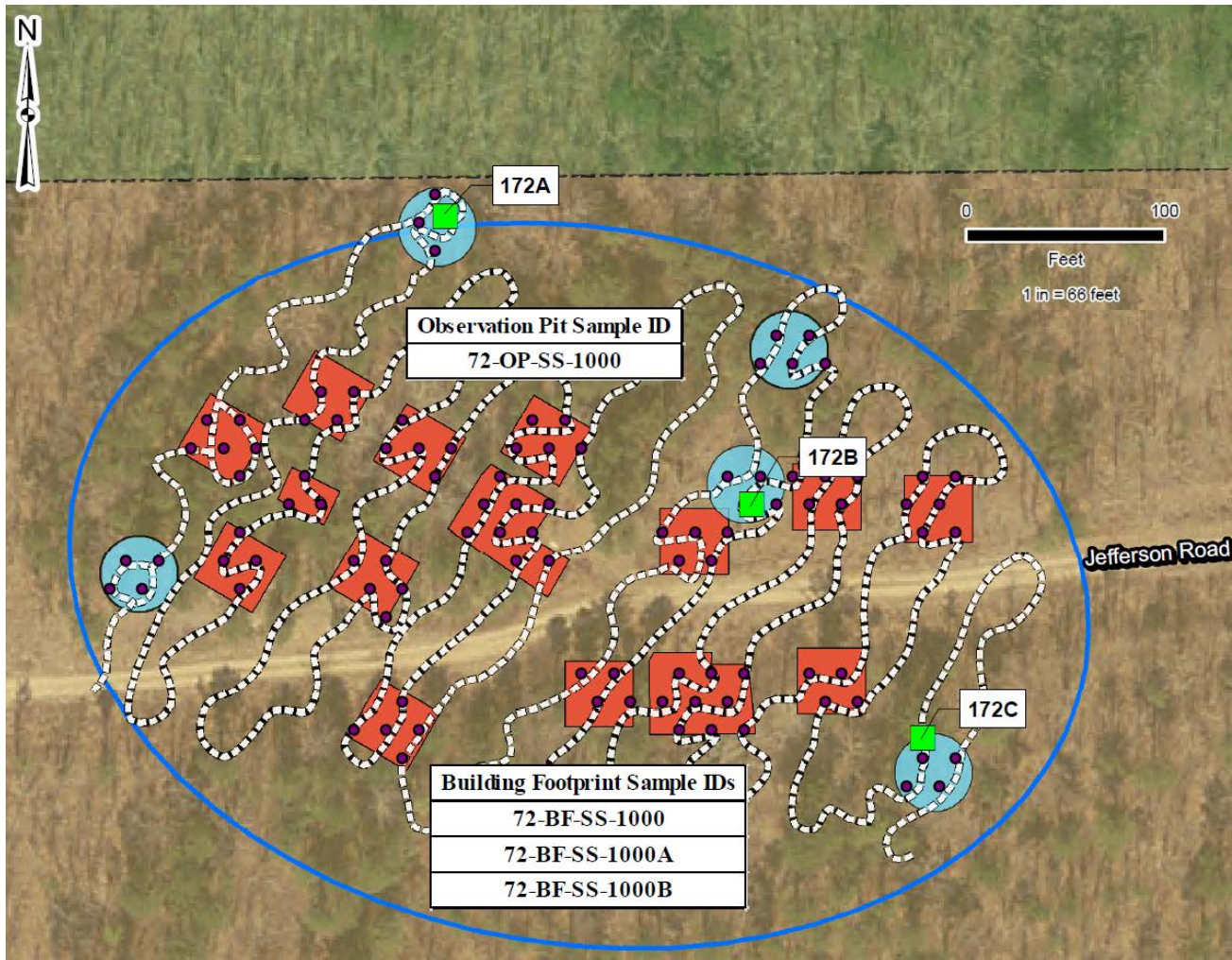
Previous Investigations (continued)

Findings:

- Two additional observation pits were identified
- No MC were detected above reporting limits in soil samples; therefore, MC results were below EPA's industrial or residential RSLs and MassDEP S-1 standards
- Concluded that based on the historical use of the MRS, including the potential for high explosive grenades, further assessment and/or action should be conducted to evaluate potential residual MEC

Mock Village MRS

Summary of Previous Investigations



- Mock Village MRS Boundary
- Army National Guard
- US Coast Guard

CSE Phase II Investigation

- Investigation Summary
- Observation Pit
- IS Increment Locations
- Magnetometer-Assisted IS Survey Transect

IAGWSP Phase II B Investigation

- Discrete Soil Sample Location

Mock Village Munitions MRS Remedial Investigation/Feasibility Study

- A Remedial Investigation (RI)/Feasibility Study (FS) was finalized January 2021. The primary objective of the RI/FS was to define the nature and extent of MEC hazards and potential MC risks associated with historical military munitions use as a target area for urban training. Specifically, the following objectives were established:
 - The RI concluded that there is no evidence of MEC at the MRS; however, since 100% of the site was not investigated with digital geophysical methods, there is a small possibility that MEC could be present
 - If MEC is found at a future time and is breached or has leaked explosive filler, or an item requires detonation-in-place, the soil beneath the item may be investigated to determine if the item is a source of MC
- The FS developed the following remedial action objectives:
 - Reduce the risk of direct contact by current and anticipated future human receptors to potential MEC in the surface and subsurface soil
 - Prevent the release of contamination from the detonation of any MEC that would result in a total excess lifetime cancer risk greater than the target risk range of 10^{-4} to 10^{-6} , and/or a non-cancer Hazard Index greater than 1.0

