

# IT'S ALL CONNECTED

## *Risk Assessment through Selected Remedy*

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# THE REASON FOR THIS M2S2 WEBINAR



- ❖ For the past decade, MMRP initiatives and presentations have concentrated a lot on RIs and RAs
  - Advanced Geophysical Classification
  - MR-QAPP Toolkits 1 and 2
  - DAGCAP
  - Field Investigation QA/QC
  - RI and RA case studies
  - Incremental Sampling
- ❖ Focus on high quality data, but less so on decisions we make about remedies using that data
  - i.e., remedial alternatives and the selected remedy



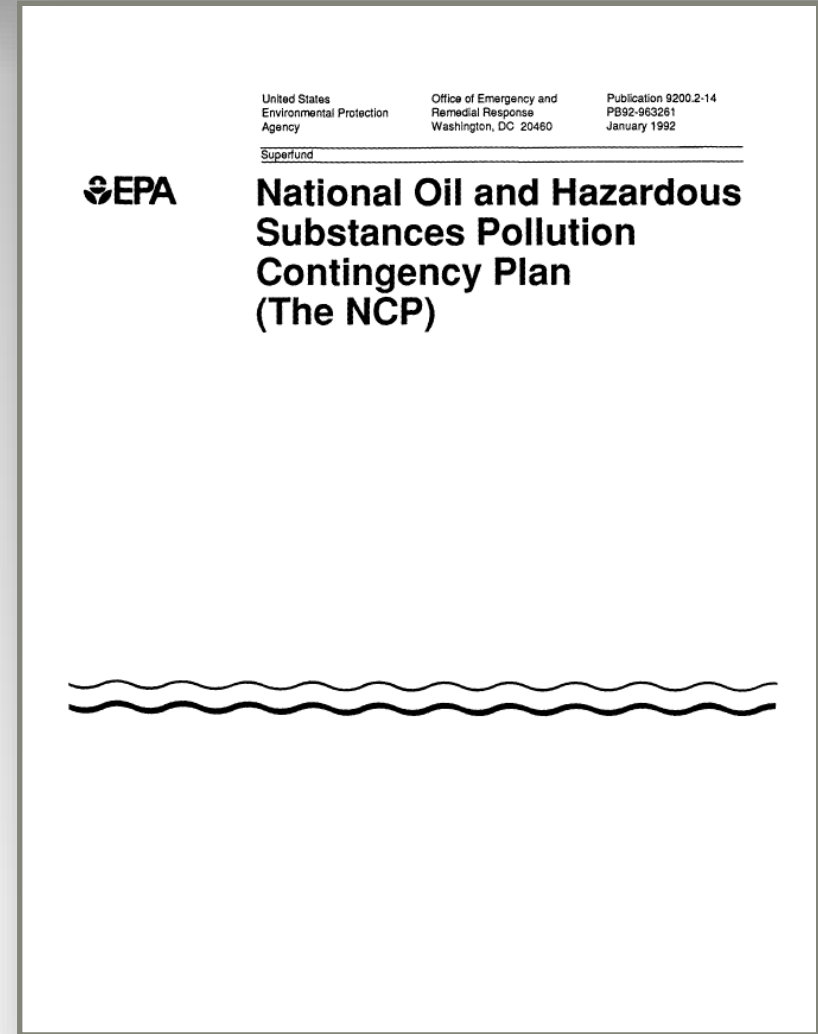
***It's (past) time for us to broaden our focus***



# IMPORTANT BACKGROUND: WHY WE DO THIS



- ❖ Before we cover *how* we make decisions on remedies, it's helpful to understand **WHY** we make these decisions
- ❖ Revisit a major driver
  - 40 CFR §300, better known as the...
    - National Oil and Hazardous Substances Pollution Contingency Plan (NCP)
- ❖ The overall purpose of the NCP is
  - “... *to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.*”





# 40 CFR § 300.430 – RI/FS AND SELECTION OF REMEDY



- ❖ § 300.430 covers *Remedial Investigation (RI) through the remedy selection (ROD)*
  - Starts with “The purpose of the remedy selection process is to implement remedies that eliminate, reduce, or control risks to human health and the environment.”
  - Next it lists the Program Goal:
    - “The national goal of the remedy selection process is to select remedies that are protective of human health and the environment, that maintain protection over time, and that *minimize untreated waste*.”
  - Then the Management Principles: *If FUDS Property ≈ MRA  
then OUs ≈ MRSs*
    - Use **Operable Units** when necessary or appropriate for quick risk reduction
    - OUs must be consistent with expected final remedy
    - Documentation of selected remedy should reflect scope and complexity of site problems
  - Then the Program Expectations (*see next slide*)



