MR-QAPP Toolkit, Module 2: Remedial Action
Data Quality Objectives

James Salisbury
USACE Environmental & Munitions Center of Expertise (EM CX)

M2S2 Webinar Series
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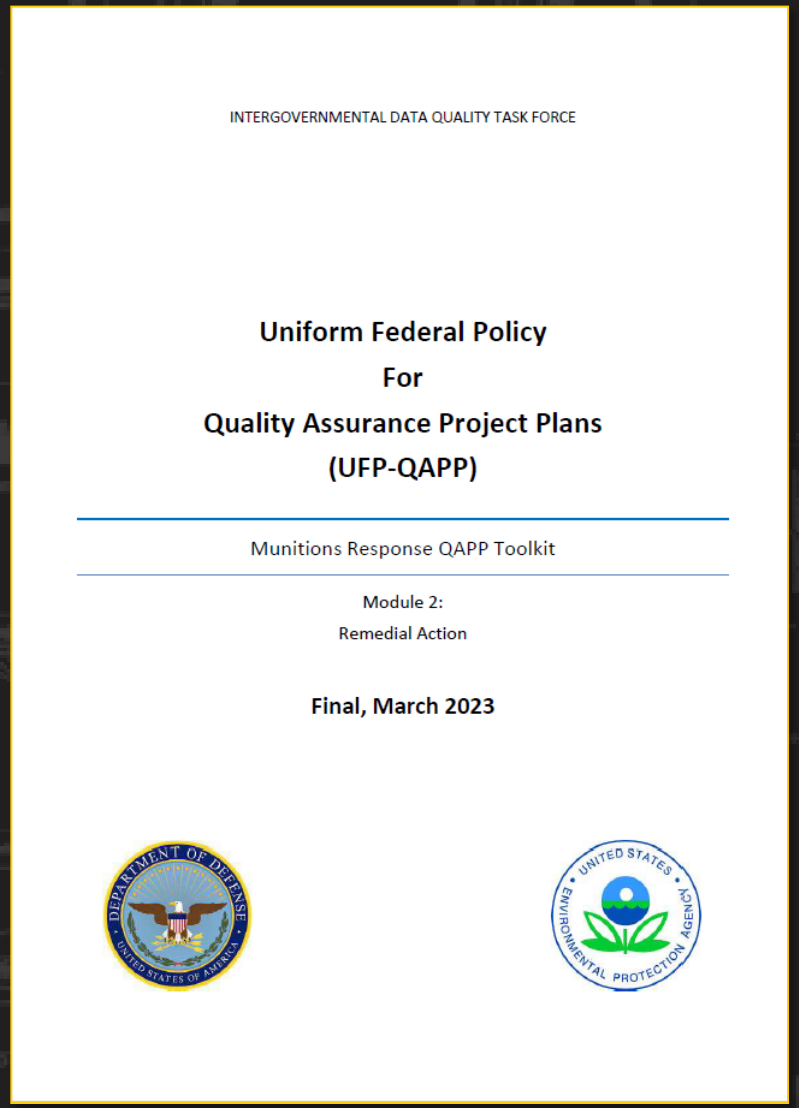


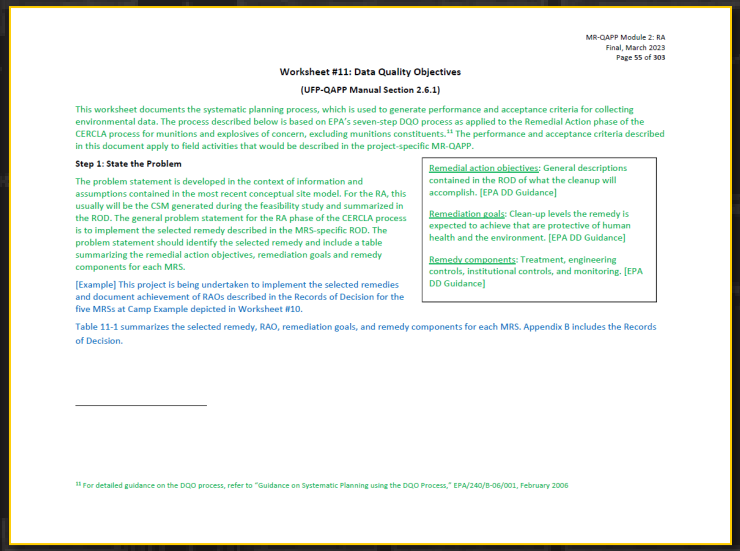
INTERGOVERNMENTAL DATA QUALITY TASK FORCE

