



# Department of the Navy - Approach to Optimization of Remedial Actions

**Presentation to FRTR  
November 9, 2011**

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# DON Approach to Optimization



- Described by Navy Policy & Guidance
- Encourages Planning for Optimization
- Emphasizes Evaluation of Remedy Performance and Cost Effectiveness
- Results in Cost Reduction and Expedited Site Closures
  - ROI for Optimization is 5.5 (Midyear FY11)
  - Cost Avoidance to date is \$134M

# DON Optimization Policy



- April 2004
- Required for all remediation response actions
  - Remedy evaluation and selection, remedial design, RA-O, and LTMgt
  - Requirement to use Optimization Guidance Documents developed by the NAVFAC Optimization Workgroup
  - Requirements for any new P&T systems
    - Requires HQ approval
- Track progress within NORM
  - Recommendations from optimization study
  - Implemented strategies
  - Results
  - Cost avoidance
- 3<sup>rd</sup> Party Independent Evaluation

# New Policy Updates



- Incorporates sustainability analysis as part of the optimization process
  - GSR and optimization occurs throughout the ER process
  - Requirement to use SiteWise™ in the FS
- Adds Remedial Alternatives Analysis (RAA) requirement
  - Phase 1 of Remedy Evaluation and Selection
  - Early and quick optimization of the remediation alternatives that will ultimately be considered in the remedy evaluation document.
- Provides reference to new Monitoring Report Template
  - Useful during RA-O and LTMgt phases to facilitate optimization, particularly for sites with large amounts of data.

# New Policy Updates, *cont.*



- Describes proven remedial strategies using the treatment train approach
  - Source area/hot spots: Active technologies
    - Excavation
    - In situ treatment
  - Plume area: Passive in situ technologies
    - Natural attenuation
    - Enhanced bioremediation
  - Installation property boundaries: In situ passive barriers
    - Zero-valent iron permeable reactive barrier
    - Biobarrier

Note: Treatment trains usually involve LUCs

# Updated Optimization Process

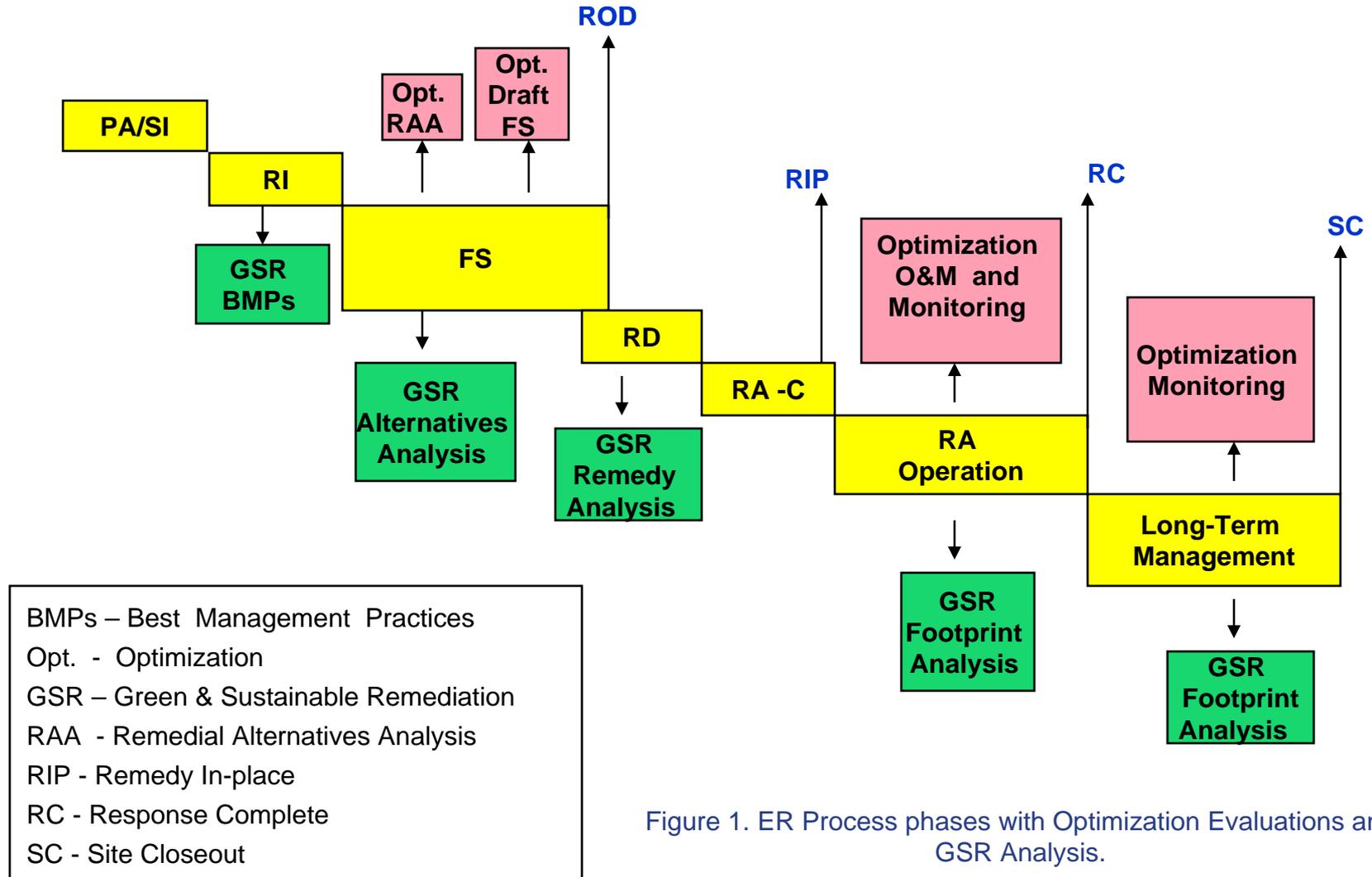


Figure 1. ER Process phases with Optimization Evaluations and GSR Analysis.

