

DERP WEBINAR

Military Munitions Response Program Feasibility Studies, Remedial Action Objectives, and Records of Decision

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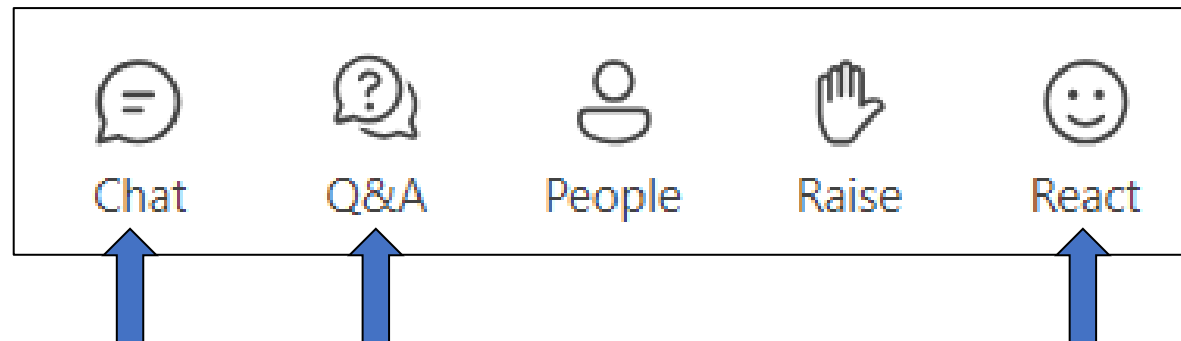
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Department of War

DEFENSE OFFICE OF PREPUBLICATION AND SECURITY REVIEW

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Agenda

- **Describing Remedial Action Objectives (RAOs)** – Ed Walker
- **Developing Remedial Alternatives** – James Salisbury
- **Records of Decision (RODs) Best Practices** – Doug Maddox
- **Q&A and Wrap-up** – All Presenters

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Remedial Action Objectives (RAOs)

How We Define Protectiveness in MEC Projects

Ed Walker, PE

Site Mitigation and Remediation Program, Engineering Branch Chief

California Department of Toxic Substances Control

RAOs and Remediation Goals

- Remedial Action Objectives (RAOs) define contaminants, media, exposure pathways, and remediation goals.
- Munitions and Explosives of Concern (MEC) risks are not easily quantified.
- No universally accepted “safe” MEC exposure level exists.
- Understanding pathways and receptors is essential to defining protectiveness.

Components of RAOs

Contaminants and Media of Concern

Based on site characterization and the Conceptual Site Model (CSM).

Potential Exposure Pathways

Identified through receptors and activities in the CSM.

Remediation Goals (RGs)

Remedy-non-specific statements describing what must be mitigated.

Remediation Goals: PDT's Definition of Protectiveness

Defined by the Project Delivery Team (PDT).

Indicate what a remedy must achieve to protect human health and the environment.

Guide the development and evaluation of alternatives in the Feasibility Study (FS).

Protectiveness is achieved when all MEC exposure pathways for each receptor group are adequately mitigated.

Remediation goals describe what must be achieved to be protective; Clean-up Goals are remedy-specific metrics established after remedy selection.

PDT's Composition for RAO Development at Munitions Sites

- Technical Project Managers lead and coordinate PDT activities.
- Includes State, Tribal, and Federal Land Managers with authority over the site.
- State and Federal Regulators ensure State, CERCLA, and NCP compliance.
- Technical experts in Risk Assessment, Geophysics, and Ordnance and Explosives Safety.
- Knowledge of current and future property use from landowners and communities.

Interpreting “Adequate Mitigation”

MEC lacks measurable acceptable concentration standards.

Risk-driving conditions must be addressed directly.

Clear definition of contaminants and pathways within the RAO is essential for evaluating protectiveness.

RAOs Within the FS Process

Each alternative must:

- Adequately mitigate risks for all receptors and exposure pathways.
- Mitigate all identified risk drivers.
- Cover the full remedial footprint.
- Use technologies and/or institutional controls as appropriate to adequately mitigate the exposure pathways identified in the RAO.

Goal: Alternatives should achieve an acceptable end state and be protective.

Constraints Affecting Remedial Alternatives

Common constraints include:

- Access limitations (buildings, utilities, sensitive resources).
- Vegetation removal restrictions.
- Limits on institutional controls (signs, deed restrictions).
- Prohibitions on specific technologies.
- Constraints identified during Institutional Analysis.
- Technology depth of detection limits
- Site-specific physical and environmental constraints.

Identifying Site-Specific Constraints

Key questions:

Are there lateral or vertical access limitations?

Are there implementation constraints?

Are there timing restrictions?

Are certain technologies prohibited?

Are there other limitations?

Are there restricted areas?

Are there transportation or equipment access limits?

Document any “Yes” responses as constraints on alternatives.

RAO Format from EM 200-1-15

“The [assessment area(s)] is(are) anticipated to have [contamination (MEC types)] in [media] throughout the assessment area(s), with MEC expected to exist within [depth profile(s)]. [Receptors] in the assessment area could be exposed to MEC via [exposure pathway(s)] to [exposure depth(s)]. The remediation goal for the assessment area(s)] is(are) to mitigate [specify each exposure pathway that must be mitigated] to eliminate unacceptable risk conditions.”