Uniform Federal Policy
For
Quality Assurance Project Plans
(UFP-QAPP)

Munitions Response QAPP Toolkit

Module 2:
Remedial Action

Final, March 2023



MR-QAPP Module 2: RA
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Worksheet #11: Data Quality Objectives
(UFP-QAPP Manual Section 2.6.1)

This worksheet documents the systematic planning process, which is used to generate performance and acceptance criteria for collecting environmental data. The process described below is based on EPA's seven-step DQO process as applied to the Remedial Action phase of the CERCLA process for munitions and explosives of concern, excluding munitions constituents.[11] The performance and acceptance criteria described in this document apply to field activities that would be described in the project-specific MR-QAPP.

Step 1: State the Problem

The problem statement is developed in the context of information and assumptions contained in the most recent conceptual site model. For the RA, this usually will be the CSM generated during the feasibility study and summarized in the ROD. The general problem statement for the RA phase of the CERCLA process is to implement the selected remedy described in the MRS-specific ROD. The problem statement should identify the selected remedy and include a table summarizing the remedial action objectives, remediation goals and remedy components for each MRS.

[Example] This project is being undertaken to implement the selected remedies and document achievement of RAOs described in the Records of Decision for the five MRSs at Camp Example depicted in Worksheet #10.

Table 11-1 summarizes the selected remedy, RAO, remediation goals, and remedy components for each MRS. Appendix B includes the Records of Decision.

Remedial action objectives: General descriptions contained in the ROD of what the cleanup will accomplish. [EPA DD Guidance]

Remediation goals: Clean-up levels the remedy is expected to achieve that are protective of human health and the environment. [EPA DD Guidance]

Remedy components: Treatment, engineering controls, institutional controls, and monitoring. [EPA DD Guidance]

[11] For detailed guidance on the DQO process, refer to "Guidance on Systematic Planning using the DQO Process," EPA/240/B-06/001, February 2006

WHAT IS A DATA QUALITY OBJECTIVE?

A Data Quality Objective (DQO)…

– Summarizes project goals & data needs

– **Tells us *when the project is done***

More specifically, the DQO explains when we have project data of

– The right type(s)

– Sufficient quantity

– Adequate quality

… to support defensible project decisions & revisions to the CSM

– ***So, DQOs MUST be measurable!***

Similar to the CSM

– Forms a basis for communication with stakeholders

– Presented using text, tables, figures, & graphics

"If you don't know where you want to go, ***how will you know when you get there***?"

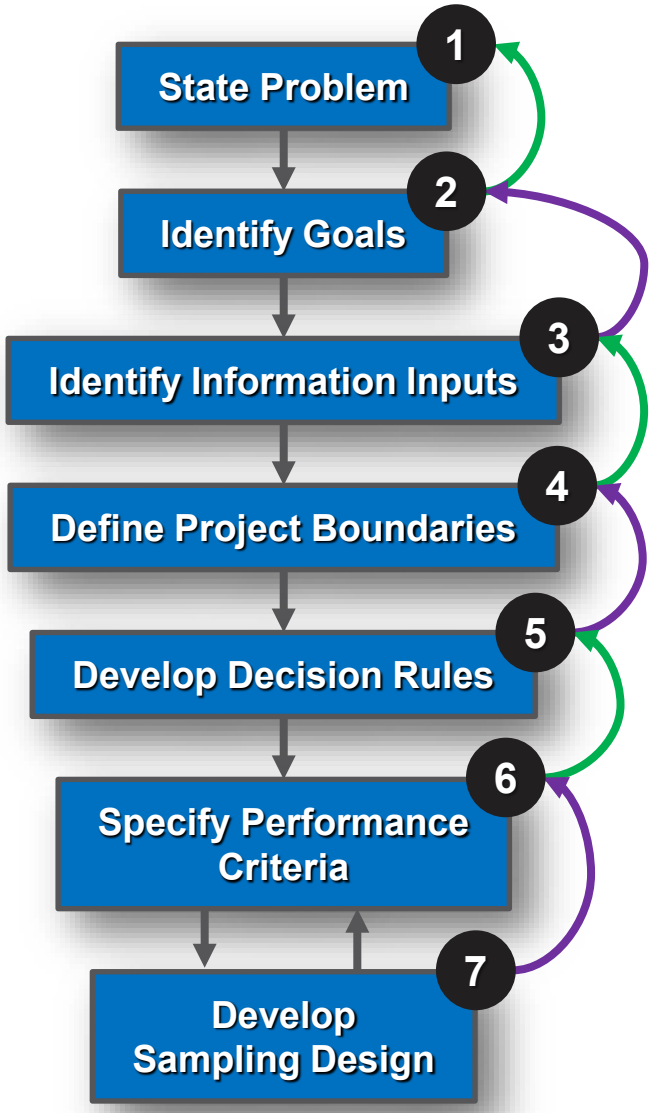
James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

