RA LESSONS LEARNED

Elise Goggin

USACE EMCX

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WHAT'S THE POINT?

Goal 2: Get ~100 projects to RC by 2030

We've hit some speed bumps along the way

What have we learned to help us meet our next goal?

LET'S LOOK AT THOSE BUMPS IN THE ROAD

What has caused delays on reaching RC on our Goal 2 Projects?

– Large Areas Requiring MEC Removal
– Site-specific challenges
– Holes in the CSM
– Underestimating ROD Language

What Lessons Learned can we implement during the RI/FS to prevent recurrence on future RAs?

What can we do if we already have a ROD in place?

BUMP #1: LARGE MEC REMOVALS

Example:

- Selected Remedy: Surface and subsurface removals and land use controls
- Acreage: >1000 acres — Huge
- RA cost: >$50M — Cost prohibitive
- Land Use: — Broad/Generic Land Use
  - Recreation
  - Forestry

We have several of these sites!

BUMP #1: APPLY LESSONS LEARNED

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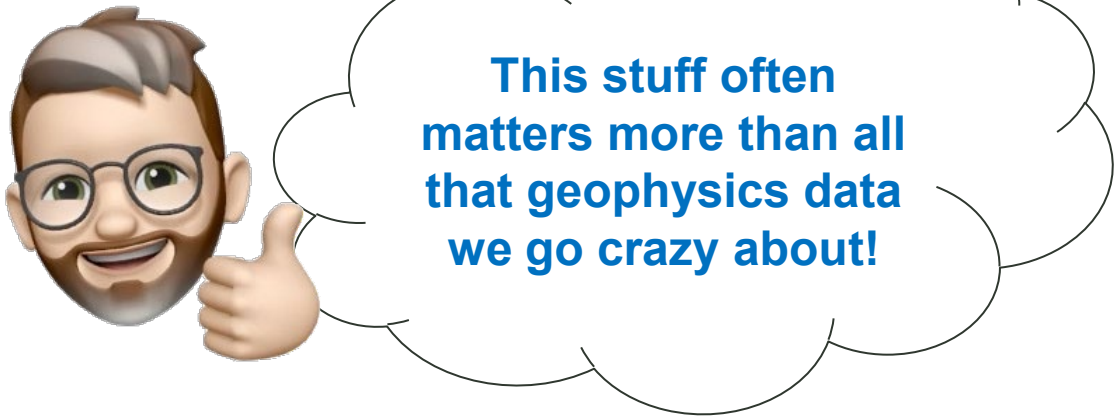
Collect better land use data during the RI, including specific receptor activities

Define site-specific risk assessment areas

– Identify areas of unacceptable and acceptable risk

– Think about this:

Likelihood of MEC Presence	Types of Activities	
HIGHER RISK	High likelihood, Lots of activity	High likelihood, Little activity
	Low likelihood, Lots of activity	Low likelihood, Little activity LOWER RISK

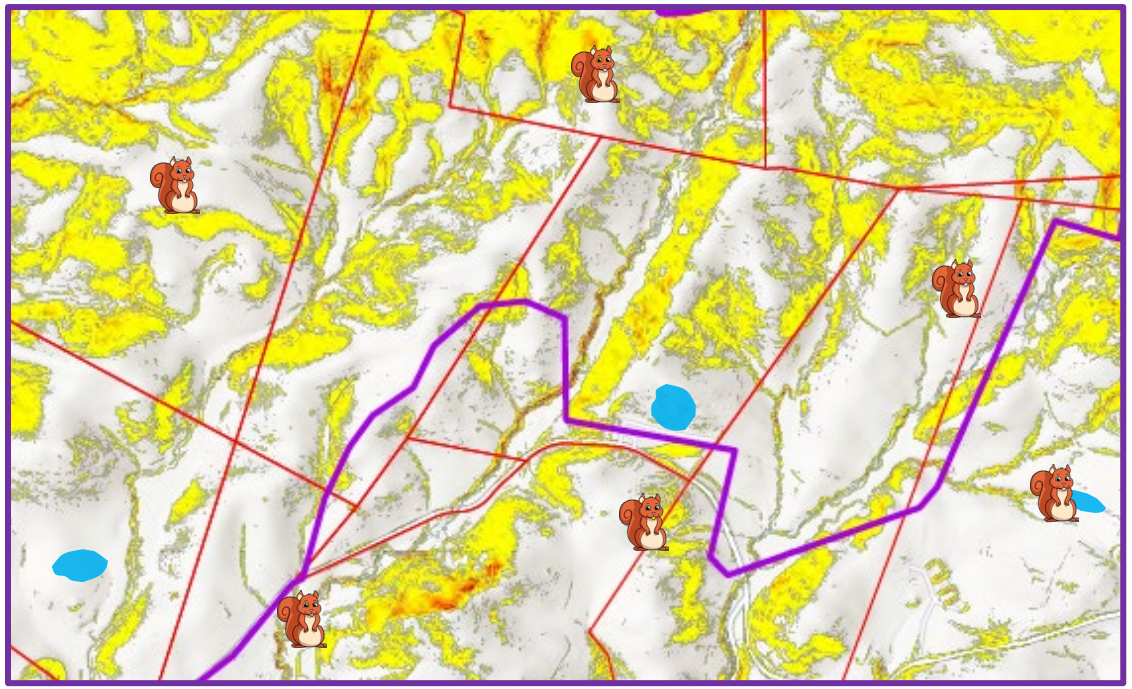


Bottom Line: Develop Remedial Alternatives that address the site-specific risk scenarios, rather than applying one remedial process to the entire site.