Breaking Down the RAO Format

Contaminants & Media

- MEC types, media, depth profile

Exposure Pathways

- Receptors, activities, interaction zones

Remediation Goal

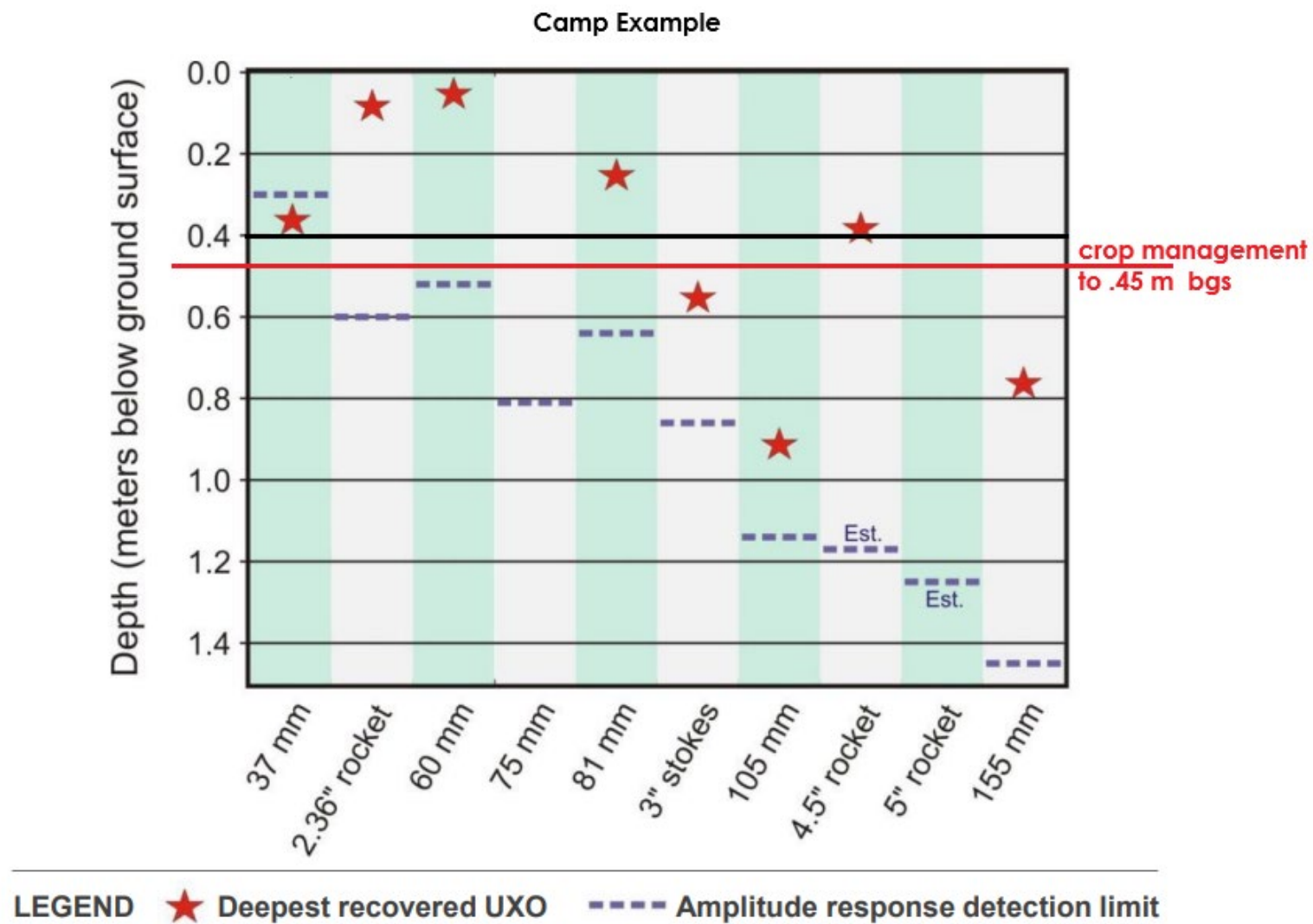
- What must be mitigated to eliminate unacceptable conditions

Camp Example Site Scenario (Post-RI)

Former infantry training area now privately owned

- Potential for 37mm, 2.36 rocket, 60 mm, 75 mm, 81mm, 3" stokes, 105 mm, 4.5" rocket, 5" rocket and 155 mm to 1.4 m bgs
- Agricultural land use: intrusive crop management .45 m bgs.
- Mitigate unacceptable risk to workers.
- Restrictions: no deed notices, no signs.

Vertical CSM



Camp Example RAO Statement Structured, EM 200-1-15 Format

- **Contaminants & Media of Concern:**

The Example MRS is anticipated to contain for 37mm, 2.36 rocket, 60 mm, 75 mm, 81mm, 3" stokes, 105 mm, 4.5" rocket, 5" rocket and 155 mm rounds in soil throughout the MRS, with MEC expected to exist from the surface to .9 M bgs.

- **Potential Exposure Pathways:**

Agricultural workers in the assessment area may be exposed to MEC via intentional or unintentional direct contact during crop-management activities to a depth of .45m bgs

- **Remediation Goal:**

The remediation goal for the Example MRS is to mitigate intentional or unintentional direct contact during crop-management activities to eliminate unacceptable risk conditions.

- **Constraints:**

This RAO cannot be achieved using deed notices, signs. Munitions are known to exist below current site use. Detection depths are limited by technology capabilities.