REFRESHER: EPA DQO 7-STEP PROCESS

1. State the problem
   - What problem do we need to address?
2. Identify the data collection goals
   - What questions do we need to answer to address the problem?
3. Identify information inputs
   - What data do we need to answer those questions?
     - Consider ALL data
4. Define the project boundaries
   - Where are we collecting data?
   - What are the limitations on collecting those data?
5. Develop Data Collection & Analysis Approach
   - How are we using the data to make decisions? (*Decision Rules*)
6. Specify performance criteria
   - How good must data be to support project decisions?
7. Develop Sampling Design
   - Considering the above, how are we going to do this?

Notice how these steps follow each other logically

- Approach **MUST** address data needs and limitations!



[1] Guidance on Systematic Planning Using the Data Quality Objectives Process, U.S. EPA, EPA QA/G-4, February 2006.

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

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REMEMBER: ALL THE DQO STEPS ARE *RELATED*

Confirm the assumptions and related DQOs during Data Usability Assessment and revise DQOs/approach as needed

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

DQOs IN MR-QAPP TOOLKIT, MODULE 2

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Presented quite differently to the DQOs in MR-QAPP Toolkit, Module 1

– Selected remedy is part of problem statement

– Steps 1-3 use tables rather than just text

Table 11-1: Selected Remedy Summary

– DQO Step 1

- Remedial Action Objective
- Selected Remedy Components

Table 11-2: Data Collection Goals & Information Inputs

– DQO Step 2

- Data Collection Goals
- Principal Study Questions

– DQO Step 3

- Data Inputs
- Data Uses

Table 11-1: Summary of Selected Remedy

MRS/Selected Remedy	Remedial Action Objectives	Selected Remedy Components		
		MEC Removal	MEC Treatment	Land-Use Controls[12]
MRS A1 Maneuver Area Development Area Alternative # __ MEC surface and subsurface removal using non-AGC DGM detection and cued AGC with interim land use controls	Remove MEC in the surface and subsurface Remedial action is designed to achieve UU/UE MEC Removal Remediation Goal: Detection and removal of: • 60-mm mortar to a minimum depth of 0.45 m bgs • Practice hand grenades, signals, flares, pyrotechnics, 2.36" practice rockets, and practice anti-tank mines to a depth of 0.30 m bgs • Any other munitions present on the site that are detectable at the anomaly selection criteria	Anomaly detection using non-AGC DGM TOI selection using cued AGC TOI investigation and source removal using manual and backhoe-assisted excavation	All recovered MEC to be detonated in place or otherwise destroyed on-site	Add interim LUCs if specified in applicable decision document (DD) Upon successful remediation, LUCs will be removed

Table 11-2: Data Collection Goals and Information Inputs (DQO Steps 2 and 3)