BUMP #2: SITE-SPECIFIC CHALLENGES

Example:

Selected Remedy: AGC survey and subsurface removal over 100 of the 100-acre site



Problems:

- Endangered squirrel dens located throughout the site cannot be disturbed
- There are cattle ponds scattered throughout the site
- The landowner doesn't want fencing removed
  - Fence repair is a primary subsurface receptor activity
- There are steep ravines throughout the site

We complete the RA but only covered 80% of the site.
Can we claim Response Complete?

Nope

BUMP #2: APPLY LESSONS LEARNED

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Identify site-specific challenges during the RI

– Start with Principal Study Questions

– e.g. What areas are inaccessible to receptors? To DGM? Or What are the biological and cultural restrictions at this site?

Develop decision rules related to assessing risk within bodies of water

– This doesn't always mean we have to collect geophysical data in the water

– Do receptors interact with the bodies of water?

Develop site-specific alternatives during the FS

– You may have to get creative in order to be protective!

– e.g. Identify and monitor squirrel dens during remediation to ensure maximum coverage is obtained. Place signs to warn receptors of remaining hazards at squirrel den locations that were not remediated.

Increase effective communication with stakeholders

– e.g. Explain why it is in their best interest to remove fencing during remedial activities

– Gather information about land use

BUMP #3: OTHER HOLES IN THE CSM

Extent has not been determined
– MRS Boundary is wrong

→ Never ending Step-outs

Vertical Profile is incomplete or based on the wrong data
– Depth of MD ≠ estimated depth of MEC

→ Change in CSM identified during RA requires ROD Amendment to be protective

Anomaly densities are much higher than anticipated

→ Anomaly reduction isn't planned for, and allocated funding isn't sufficient

BUMP #3: APPLY LESSONS LEARNED

Structure RI Task Orders to have the flexibility to find the extent

– Options

– Phased approach

EM 200-1-12: “while vertical distribution of detected and recovered pieces of metal, including MD, can be used to support these estimates, MD depth alone is NOT a reliable predictor of MEC Depth"

– Use RA data from similar sites

– SERDP/ESTCP models (as available)

– Professional judgement and experience

Consider performing a Remedial Design if we still have CSM data gaps after the RI

Focus on completing a detailed vertical profile during the RI

This is the backbone of your RAO!

BUMP #4: UNDERESTIMATING ROD LANGUAGE

Examples:

- The Selected Remedy is Subsurface Removal using AGC, but the contractor proposed digging and sifting part of the site.
  - Should USACE award the TO to this contractor?
  - No! Dig and Sift is not the Selected Remedy
- The ROD says the remedy is applied to the whole site, but during a site visit we see a pile of old cars, so we determine that is an “exception area” and we do not apply the remedy to that area.
  - Can we get to RC if we exclude this area?
  - Depends. We can if we determine the remedy would still be protective AND we follow the process to change the ROD.
- The ROD doesn’t mention analog methods, but there are areas that are challenging to map with DGM sensors, so we use analog methods to clear those areas.
  - Can we claim RC?
  - No, we did not implement the Selected Remedy or follow DoD Policy.

BUMP #4: LESSON LEARNED

Complete the Selected Remedy as defined in the ROD

OR

Follow the designated process to change the ROD

BUMP SUMMARY

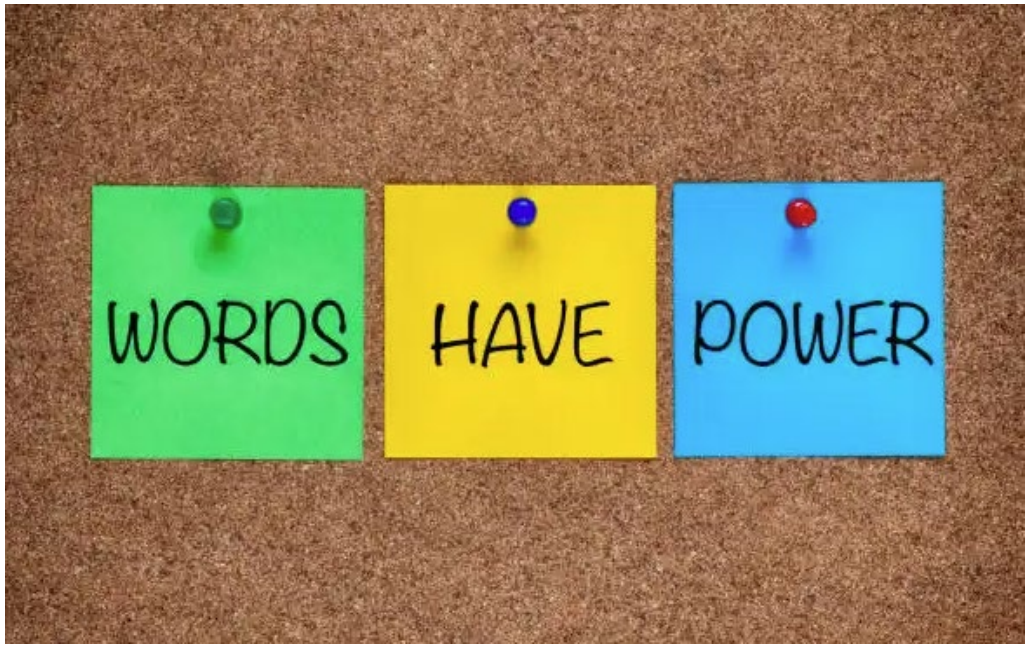
Success in the RA Phase depends on a well characterized site and site-specific remedial alternatives.