Summary of RAOs & Remediation Goals

RAOs include
Contaminants &
media

Exposure pathways

Remediation goals

RGs represent the
PDT's definition of
protectiveness

Adequate
mitigation =
exposure pathways
addressed

RAOs and RGs are
not clean-up goals

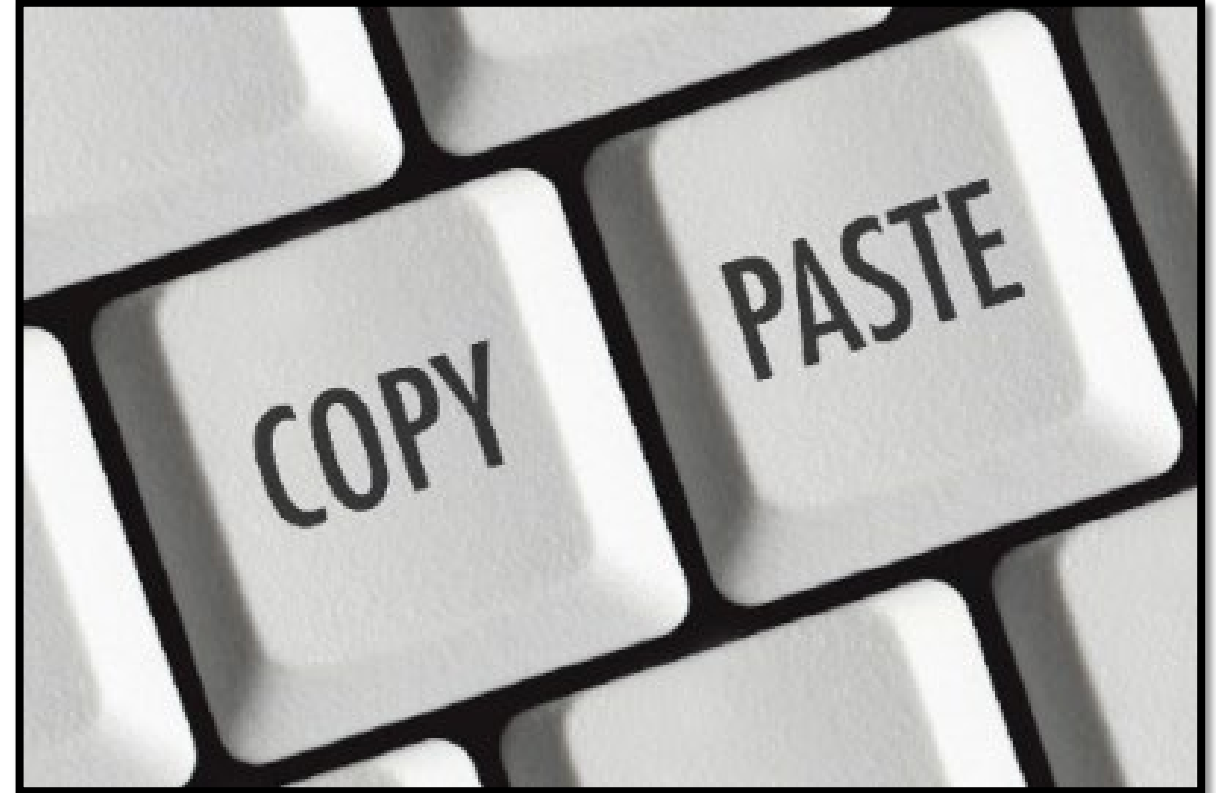
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Developing Site-Specific Remedial Alternatives for FSs

James Salisbury, USACE EM CX

Why we are Discussing This

- Many FSs identify the same remedial alternatives *every time*
 - LUCs only
 - Surface removal and LUCs
 - Subsurface removal and LUCs
 - Using AGC or DGM
 - Subsurface removal for UU/UE
 - Using AGC or DGM, or dig/sift
- But most often these alternatives are not suitable for every site
 - Some FSs even say they aren't protective!
 - Then why describe & evaluate them?
- So, how can we kick this habit?



Kicking the Habit

- The first step
 - **STOP** using old FS templates
 - At least for descriptions of remedial alternatives
 - It seems easier, but it won't get the best result
 - And it's not SITE-SPECIFIC!
- The second step
 - **START** thinking about
 - Regulatory and policy requirements
 - Conceptual Site Model (CSM), Risk Management Methodology (RMM) risk scenarios, and Remedial Action Objectives (RAOs)
 - CERCLA FS “balancing” criteria
 - Remedial technology differences



Consider Regulatory and Policy Requirements

- National Contingency Plan (NCP)
 - *Preference* for treatment
 - i.e., MEC detection and removal
- DERP Manual
 - *Must* look at the No Action alternative
 - *Must* consider alternatives that:
 - Achieve conditions allowing for UU/UE
 - *Include* land use controls (LUCs)
- DoD/EPA UXO Management Principles, March 2000
 - *Preference* to use digital data collection
- FUDS policy
 - *Preference* to use AGC technologies for MEC removal at FUDS



Policy documents describe both *minimum requirements* and *preferences*

Consider CSM, RMM Risk Scenarios, and RAOs

- Conceptual Site Model

- Are there areas where MEC removal could/should be focused?
 - Areas with greatest risk of exposure
 - e.g., HUAs with high activity
- Are there constraints on remedial alternatives?
 - Topography and/or vegetation
 - Sensitive ecological/cultural resources
 - Developed/paved areas

- RMM Risk Scenarios

- Can highlight focus areas and pathways

- Remedial Action Objectives

- Remedial alternative components must mitigate risk for all complete exposure pathways
 - Receptors, activities, and locations
 - Depths for MEC and activities

CONTAMINANT/MEDIA	POTENTIAL EXPOSURE PATHWAY(S)		
	Assessment Area(s)	Receptors and Exposure Pathways	Interaction Zone
IN SOIL: ▪ Bomb, 100-lb., GP, AN-M30 (up to 4 feet bgs est.) ▪ Bomb, 100-lb., Practice, M38A2 (up to 2 feet bgs est.) ▪ Charge, spotting, M1A1 (up to 1 feet bgs est.)	HUA/LUA (crop cultivation)	Crop management – inspection and harvesting	Surface only
		Crop management – plowing	0-60cm bgs
	HUAs (residential/ranching)	Outdoor recreation, mowing	Surface only
		Cattle handling/management	Surface only
		Boundary fence maintenance	0-30cm bgs
	LUA (residential)	Outdoor recreation, gardening, landscaping	0-30cm bgs
	LUA (residential/recreational)	Outdoor recreation, mowing	Surface only
	LUA (ranching)	Cattle handling/management	Surface only
		Boundary fence maintenance	0-30cm bgs

For each remedial alternative, how is the risk mitigated for each receptor in the RAO?