Activity	DQO Step 2		DQO Step 3	
	Data Collection Goals	Principal Study Questions	Inputs	Data Uses
MRS A1: MEC surface and subsurface removal using non-AGC DGM detection and cued AGC				
Anomaly detection using non-AGC DGM	• Detect IOC within the surface and subsurface as geophysical anomalies • Confirm underlying assumptions in CSM	• Have all anomaly locations been identified and recorded in a manner that supports cued AGC collection? • Are field observations (site conditions) consistent with CSM?	• Field observations • Validated EM61 data • Geolocation data • Detection survey DUA report	• Process data to identify locations of geophysical anomalies that exceed selection criteria for cued AGC data collection • Verify site conditions support achieving remediation goal (see Table 11-1) • Document successful implementation of EM61 detection survey • Update CSM
TOI selection using cued AGC	• Classify subsurface anomalies and select TOI for intrusive investigation • Justify non-TOI decisions	• Have sources from all cued locations been classified as TOI, non-TOI, or inconclusive? • Have all TOI been placed on the dig list? • Have locations of inconclusive analyses been resolved or placed on the dig list?	• Validated AGC cued data • Geolocation data • Software (specify) • TOI library • Dig list • Cued survey DUA report	• Process data to obtain polarizabilities and perform classification to identify TOI • Determine location and depth of sources • Verify site conditions support achieving remediation goals (see Table 11-1) • Document successful implementation of cued AGC • Update CSM
TOI investigation and source removal	• Create a record of all locations excavated and items removed from the site	• Have all IOC been recovered? • Have sources at all locations on the dig list been resolved? • Have all recovered objects been correctly classified?	• Description, depth, mass, photograph, and location of recovered objects • Disposal records • Final DUA report	• Verify recovered objects are consistent with AGC analyses • Identify MPPEH for inspection and destruction • Document achievement of remediation goal • Update CSM
UU/UE recommendation	• Compile lines of evidence supporting UU/UE	• Do all available lines of evidence support UU/UE?	• All inputs listed above • Administrative record	• Prepare documentation supporting or rejecting UU/UE for consideration by final decision-makers

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

DQOs IN MR-QAPP TOOLKIT, MODULE 2, CONT'D.

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Module 2 includes example DQOs

- Multiple different scenarios
  - Surface and subsurface removal using non-AGC DGM detection and cued AGC (**MRS A1**)
  - Surface removal using instrument-aided visual identification (**MRS A2**)
  - Surface and subsurface removal using non-AGC DGM (**MRS B1**)
  - Surface and subsurface removal using analog detection (**MRS B2**)
  - Surface and subsurface removal using dynamic AGC and cued AGC (**MRS C**)
    - This is a "UU/UE" example
- These are blue text (**EXAMPLES!**)

Table 11-1: Summary of Selected Remedy

MRS/Selected Remedy	Remedial Action Objectives	Selected Remedy Components		
		MEC Removal	MEC Treatment	Land-Use Controls
MRS C Bomb Target Alternative #__ MEC surface and subsurface removal using dynamic AGC followed by cued AGC with interim LUC	Remove MEC from the surface and subsurface Remedial action is designed to achieve UU/UE MEC removal remediation goal: • 100-lb HE and practice bombs to bedrock • Fuzes and spotting charges to a minimum depth of 0.30 m bgs • Any other munitions present on the site that are detectable at the anomaly selection criteria	Surface sweep using instrument-aided visual identification Anomaly detection using AGC TOI selection using cued AGC TOI investigation and source removal using manual and backhoe-assisted excavation	All recovered MEC to be detonated in place or otherwise destroyed on site	[Add interim LUCs if specified in applicable decision document.] Upon successful remediation, any LUCs will be removed.

Table 11-2: Data Collection Goals and Information Inputs (DQO Steps 2 and 3)