# DON Optimization Guidance Documents



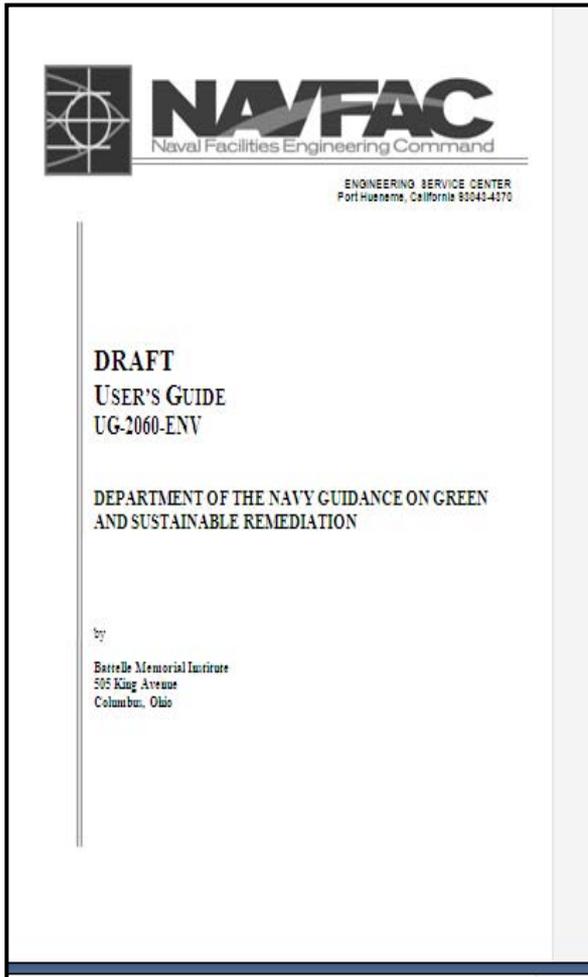
- Guidance for Optimizing Remedy Evaluation, Selection, and Design, March 2010
- Guidance for Optimizing Remedial Action Operation, April 2001
  - Planned Update 2012
- Guidance for Planning and Optimizing Monitoring Strategies, November 2010
- NAVFAC Monitoring Report Template, May 2011
- Guidance to Documenting Milestones throughout the Site Closeout Process, March 2006
- Guidance on Green and Sustainable Remediation
  - To be released soon

# DON Guidance on GSR



- Describes how to incorporate GSR into cleanup within the NCP framework
- Emphasizes that the Navy remains focused on cleanup goals, budget, and RIP/RC dates
- Cross-references the updated NAVFAC optimization policy and the requirement to perform optimization and sustainability analysis throughout the ER process
- Presents metrics, tools, general footprint reduction methods, and specific considerations for each phase of the process

# Green & Sustainable Remediation Guidance



- GSR Metrics (Section 2.0)
- Metric Calculation Methods and Tools (Section 3.0)
- GSR during Site Characterization (Section 4.0)
- GSR during Remedy Selection (Section 5.0)
- GSR during Remedial Design and Construction (Section 6.0)
- GSR during Remedial Action – Operation and Long Term Monitoring (Section 7.0)
- General Footprint Reduction Methods (Section 8.0)

# GSR Web Portal



## Green and Sustainable Remediation

[www.ert2.org](http://www.ert2.org)

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Welcome to the Navy's Web site on green and sustainable remediation. This Web site provides useful links on available information, case studies, and Web tools on sustainable practices for remediation.

**Web Tool:** A Web-based multi-media tool on green and sustainable remediation that discusses sustainability, sustainable remediation, and regulatory drivers for considering green and sustainable remediation. The Web tool available at this location also discusses sustainable remediation metrics, tools, and environmental footprint reduction methodologies.

**Fact Sheet:** In August 2009, the NAVFAC Optimization Workgroup issued a fact sheet on sustainable environmental remediation. The fact sheet summarizes the need for considering sustainable practices by Navy Remedial Project Managers (RPMs) and lays out the metrics of green and sustainable remediation as per the Workgroup. The fact sheet also discusses methodologies to conduct baseline environmental footprint of remedial technologies and ways to reduce the footprint.

**Case Studies:** NAVFAC has applied sustainability concepts on several existing and planned remedial systems. The case studies on this Web page provide a few examples.

**Drivers:** There are several regulations and incentives that are driving the industry towards green and sustainable remediation. This Web page discusses some of the regulations and executive orders that mandate federal agencies to conserve energy and to be more sustainable.

**Resources:** There are guidance documents, case studies, and standards available on green and sustainable remediation on several federal, state, and other organizations. This Web page contains links to many of these informational sites.

**Tools:** There are several tools available in the public domain for conducting a baseline environmental footprint of a remedial technology. SiteWise™ being developed jointly by the Navy, Army Corps, and Battelle is one of such tools and will be available on this site soon.

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# Optimization Web Portal



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## Welcome to Technology Transfer Optimization Portal!

Welcome to NAVFAC's interactive case studies and training tool. The primary objective of optimization efforts is to maximize the effectiveness of remedial and removal actions while minimizing the cost to achieve site closeout. This Web page is a link to the optimization Web tool and also focuses on the case studies associated with the tool.