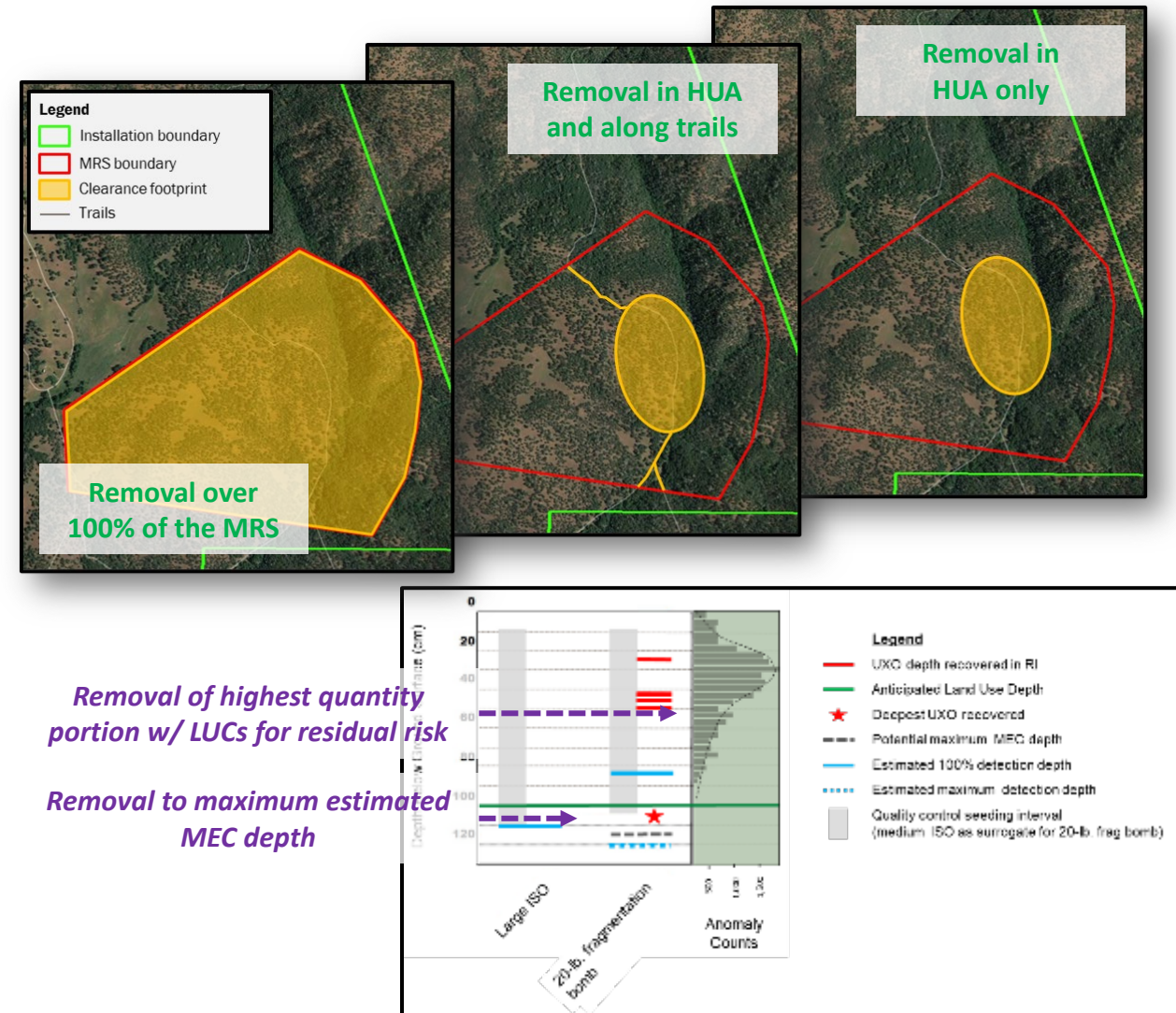
Consider Balancing Criteria

- There are 9 criteria used to evaluate remedial alternatives in the FS
 - Two threshold criteria
 - Five balancing criteria
 - Two modifying criteria
- Every alternative must meet the two threshold criteria
 - Overall protection of human health and the environment
 - i.e., must achieve the remediation goals for the remedial action objectives (RAOs)
 - Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
 - i.e., must comply with ARARs

Threshold Criteria	Overall protection of human health and the environment
	Compliance with ARARs
Primary Balancing Criteria	Long-term effectiveness and permanence
	Reduction of toxicity, mobility or volume through treatment
	Short-term effectiveness
	Implementability
	Cost
Modifying Criteria	State acceptance
	Community acceptance

Consider Balancing Criteria, cont'd.

- But some balancing criteria suggest how remedial alternatives can differ
 - Long-term effectiveness and permanence
 - Magnitude of residual risk
 - Amount of MEC removal involved
 - Adequacy and reliability of controls
 - Proportions of MEC removal and LUCs
 - Planned maintenance for LUCs
 - Reduction of toxicity, mobility, or volume through treatment
 - The amount of treatment being done
 - Amount of MEC removal involved
 - How alternative satisfies the preference for treatment as a principal element
 - Amount of MEC removal involved



Consider Balancing Criteria, cont'd.