Activity	DQO Step 2		DQO Step 3	
	Data Collection Goals	Principal Study Questions	Inputs	Data Uses
MRS C: MEC Surface and subsurface removal using dynamic AGC followed by cued AGC				
Anomaly detection using dynamic AGC	• Detect IOC within the surface and subsurface as geophysical anomalies • Confirm underlying assumptions in CSM	• Have all anomalous locations been identified and recorded in manner that supports cued AGC collection? • Are field observations consistent with CSM?	• Field observations • Validated dynamic AGC survey data • Geolocation data • Detection survey DUA report	• Process data to identify locations of geophysical anomalies that exceed selection criteria for cued AGC data collection • Verify site conditions support achieving remediation goal • Document the successful implementation of AGC detection survey • Update CSM
TOI selection using cued AGC	• Classify subsurface anomalies and select TOI for intrusive investigation • Record TOI locations and characteristics to support intrusive investigation	• Have sources for all selected anomaly locations been classified as TOI, non-TOI or inconclusive? • Have all TOI been placed on the dig list? • Have inconclusive analyses been resolved or placed on the dig list?	• Validated AGC cued data • Geolocation data • Cued survey DUA report	• Process data to obtain polarizabilities and perform classification to identify TOI • Verify site conditions support achieving remediation goal • Determine location and depth of sources • Document successful implementation of AGC cued survey • Update CSM
TOI investigation and source removal	• Create a record of all locations excavated and items removed from the site	• Have all IOC been recovered? • Have sources at all locations on the dig list been resolved? • Have all recovered objects been correctly classified?	• Description, depth, mass, photograph, and location of recovered objects • Disposal records • Final DUA report	• Verify recovered objects are consistent with AGC analyses • Identify MPPEH for inspection and destruction • Document achievement of remediation goal • Update CSM
UU/UE recommendation	• Compile lines of evidence supporting UU/UE	• Do all available lines of evidence support UU/UE?	• All inputs listed above for • Administrative record	• Prepare documentation supporting or rejecting UU/UE for consideration by final decision-makers

EXAMPLES ONLY (i.e., do NOT just copy them!)

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

TABLE 11-1: SELECTED REMEDY SUMMARY

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Step 1: State the Problem

- For Remedial Actions, the problem is
  - Contamination poses an unacceptable risk to human heath and the environment
  - A selected remedy must be implemented to mitigate that risk
- So, Step 1 describes the ***selected remedy***

Table 11-1: Summary of Selected Remedy

MRS/Selected Remedy	Remedial Action Objectives	Selected Remedy Components		
		MEC Removal	MEC Treatment	Land-Use Controls
MRS A2 Maneuver Area Recreational Area Alternative #__ MEC surface removal using instrument-aided visual identification with land use controls	Remove MEC from the surface and minimize the likelihood of exposure to MEC in the subsurface Remedial action is not designed to achieve UU/UE MEC Removal Remediation Goal: Detection and removal of munitions items on the surface Subsurface MEC exposure to be managed using LUCs	Surface removal using instrument-aided visual identification	All recovered MEC to be detonated in place or otherwise destroyed on site	[Add LUCs as specified in applicable decision document.]
MRS B1 Mortar Range Flat Terrain Area Alternative #__ MEC surface and subsurface removal using non-AGC DGM with land use controls	Remove MEC from the surface and subsurface Remedial action is not designed to achieve UU/UE MEC Removal Remediation Goal: Detection and removal of: • 60-mm mortar to minimum depth of 0.45 m bgs • Any other munitions present on the site that are detectable by the anomaly selection criteria Post-removal potential exposure to MEC to be managed using LUC	Anomaly detection using non-AGC DGM TOI investigation and source removal using manual and backhoe-assisted excavation	All recovered MEC to be detonated in place or otherwise destroyed on site	[Add LUCs as specified in applicable decision document.]

EXAMPLE ONLY

Table 11-1 summarizes…

- Remedial Action Objectives/Cleanup Goals
  - Basic goals of the selected remedy
- Selected Remedy Components
  - Specific elements of the selected remedy
    - MEC detection and removal
    - MEC treatment/disposal
    - Land Use Controls (LUCs)
      - » *No examples included in MR-QAPP, but that doesn't mean LUCs can be omitted!*

This must all agree with the Record of Decision (ROD)

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

TABLE 11-2: DATA COLLECTION GOALS & INFORMATION INPUTS

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Step 2: Identify data collection goals

– What questions do we need to answer to show the remedy has been implemented?

- Data Collection Goals
  – What we plan to achieve by performing this activity
- Principal Study Questions
  – Questions being answered by that activity

Step 3: Identify information inputs

– What data do we need to answer those questions?