WHAT WE WRITE IN THE FS, IMPACTS THE RA

Be intentional when writing remedial alternatives

Address known and unknown site-specific features that may impact the ability to successfully implement the remedy

If an alternative becomes the selected remedy, the Lead Agency is legally required to implement it as described



EXAMPLE LANGUAGE

Acknowledge areas where we can't reasonably perform treatment while explaining why it is still protective:

– There are areas of the site in which AGC/DGM data collection and/or MEC removal will not be practicable, however, these areas represent an **insignificant percentage of the site** and **will not impact protectiveness** of the remedy. At this site:

- **MEC may remain** under trees that are not removed. The Forest Service has restricted the removal of trees with a **diameter of 5 inches at a height of 5 feet above ground surface**.
- **MEC may remain** in the bottom of the creek bed. USACE will coordinate with the Forest Service to **schedule removal activities during the times of lowest flow** to ensure maximum coverage is obtained. There are **no known or anticipated receptor activities** in the creek.

Disclaimer: None of this language should be taken as guidance or direction. They are merely examples.

EXAMPLE LANGUAGE CONTINUED

Use language that allows for use of different technologies, while stating the preference for AGC and digital data collection:

– In areas where AGC is determined to be impracticable, alternate detection methods will be employed after receiving **authorization from a USACE AGC Subject Matter Expert** (i.e., Level 2 Geophysicist). In these authorized areas, **non-AGC DGM will be used** where practicable. If an area is **inaccessible** to AGC and non-AGC DGM sensors, but accessible to **analog detection methods**, they will be used.

Explain the anticipated detection depths for sensors:

– The geophysical system used during the RI (**Geonics EM61-MK2**) had a reliable depth of detection in the worst-case orientation for the **Mk II fragmentation hand grenade** of **30 centimeters (11.8 inches**). **AGC sensors** may be able to reliably detect the Mk II fragmentation hand grenade to approximately **45 cm (approximately 18 inches**) pending site-specific conditions and sensor selection. **All detected TOI will be investigated regardless of depth.**

EXAMPLE LANGUAGE CONTINUED

Example related to features that interfere with detection capabilities:

– **DGM data will be collected under powerlines**. If the noise from the powerlines cannot be mitigated through filtering of the data to facilitate reliable classification, **analog sensors will be used in addition to DGM data** to detect and remove MEC in these areas.

Example related to fencing:

– USACE will coordinate with the Forest Service to **remove all fencing** in the MRS prior to collecting AGC data. Fencing will be replaced during site restoration. (See MOU/MOA)

- Note: **MOU/MOA** shows we have already reached agreement on this with the Forest Service

Example of a site-specific constraint:

– **Intrusive investigation is prohibited** along the natural gas pipeline and the required setback of 15 feet. To **mitigate the unacceptable risk** in this area, the Forest Service will be **provided coordinates for any Targets of Interest (TOI)** identified in these areas.

BUT HOW DO WE DEAL WITH THIS WHEN WE ALREADY HAVE A ROD?

Follow the established process to change the ROD

– We have a process for a reason

– **Changes to a ROD are not a bad thing**

If you need to make a change:

– Talk to Office of Counsel to determine what is needed to change the ROD

- MFR
- ESD
- ROD Amendment

– Consider delineation to optimize the implementation of the remedy

– Complete a Remedial Design to fill holes in the CSM and then update the ROD as needed

IN SUMMARY

You will only remember 7% of what I said, so remember this:

- Use the RI to characterize accessibility
  - Receptors, sensors, or other field activities
- Collect detailed land use data in the RI
- Don’t paint the entire elephant red
  - Different parts of the site likely have different risk scenarios that can be mitigated using different response actions
- Write site-specific remedial alternatives and explain how they are protective over then entire site
- Take the ROD language seriously
- Use the established process to change the ROD when needed

QUESTIONS?

Elise M. Goggin
Geophysicist, Military Munitions Division, EM CX
Engineering and Support Center Huntsville
United States Army Corps of Engineers
(Mobile) 256-640-5822