- Short-term effectiveness (effects?)
 - Environmental impacts of remedial action
 - Quantities or extent of vegetation removal
 - Time until response complete is achieved
 - Phased implementation

Less suitable elements for suggesting different approaches

- Protection of public *during* remedial action
 - MEC removal vs. LUCs
- Protection of workers *during* remedial action
 - MEC removal vs. LUCs
- Implementability
 - Technical feasibility
 - Administrative feasibility
 - Availability of services and materials
- Cost



Consider Remedial technology Differences

- MEC removal methods
 - AGC vs DGM vs. analog
 - Digital vs. analog
 - Dig and sift
 - Removal on slopes or in ponds using engineering methods
- Land use controls
 - We have **options**; don't just say "...and LUCs"
 - Engineering controls
 - Fencing
 - Covers
 - Educational controls
 - Signs
 - Information pamphlets
 - Meetings and websites
 - And maybe a few others as well...



Technology combinations can be used to create a range of remedial alternatives

Differences between Remedial Alternatives

- Differences **DON'T** need to be extreme
 - i.e., LUCs only vs. complete MEC removal
- Largely boils down to differences in
 - MEC removal footprint(s)
 - Removal depth(s)
 - Where/how technologies are applied
 - Different combinations of LUCs
- But remember alternatives must be protective and comply with ARARs
 - i.e., achieve the RAO across the **whole** MRS
 - Mitigate risk for **all** exposure pathways
- Think about the following questions
 - Is a UU/UE alternative viable?
 - (We must consider one anyway)
 - Is MEC removal viable across the whole MRS?
 - Which LUCs will be protective for receptors?
 - Is a LUCs only alternative protective/viable?
 - Are there areas where MEC removal could or should be focused?
 - i.e., areas with greatest risk for exposure
 - For example, HUAs with high activity

Our goal is to develop a range of implementable, site-specific remedial alternatives that are protective and comply with ARARs

EXAMPLE: Maydup AAF Bombing Ranges MRS

- 5 Assessment Areas, 9 Risk Scenarios
 - AA1: HUA/LUA (crop cultivation)
 - RS1a: Crop management – inspection and harvesting
 - RS1b: Crop management – plowing
 - AA2: HUAs (residential/ranching)
 - RS2a: Outdoor recreation, mowing
 - RS2b: Cattle handling/management
 - RS2c: Boundary fence maintenance
 - AA3: LUA (residential)
 - RS3: Outdoor recreation, gardening, landscaping
 - AA4: LUA (residential/recreational)
 - RS4: Outdoor recreation, mowing
 - AA5: LUA (ranching)
 - RS5a: Cattle handling/management
 - RS5b: Boundary fence maintenance
- *Unacceptable risk conditions assessed for ALL risk scenarios*



Maydup AAF Bombing Ranges MRS – RAOs

CONTAMINANT/MEDIA	POTENTIAL EXPOSURE PATHWAY(S)			Remediation Goal
	Assessment Area(s)	Receptors and Exposure Pathways	Interaction Zone	
IN SOIL: - Bomb, 100-lb., GP, AN-M30 (up to 4 feet bgs est.) - Bomb, 100-lb., Practice, M38A2 (up to 2 feet bgs est.) - Charge, spotting, M1A1 (up to 1 feet bgs est.)	HUA/LUA (crop cultivation)	Crop management – inspection and harvesting	Surface only	Mitigate all exposure pathways to eliminate unacceptable risk conditions
		Crop management – plowing	0-60cm bgs	
	HUAs (residential/ranching)	Outdoor recreation, mowing	Surface only	
		Cattle handling/management	Surface only	
		Boundary fence maintenance	0-30cm bgs	
	LUA (residential)	Outdoor recreation, gardening, landscaping	0-30cm bgs	
	LUA (residential/recreational)	Outdoor recreation, mowing	Surface only	
	LUA (ranching)	Cattle handling/management	Surface only	
		Boundary fence maintenance	0-30cm bgs	

Constraints on the remedial alternatives:

- Per the Institutional Analysis, educational controls are the only implementable LUCs for this MRS (i.e., Public Notices and Information Pamphlets, Education Seminars and Meetings, and Websites). The landowners will not allow posting of warning signs.
- The landowners will not allow the removal of mature trees (>3" dia.) or dig and sift as a MEC removal technology.

Maydup AAF Bombing Ranges MRS – Alternatives

- Answers to suggested questions
 - Is a UU/UE alternative viable?
 - Requires MEC removal beneath trees, so is not implementable
 - But still need to comply with DERP requirements
 - **ALTERNATIVES:**
 - *Subsurface Removal to Allow UU/UE*
- Is MEC removal viable across the whole MRS?
 - Yes, but no removal beneath buildings or trees greater than 3" dia., so will be exception areas
 - **ALTERNATIVES:**
 - *Subsurface Removal throughout MRS*
 - No MEC removal conducted beneath buildings or trees greater than 3" dia.