- Data Inputs
  – What data answer the Step 2 questions
- Data Uses
  – How we are using those data to answer the Step 2 questions

For *each activity* associated with the selected remedy, Table 11-2 explains…

Table 11-2: Data Collection Goals and Information Inputs (DQO Steps 2 and 3)

Activity	DQO Step 2		DQO Step 3	
	Data Collection Goals	Principal Study Questions	Inputs	Data Uses
MRS A/, MEC surface and subsurface removal using non-AGC DGM detection and cued AGC				
Anomaly detection using non-AGC DGM	• Detect IOC within the surface and subsurface as geophysical anomalies • Confirm underlying	• Have all anomaly locations been identified and recorded in a manner that supports cued AGC collection? • Are field observations (site conditions) consistent with CSM?	• Field observations • Validated EM61 data • Geolocation data • Detection survey DUA report	• Process data to identify locations of geophysical anomalies that exceed selection criteria for cued AGC data collection • Verify site conditions support achieving remediation goal (see Table 11-1) • Document successful implementation of EM61 detection survey • Update CSM
TOI selection using cued AGC	• Classify subsurface anomalies and select TOI for intrusive investigation • Justify non-TOI decisions	• Have sources from all cued locations been classified as TOI, [illegible] • [illegible] been placed on the dig list? analyses been resolved or placed on the dig list?	• Validated AGC cued data • Geolocation data • Software (specify) • TOI library • Dig list Cued survey DUA report	• Process data to obtain polarizabilities and perform classification to identify TOI • Determine location and depth of sources • Verify site conditions support achieving remediation goals (see Table 11-1) • Document successful implementation of cued AGC • Update CSM
TOI investigation and source removal	• Create a record of all locations excavated and items removed from the site	• Have all IOC been recovered? • Have sources at all locations on the dig list been resolved? • Have all recovered objects been correctly classified?	photograph, and location • Disposal records • Final DUA report	• [illegible] recovered objects are consistent with [illegible] analyses • Identify MPPEH for inspection and destruction • Document achievement of remediation goal • Update CSM
UU/UE recommendation	• Compile lines of evidence supporting UU/UE	• Do all available lines of evidence support UU/UE?	• All inputs listed above • Administrative record	• Prepar[illegible] rejecting UU/UE for consideration by final decision-maker

What is being done

Why we are doing it

The questions being answered

The data answering those questions

How we are using those data

Relates data collection to activities

– Clarifies the relevance and importance of those activities to the remedy implementation

– Each component should have ***at least*** one row

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

MORE DQO STEPS (BUT SIMILAR TO MODULE 1)

Step 4: Define the project boundaries

– What are the limitations on collecting data?

- Spatial boundaries **[figures and tables]**
  - Remedial footprints
  - Vertical limits (e.g., removal depths, detection limits, bedrock, etc.)
  - Horizontal limits (e.g., ROE, T&E areas, etc.)
- Population(s) of interest **[tables]**
  - MEC items of concern
  - Analyte list for munitions constituents, if any
  - Environmental media
- Temporal boundaries **[various]**
  - Schedule limitations
- Scale of decision making **[text and figures]**
  - Decision Units and Survey Units
    - » More on this later in the webinar…

Table 11-3: Target Population [Example]

Known or suspected munitions used (including nomenclature, if known)	MRS	MEC Type (UXO, DMM, or both)	Maximum Reliable Detection Depth (MRDD) (bgs)[13]	ROD-required clearance depth	Approx. Diameter	Approx. Length
MKII practice hand grenades	A1/A2	Both	0.30 m (EM61)	0.30 m	58 mm	110 mm
Mk1 mod 0 Trip Flares	A1/A2	UXO	0.30 m EM	0.30 m	64 mm	140 mm
Mk 1 target flares	A1/A2	UXO	0.30 (EM61)	0.30 m	83 mm	203 mm
60-mm smoke and illumination mortars	A1/A2	UXO	0.50 m (EM61)	0.45 m	60 mm	363 mm
Practice anti-tank mines M1/M1A1	A1/A2	UXO	0.30 m (EM61)	0.30 m	203 mm	102 mm
2.36" practice anti-tank rockets M6A1	A1/A2	UXO	0.66 (EM61)	0.30 m	60 mm	493 mm
60-mm M49A2 HE mortars	B1/B2	UXO	0.60 m (EM61) Unknown (Schonstedt)	0.45 m	60 mm	244 mm
100-lb M38A2 practice bombs	C	UXO	0.75 m (TEMTADS)	1.2 m (Bedrock)	208 mm	1180 mm
100-lb M30A1 HE bombs	C	UXO	1.75 m (TEMTADS)	1.2 m (Bedrock)	208 mm	660 mm
AN-M103 series nose fuzes	C	UXO	0.30 m (TEMTADS)	0.30 m	41 mm	164 mm