Mock Village MRS FS Alternatives

- The FS developed and evaluated the following two remedial alternatives, with input from the regulatory agencies. A full MEC removal inclusive of 100% clearance of the site to achieve unlimited use/unrestricted exposure was evaluated as a technology; however due to cost, level of difficulty to implement and achieve, the technology was not retained for evaluation as an alternative.
 - **Alternative 1: No Action** – Per the National Contingency Plan, a No Action alternative is always assessed. This alternative does not include remedial activities to mitigate the possible MEC hazard for the site.
 - **Alternative 2: Land Use Controls (LUCs) with Unexploded Ordnance Control Construction Support** – Includes physical mechanisms (e.g., warning signs, on-call unexploded ordnance [UXO] construction support), administrative mechanisms (e.g., public education/training), and legal mechanisms (e.g., Dig Safe®).
 - These LUCs would provide notification to persons accessing the property where the potential explosive dangers may be present. It would also provide on-call UXO construction support when any potential MEC hazard is identified. Annual inspections (including geophysical surface sweeps) and five-year reviews would also be conducted.
- These FS alternatives were evaluated and compared using seven of the nine criteria. The remaining two criteria, “community acceptance” and “state acceptance” are evaluated during and after the public comment period associated with the Proposed Plan.

Mock Village MRS FS Evaluation Criteria

- The Air Force uses nine criteria developed by the EPA to compare alternatives and select a final cleanup plan or remedy that meets the statutory goals of protecting human health and the environment, maintaining protection over time, and minimizing contamination while being cost effective. FS alternatives were evaluated and compared to 7 of 9 criteria:

Threshold Criteria



1. Overall protection of human health and the environment
2. Compliance with applicable or relevant and appropriate requirements (ARARs)

Balancing Criteria



3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume through treatment
5. Short-term effectiveness
6. Implementability
7. Cost

Modifying Criteria (evaluated during and after the public comment period associated with the Proposed Plan)

8. State acceptance
9. Community acceptance

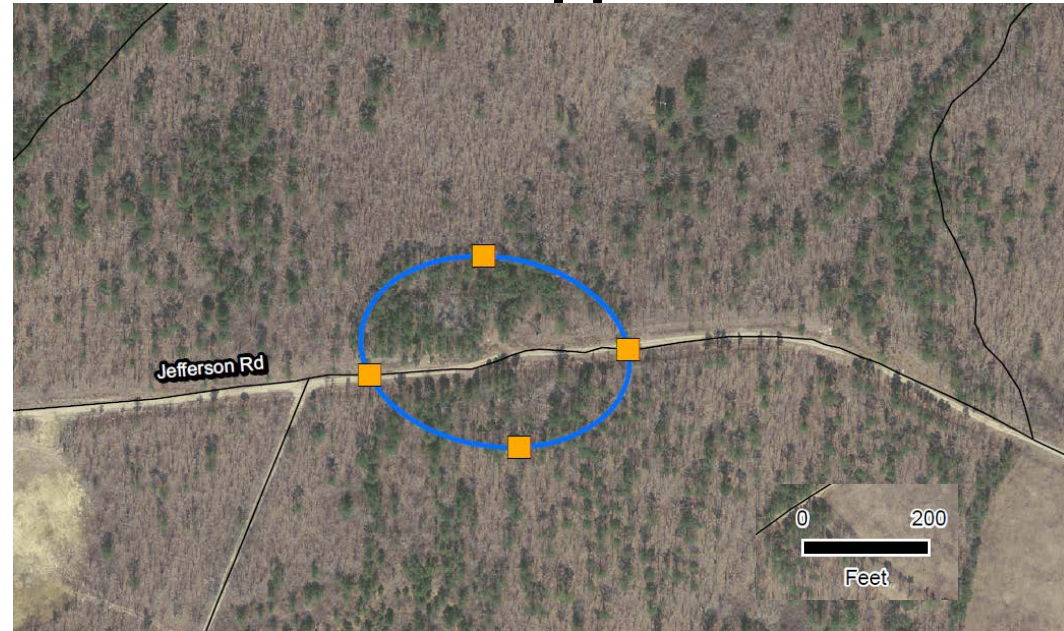
- Of these nine criteria, the two threshold criteria (overall protection of human health and the environment and compliance with ARARs) must be met for a candidate cleanup alternative to be selected.

Mock Village MRS

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Mock Village Munitions Response Site (MRS)

Next Steps

- Public comment period of the Proposed Plan (12 March – 10 April 2021)
- The Proposed Plan and Remedial Investigation/Feasibility Study (RI/FS) can be found on AFCEC's webpage:
 - <https://www.massnationalguard.org/JBCC/afcec.html>
 - The RI/FS is also found on AFCEC's online Administrative Record <https://ar.afcec-cloud.af.mil/> (search for AR# 605208).
- Address public comment in a responsiveness summary
- MassDEP will state their preference for a remedy after consideration of comments received during the public comment period.
- Record of Decision
- Remedial Action

How to Submit Comments on this Proposed Plan

- Offer verbal/written comments during today's virtual public meeting/hearing
- Mail written comments to:
 - Doug Karson
 - AFCEC/JBCC
 - Attn: Mock Village MRS
 - 322 East Inner Road
 - Otis ANG Base, MA 02542-5028
- E-mail comments to
douglas.karson@us.af.mil

Comments/Questions?