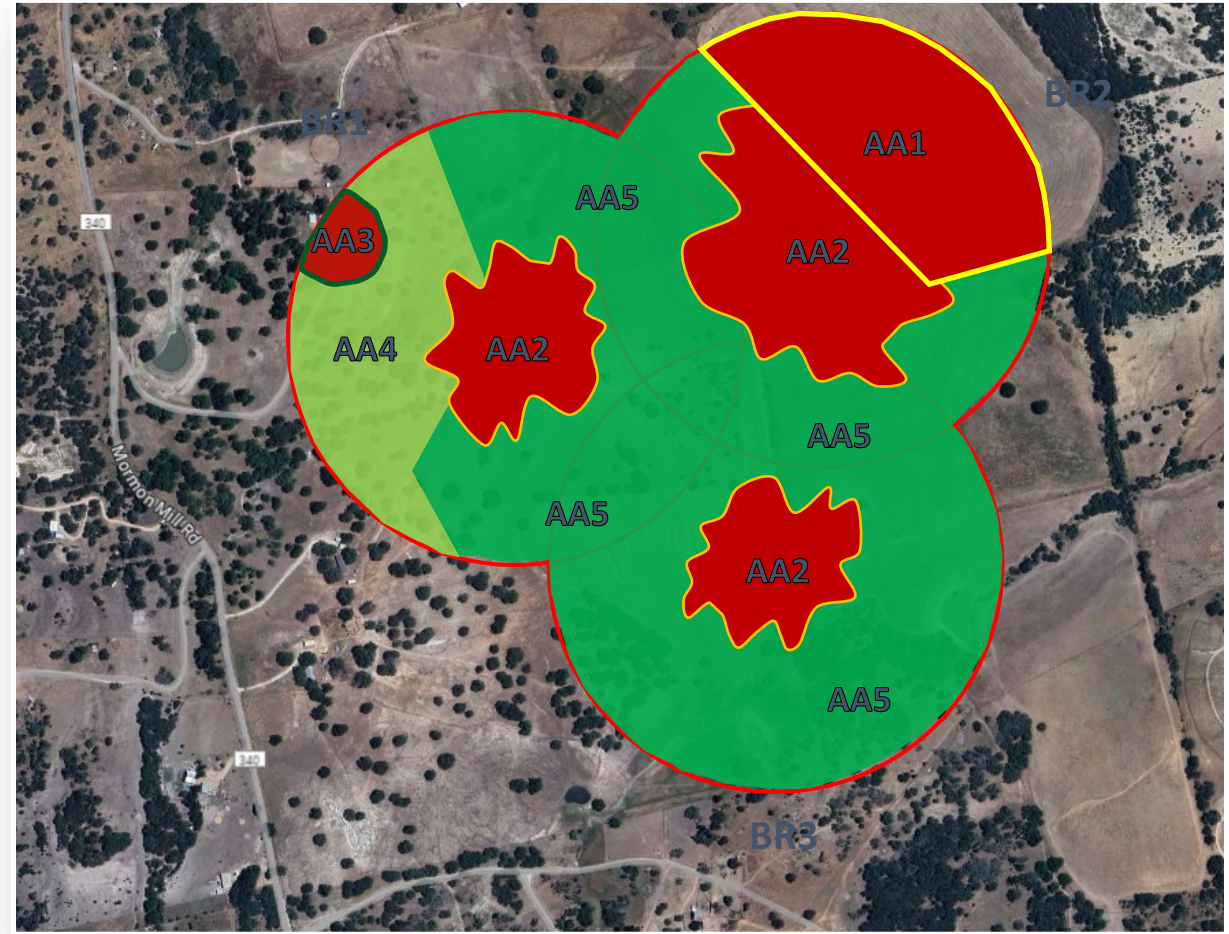
Maydup AAF Bombing Ranges MRS – Alternatives, cont'd.

- Answers to suggested questions, cont.
 - Which LUCs will be protective for receptors?
 - Informational pamphlets, maintain website
 - Signs not implementable
 - Is a LUCs only alternative protective/viable?
 - No – LUCs not protective for AA1
 - However
 - Should be protective for AA3, AA4, and AA5
 - Could also be protective for AA2 in cattle ranching areas
 - **ALTERNATIVES:**
 - **No LUCs only alternative**
 - But will have alternatives *including* LUCs to comply with DERP requirements (see next slide)



Maydup AAF Bombing Ranges MRS – Alternatives, cont'd.

- Answers to suggested questions, cont.
 - Are there areas where MEC removal could or should be focused?
 - AA1, AA2, and AA3 are highest risk areas
 - HUAs and frequently accessed areas
 - **ALTERNATIVES:**
 - Subsurface Removal at AA1, 2, 3, and 4 with Surface Removal at AA5, and LUCs
 - Subsurface Removal at AA1, 2, and 3 with Surface Removal at AA4 and 5, and LUCs
 - Subsurface Removal at AA1, 3, and 4, and AA2 fence lines, with Surface Removal at AA2 and 5, and LUCs



Maydup AAF Bombing Ranges MRS – Alternatives, cont'd.

No.	ALTERNATIVE NAME	MAJOR COMPONENTS	COMMENTS
1	No Action	None	Evaluation of the No-Action alternative is required
2	Subsurface Removal to Allow UU/UE	- Surface and subsurface MEC removal in MRS using AGC for anomaly detection and classification to 1.2m bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - BIP or consolidated shots for MEC disposal	- Requires MEC removal beneath trees, so is not implementable - However, evaluation of alternative to allow UU/UE required under DERP
3	Subsurface Removal throughout MRS	- Surface and subsurface MEC removal in MRS using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - BIP or consolidated shots for MEC disposal	- No MEC removal conducted beneath buildings or trees greater than 3" dia. - TOI detected beyond 60cm bgs will be excavated
4	Subsurface Removal at AA1, 2, 3, and 4 with Surface Removal at AA5, and LUCs	- Surface and subsurface MEC removal in AA1, 2, 3, and 4 using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- No MEC removal conducted beneath buildings or trees greater than 3" dia. - TOI detected beyond 60cm bgs will be excavated
5	Subsurface Removal at AA1, 2, and 5 with Surface Removal at AA3 and 4, and LUCs	- Surface and subsurface MEC removal in AA1, 2, 3, and 4 using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- No MEC removal conducted beneath buildings or trees greater than 3" dia. - TOI detected beyond 60cm bgs will be excavated
6	Subsurface Removal at AA2, 3, and 5, and AA1 fence lines, with Surface Removal at AA1 and 4, and LUCs	- Surface and subsurface MEC removal in AA1, 2, and 3, and along AA4 fence lines, using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA1 and 4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- Only surface removal in HUAs in cattle ranching areas (except for fence lines) - No MEC removal conducted beneath buildings or trees greater than 3" dia. - TOI detected beyond 60cm bgs will be excavated

Maydup AAF Bombing Ranges MRS – Alternatives, cont'd.