EXAMPLE ONLY

The above table shows the MEC items of concern ***and*** the related vertical limits

Figures showing where remedy components must be implemented are ***essential***

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

MORE DQO STEPS (BUT SIMILAR TO MODULE 1), CONT'D.

Step 5: Data Collection & Analysis Approach

- How are we using the data to make decisions? (Decision Rules)
  - If/then statements relating to the activities included in Table 11-2
    - Describe the logic for drawing conclusions from collected data
    - IF [*this result occurs*], THEN [*this will be the conclusion*]
- Module 2 includes Decision Rules for each example scenario (**MRS A1 through C**)
  - These are blue text (**EXAMPLES!**)

MRS A2 – Maneuver Area Recreational Area

Selected Remedy: Surface removal using instrument-aided visual identification

Activity: Surface removal using instrument-aided visual identification

1. If field observations are consistent with the CSM, the project team will continue with the remediation under the current assumptions. If field observations are inconsistent with the CSM, the project team will update the CSM and determine the impacts on the DQOs and remedial design.
2. If MPCs have been achieved, the project will have implemented the removal component of the remedy. The LUCs specified in the ROD will be used to manage residual risk. If not, the team will recommend that the appropriate representatives of the responsible offices revisit and reconsider the ROD.

MRS B1 – Mortar Range Flat Terrain Area

Selected Remedy: MEC surface and subsurface removal using non-[illegible]DGM

Activity: Anomaly detection using EM61

1. If field observations are consistent with the CSM, the project team will continue with the remediation under the current assumptions. If field observations are inconsistent with the CSM, the project team will update the CSM and determine the impacts on the DQOs and remedial design.
2. If signals meet the anomaly selection criteria (to be established in Step 6), they will be selected for intrusive investigation.
3. If areas of the site are deemed unsuitable for individual target selection at the established target selection threshold, (criteria to be established in Step 6), the project team will document those areas and revise the remedial design, as necessary.

Activity: TOI investigation and source [illegible]

1. If field observations are consistent with the CSM, the project team will continue with the remediation under the current assumptions. If field observations are inconsistent with the CSM, the project team will update the CSM and determine the impacts on the DQOs and remedial design.
2. If reanalysis does not reveal any new anomalies that meet anomaly selection criteria that cannot be resolved, the project has achieved DQOs. If reanalysis identifies new anomalies that cannot be resolved, the project team will conduct an RCA/CA and determine the impacts on project objectives.

EXAMPLES ONLY (i.e., do NOT just copy them!)

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

MORE DQO STEPS (BUT SIMILAR TO MODULE 1), CONT'D.

Step 6: Specify Performance Criteria

- How good must data be to support project decisions?
  - Develop project-specific Measurement Performance Criteria (MPCs)
  - Qualitative and quantitative specifications for
    - Accuracy
    - Sensitivity
    - Representativeness
    - Completeness
    - Comparability
  - Collected data must meet MPCs to satisfy the DQOs described in Steps 1 through 5
    - i.e., demonstrate remedy implementation
- MPCs are detailed in Worksheet #12
  - More on this later in the webinar…

Step 7: Develop Sampling Design

- Considering Steps 1-6, how are we going to do this?
  - Develop site-specific plan for remedy implementation based on Steps 1-6
    - Required type(s) of data
    - Required quantity of data
    - Required quality of data
  - Output is technical approach
    - Described fully in Worksheet #17
    - Mostly text, but tables are helpful, and figures are ***crucial***
    - Must be comprehensible to project team and major stakeholders

If a technical approach is unclear and hard to understand, that's a warning sign for the project!