# 40 CFR § 300.430 – RI/FS AND SELECTION OF REMEDY



– Program Expectations

- “EPA generally shall consider the following expectations in developing appropriate remedial alternatives:”
  - (A) *Use treatment* to address the principal threats posed by a site, wherever practicable.
  - (B) *Use engineering controls*, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable. **Impracticable ≠ Difficult**
  - (C) *Use a combination of methods, as appropriate*, to achieve protection of human health and the environment. In appropriate site situations, treatment of the principal threats posed by a site, with priority placed on treating waste that is liquid, highly toxic or highly mobile, will be combined with engineering controls (such as containment) *and institutional controls, as appropriate, for treatment residuals and untreated waste.*
  - (D) *Use institutional controls* such as water use and deed restrictions to supplement engineering controls as appropriate *for short- and long-term management to prevent or limit exposure* to hazardous substances, pollutants, or contaminants [...] *The use of institutional controls shall not substitute for active response measures* (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy *unless such active measures are determined not to be practicable*, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.
  - (E) Consider using innovative technology for same or better performance or implementation, fewer or lesser adverse impacts, for lower costs at similar performance levels.
  - (F) *Something to do with ground water...*





# 40 CFR § 300.430(d) – REMEDIAL INVESTIGATION



## ❖ From 40 CFR § 300.430(d) –

- “The purpose of the remedial investigation (RI) is to collect data necessary to adequately *characterize the site* for the purpose of *developing and evaluating effective remedial alternatives*”
  - Characterize the nature and extent of contamination AND collect data to support the FS evaluations
- “To characterize the site, the lead agency shall, as appropriate, conduct field investigations, including treatability studies, and conduct a *baseline risk assessment*”
  - Part of evaluating the nature of contamination is conducting a baseline risk assessment
    - The Army currently recommends using the Risk Management Methodology for MEC
- “The RI provides information to assess the risks to human health and the environment and to *support the development, evaluation, and selection of appropriate response alternatives*”
  - The main purpose of RI data collection is to *feed the risk assessment and the FS*



# 40 CFR § 300.430(e) – FEASIBILITY STUDY



## ❖ From 40 CFR § 300.430(e) –

- “The primary objective of the feasibility study (FS) is to ensure that *appropriate remedial alternatives are developed and evaluated* such that relevant information concerning the remedial action *options can be presented to a decision-maker* and *an appropriate remedy selected*”
  - Develop and evaluate appropriate alternatives to *present options* to the decision-maker
    - *i.e., don't make the decision for them or only provide them with one viable choice!*
- “The development and evaluation of alternatives *shall reflect* the scope and complexity of the remedial action under consideration and the site problems being addressed”
  - Remedial alternatives **MUST** be *site-specific!*
- “Development of alternatives shall be fully integrated with the site characterization activities of the remedial investigation described in paragraph (d) of this section”
  - Once again, the RI is intended to **SUPPORT** the FS
- “The lead agency shall include an alternatives screening step, when needed, to select a *reasonable number* of alternatives for detailed analysis”
  - The list of alternatives can be slimmed down, *if necessary*
    - Not commonly needed for munitions response projects



# 40 CFR § 300.430(e) – FEASIBILITY STUDY, CONT'D.



## ❖ From 40 CFR § 300.430(e) –

- “Alternatives shall be developed that protect human health and the environment by recycling waste or by *eliminating, reducing, and/or controlling risks* posed through each pathway by a site”
  - This is how we *prevent or limit exposure* to hazardous substances, pollutants, or contaminants
- To support alternative development, the lead agency shall...
  - “Establish remedial action objectives [RAOs] specifying contaminants and media of concern, potential exposure pathways, and remediation goals”
    - RAOs are site-specific, but “*remedy-generic*,” protectiveness standards for alternatives
  - Determine “Final remediation goals” when the remedy is selected
    - The *remedy-generic* RAOs established in the FS become final *remedy-specific cleanup levels* in the Record of Decision
  - Use remediation goals to “establish acceptable exposure levels that are protective of human health and the environment”
    - This is often challenging for MEC





# 40 CFR § 300.430(f) – SELECTION OF REMEDY



## ❖ From 40 CFR § 300.430(f) –

- The selected remedy
  - “... shall reflect the scope and purpose of the actions being undertaken and how the action relates to long-term, comprehensive response at the site”
    - The remedy must make sense for that MRS
  - “... shall be protective of human health and the environment”
    - i.e., must achieve the remedial action objective (RAO) – *more on this later*
  - “... shall utilize *permanent solutions* and alternative treatment technologies or resource recovery technologies *to the maximum extent practicable*”
    - Remember the preference for treatment stated in the NCP?
- The selected remedy and decision process
  - “... shall be documented, as appropriate, in a record of decision, in a level of detail appropriate to the site situation, for inclusion in the administrative record”
    - ROD *doesn't* need to regurgitate the entire RI report or FS
  - Must specify “cleanup action levels”
    - Record of Decision describes *remedy-specific cleanup levels* as well as RAOs



SO, NOW WE'VE GOT THAT OUT OF THE WAY...





# RISK ASSESSMENT THROUGH SELECTED REMEDY



- ❖ Risk Scenarios and Risk Assessment
  - How to evaluate MEC risk
- ❖ RAOs and Remediation Goals
  - Setting the standard for alternatives
- ❖ Developing Site-Specific Remedial Alternatives
  - GRAs and designing alternatives
- ❖ Alternatives Evaluation
  - How the nine criteria relate to MEC response
- ❖ Selected Remedy and Cleanup Goals
  - How we describe the selected remedy