No.	ALTERNATIVE NAME	MAJOR COMPONENTS	COMMENTS
1	No Action	None	Evaluation of the No Not protective is required
2	Subsurface Removal to Allow UU/UE	- Surface and subsurface MEC removal in AA1, 2, 3, and 5 using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - BIP or consolidated shots for MEC disposal	- Requires MEC removal beneath trees, so is not implementable - However, evaluation of alternative to allow UU/UE required under DERP
3	Subsurface Removal throughout MRS	- Surface and subsurface MEC removal in MRS using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - BIP or consolidated shots for MEC disposal	- No MEC removal conducted beneath buildings or trees greater than 3" dia., or in stock ponds - TOI detected beyond 60cm bgs will be excavated
4	Subsurface Removal at AA1, 2, 3, and 5 with Surface Removal at AA4, and LUCs	- Surface and subsurface MEC removal in AA1, 2, 3, and 5 using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- No MEC removal conducted beneath buildings or trees greater than 3" dia., or in stock ponds - TOI detected beyond 60cm bgs will be excavated
5	Subsurface Removal at AA1, 2, and 5 with Surface Removal at AA3 and 4, and LUCs	- Surface and subsurface MEC removal in AA1, 2, 3, and 5 using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- No MEC removal conducted beneath buildings or trees greater than 3" dia., or in stock ponds - TOI detected beyond 60cm bgs will be excavated
6	Subsurface Removal at AA2, 3, and 5, and AA1 fence lines, with Surface Removal at AA1 and 4, and LUCs	- Surface and subsurface MEC removal in AA2, 3, and 5, and along AA1 fence lines, using AGC for anomaly detection and classification to 60cm bgs - Use anomaly reduction or conduct post-removal AGC surveys for SRAs - Surface MEC removal in AA1 and 4 using instrument-aided visual surveys - BIP or consolidated shots for MEC disposal - Regular mailings of informational pamphlets to landowners; maintain website	- Only surface removal in HUAs in cattle ranching areas (except for fence lines) - No MEC removal conducted beneath buildings or trees greater than 3" dia., or in stock ponds - TOI detected beyond 60cm bgs will be excavated

To comply with DERP Manual

- No Action alternative
- Alternative that allows for UU/UE
- Alternative(s) that use(s) LUCs

We must have BOTH

Multiple, viable site-specific alternatives

Key Takeaways

- Kick the old FS alternatives habits!
 - **STOP** using old FS templates
 - **START** thinking about
 - Policy requirements
 - CSM, RMM risk scenarios, and RAOs
 - CERCLA FS “balancing” criteria
 - Remedial technology differences
- Differences **DON'T** need to be extreme
 - i.e., LUCs only vs. complete MEC removal
- Largely boils down to differences in
 - MEC removal footprint(s)
 - Removal depth(s)
 - Where/how technologies are applied
 - Combinations of LUCs



Questions?



- Presenter Contact Information:

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Military Munitions Response Program

Records of Decision (ROD)

Regulatory Challenges - Determining Protectiveness of Remedy

- ☐ No regulatory cleanup standards or “safe” level
- ☐ Response depth & extent (surface/subsurface; detection depth)
- ☐ Munitions of concern (types, depths)
- ☐ Quality of remedial action
- ☐ Technological capabilities & site limitations
- ☐ Residual risk management (LUCs)



Purpose of the ROD

1. Certifies the remedy selection process was carried out in accordance with CERCLA and the National Contingency Plan (NCP)
2. Summarizes the technical rationale and background information
3. Provides technical information which outlines remedial action objectives and cleanup levels
4. Key Communication tool for the public on what is the remedy and why it was selected

MMRP: RODs typically document RAOs and remediation goals focused on managing explosive hazards rather than achieving chemical specific cleanup levels. Munitions constituents are described differently.

How Munitions Response Sites Influence ROD Development

Purpose	Traditional CERCLA Sites	Military Munitions Response Program (MMRP)
1. Remedy Selection	Cleanup levels	Explosive hazards & land use
2. Technical Basis	Risk assessment	Site history, munitions and explosives of Concern (MEC) distribution & geophysics
3. RAOs	Achieve cleanup level	Prevent or limit MEC exposure
4. Communication	Cleanup strategy	Hazard management & LUCs

Highlight 6-1: Recommended Outline for Standard Record of Decision*

PART 1: DECLARATION

- Site Name and Location
- Statement of Basis and Purpose
- Assessment of Site
- Description of Selected Remedy
- Statutory Determinations
- ROD Data Certification Checklist
- Authorizing Signatures

PART 2: DECISION SUMMARY

- Site Name, Location, and Brief Description
- Site History and Enforcement Activities
- Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Current and Potential Future Site and Resource Uses
- Summary of Site Risks
- Remedial Action Objectives
- Description of Alternatives
- Comparative Analysis of Alternatives
- Principal Threat Waste
- Selected Remedy
- Statutory Determinations
- Documentation of Significant Changes

PART 3: RESPONSIVENESS SUMMARY

- Stakeholder Comments and Lead Agency Responses
- Technical and Legal Issues

* See the expanded outline/checklist at the end of Chapter 6.