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092

CLOSING THOUGHTS

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DQO format in MR-QAPP Toolkit, Module 2 is quite different to Module 1

- Selected remedy is part of problem statement
- Steps 1-3 use tables rather than just text

However, this is ***helpful***!

- Step 1 summarizes selected remedy
  - Remedial Action Objectives/Cleanup Goals
  - Selected Remedy Components
- Steps 2-3 relate data collection to activities
  - Clarifies relevance and importance of those activities to the remedy implementation
- Steps 4-7 are similar to Module 1
  - No major changes

But… **DON'T COPY** the BLUE TEXT!

Table 11-1: Summary of Selected Remedy

MRS/Selected Remedy	Remedial Action Objectives	Selected Remedy Components		
		MEC Removal	MEC Treatment	Land-Use Controls
MRS C Bomb Target Alternative #__ MEC surface and subsurface removal using dynamic AGC followed by cued AGC with interim LUC	Remove MEC from the surface and subsurface Remedial action is designed to achieve UU/UE MEC removal remediation goal: • 100-lb HE and practice bombs to bedrock • Fuzes and spotting charges to a minimum depth of 0.30 m bgs • Any other munitions present on the site that are detectable at the anomaly selection criteria	Surface sweep using instrument-aided visual identification Anomaly detection using AGC TOI selection using cued AGC TOI investigation and source removal using manual excavation-assisted excavation	All recovered MEC to be detonated in place or otherwise destroyed on site	[Add interim LUCs if specified in applicable decision document.] Upon successful remediation, any LUCs will be removed.

Table 11-2: Data Collection Goals and Information Inputs (DQO Steps 2 and 3)

Activity	DQO Step 2		DQO Step 3	
	Data Collection Goals	Principal Study Questions	Inputs	Data Uses
MRS A1: MEC surface and subsurface removal using non-AGC DGM detection and cued AGC				
Anomaly detection using non-AGC DGM	• Detect IOC within the surface and subsurface as geophysical anomalies • Confirm underlying	• Have all anomaly locations been identified and [illegible] manner that supports cued AGC collection? • Are field observations (site [illegible] consistent with CSM?	• Field observations • Validated EM61 data • Geolocation data • Detection survey DUA report	• Process data to identify locations of geophysical anomalies that exceed selection criteria for cued AGC data collection • Verify site conditions support achieving remediation goal (see Table 11-1) • Document successful implementation of EM61 detection survey • Update CSM
TOI selection using cued AGC	• Classify subsurface anomalies and select TOI for intrusive investigation • Justify non-TOI decisions	• Have sources from all cued locations been classified as TOI, non-TOI, or [illegible]? • Have analyses been resolved or placed on the dig list?	• Validated AGC cued data • Geolocation data • Software (specify) • TOI library • Dig list • Cued survey DUA report	• Process data to obtain polarizabilities and perform classification to identify TOI • Determine location and depth of sources • Verify site conditions support achieving remediation goals (see Table 11-1) • Document successful implementation of cued AGC • Update CSM
TOI investigation and source removal	• Create a record of all locations excavated and items removed from the site	• Have all IOC been recovered? • Have sources at all locations on the dig list been resolved? • Have all recovered objects been correctly classified?	• Excavation logs, photograph, and location records • Disposal records • Final DUA report	• Verify recovered objects are consistent with AGC analyses • Identify MPPEH for inspection and destruction • Document achievement of remediation goal • Update CSM
UU/UE recommendation	• Compile lines of evidence supporting UU/UE	• Do all available lines of evidence support UU/UE?	• All inputs listed above • Administrative record	• Prepare [illegible] rejecting UU/UE for consideration by [illegible] decision-makers

What is being done

Why we are doing it

The questions being answered

The data answering those questions

How we are using those data

EXAMPLES ONLY (i.e. do NOT just copy them!)

"This format makes a lot of sense… perhaps we should use it for RIs too…"
Quote attributed to an anonymous EM CX employee (okay, it was me)

James Salisbury, EM CX | James.A.Salisbury@usace.army.mil | Tel.: 737.666.5092