PART 1: DECLARATION

PART 2: DECISION SUMMARY

- Site Name, Location, and Brief Description
- Site History and Enforcement Activities
- Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Current and Potential Future Site and Resource Uses
- Summary of Site Risks
- Remedial Action Objectives
- Description of Alternatives
- Comparative Analysis of Alternatives
- Principal Threat Waste
- Selected Remedy
- Statutory Determinations
- Documentation of Significant Changes

PART 3: RESPONSIVENESS SUMMARY

Key Sections of a ROD

MMRP ROD/Decision Document Language

- ☐ Need robust remedial alternatives range
- ☐ Don't default to LUCs-only every time
- ☐ ROD language – need clear, concise and factually correct decisions
- ☐ Selected remedy needs to be clearly supported
- ☐ Remember the audience

Common “Regulatory” issues

- ☐ Munitions as a hazardous waste / hazardous substance
- ☐ Principal threat waste
- ☐ ARARs
- ☐ UU/UE Determinations

Basis for Action under CERCLA

- ❑ A release or substantial threat of release of a hazardous substance into the environment (or of a pollutant or contaminant "which may present an imminent and substantial danger to public health or welfare")
- ❑ Unacceptable risk to human health based on reasonably anticipated future land use

Standard Language for Basis for Action

Hazardous substances only:

“The response action selected in this Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.”

Pollutants or contaminants only:

“The response action selected in this Record of Decision is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from this site which may present an imminent and substantial endangerment to public health or welfare.”

ROD Guidance page 6-3 Highlight 6-12:

The information presented in the *Summary of Site Risks* must support the decision to take the remedial action. A clear statement regarding the basis for action at the site should be made at the conclusion of the risk assessment section of the ROD.¹¹ See Highlight 6-12 for standard language.

Highlight 6-12: Standard Language - Basis for Action

The response action selected in this Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

If the site is contaminated with only pollutants or contaminants (in accordance with the definitions contained in NCP §300.5), then the following standard language should be used:

The response action selected in this Record of Decision is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from this site which may present an imminent and substantial endangerment to public health or welfare.

If the response action will address both hazardous substances and pollutants or contaminants, a combination of the two examples of standard language may be necessary.

Principal Threat Waste

- ❑ NCP Section 300.430(a)(1)(iii)(A): “EPA expects to use treatment to address the principal threats posed by a site, wherever practicable.”
- ❑ Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or **would present a significant risk to human health or the environment should exposure occur.**
- ❑ The ROD should discuss the source materials constituting principal threats at the site and discuss how the alternatives will address them.
- ❑ EPA and DoW have resolved disputes regarding this issue and have generic language to use as a starting point

Compliance with ARARs

NCP Section 300.430(e)(9)(iii)(B)

- ☐ Relates to the statutory requirements that an alternative must satisfy to be selected
- ☐ Not required to be met for interim actions
- ☐ Specific ARARs can be waived
- ☐ Identify ARARs early and refine them through the RI/FS, but they are not finalized until the ROD
- ☐ Inconsistent development and selection of ARARs for MMRP sites

Unlimited Use/Unrestricted Exposure (UU/UE)

☐ What affects reaching UU/UE:

- ☐ Site characteristics (terrain, geology, munitions type)
- ☐ Technology limitations (e.g., analog)
- ☐ QA/QC and data quality
- ☐ What does 100% mean?

☐ How to strengthen the case:

- ☐ Plan with the end state in mind
- ☐ Better characterization (e.g., depth profile)
- ☐ Build a strong Conceptual Site Model (CSM) and limit uncertainty

☐ Key caveat:

- ☐ “Acceptable” risk $\neq$ UU/UE
- ☐ “Acceptable” may differ for the lead agency vs. regulators
- ☐ See MR QAPP Module 2 for verification examples

Statutory Determinations

- ☐ Protect Human Health and the Environment
- ☐ Comply with Applicable or Relevant and Appropriate Requirements
- ☐ Cost-Effective
- ☐ Utilize Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable
- ☐ Preference for Treatment as a Principal Element

Statutory Determinations

- A. The ROD must state whether a five-year review is required pursuant to CERCLA Section 121(c) and NCP 300.430(f)(5)(iii)(C)

Chapter 6: Writing the Record of Decision

Highlight 6-36: Determinations for Five-Year Reviews

The purpose of this Section is to explain determinations for five-year reviews. The NCP states that the ROD must describe whether a five-year review is required (i.e., a “statutory review”). The ROD should also discuss whether the site is likely to undergo any discretionary policy reviews (i.e., a “policy review”). The structure and content of the five-year review is the same for both statutory and policy reviews.

Changing the Remedy Post-ROD

- ❑ Post-ROD changes are documented by the following:
 - A memo or note to the Post-ROD file for an **insignificant or minor change**
 - An Explanation of Significant Differences (ESD) for a **significant change**
 - A ROD Amendment for a **fundamental change**
- ❑ Changes significantly affecting the remedy selected in the ROD will need more explanation and opportunity for public comment

EPA Training

- *Federal Facilities Online Academy: Record of Decision (RODs) and More at Federal Facilities* - Archived: Wednesday, March 25, 2026
https://www.clu-in.org/conf/tio/FFAcademy2_032526/
- *Federal Facilities Online Academy: Determining Applicable or Relevant and Appropriate Requirements (ARARs) in RODs* - December 2, 2026 @ 1:00PM EST (2024 archived version also available)
<https://www.clu-in.org/conf/tio/FFAcademy11/>

Going forward

- Improve quality of description and support for the selected remedy
- Review of federal facilities decision documents by EPA HQ (at OSEM and OLEM levels)
 - Impacts to review and signature timeframes



Questions?

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Wrap-up and Q&A

Thank you!

**Please fill out a brief
survey here:**

<https://forms.osi.office365.us/r/3jyKymHriq>