

# EPA's Nationwide Optimization Strategy

*“National Strategy to Expand Superfund Optimization from  
Investigation to Site Completion”*

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2011 Federal Remediation Technologies Roundtable  
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# This Presentation

- ❖ **Reviews** current Superfund challenges
- ❖ **Identifies** types and relationships of optimization methods as components of a solution
- ❖ **Describes** OSRTI's plan and efforts to develop and implement nationwide optimization strategy
- ❖ **Provides** an update on current status of effort
- ❖ **Proposes:** a working definition of "Remediation Optimization"



# Working Definition of “Optimization”

*Systematic site review by a team of independent technical experts, at any phase of a cleanup process, to identify opportunities to improve remedy protectiveness, effectiveness, and cost efficiency, and to facilitate progress toward site completion.*



# Introduction

- ❖ Optimization not new; active effort > 12 years with over 100 reviews conducted
- ❖ OSWER management directive to expand optimization efforts and integrate into Program activities from RI to site completion
- ❖ Action 10 of Integrated Cleanup Initiative (ICI)



# EPA Optimization History

- ❖ 1998 – OSWER begins piloting optimization with specific focus on ground water pump and treat systems
  
- ❖ 2003 to present – Pilots optimization at sites
  - ❖ Earlier in pipeline
  - ❖ Other remedies
  - ❖ PRP sites
  - ❖ RCRA sites
  - ❖ OUST sites
  
- ❖ 2004 – “Optimization Action Plan” formalized optimization for Superfund Fund-lead long-term response action (LTRA) sites (primary focus on ground water pump and treat sites)
  
- ❖ 2009 – Over 100 sites reviewed
  
- ❖ 2010 – AA Stanislaus asks for National Optimization Program as part of ICI

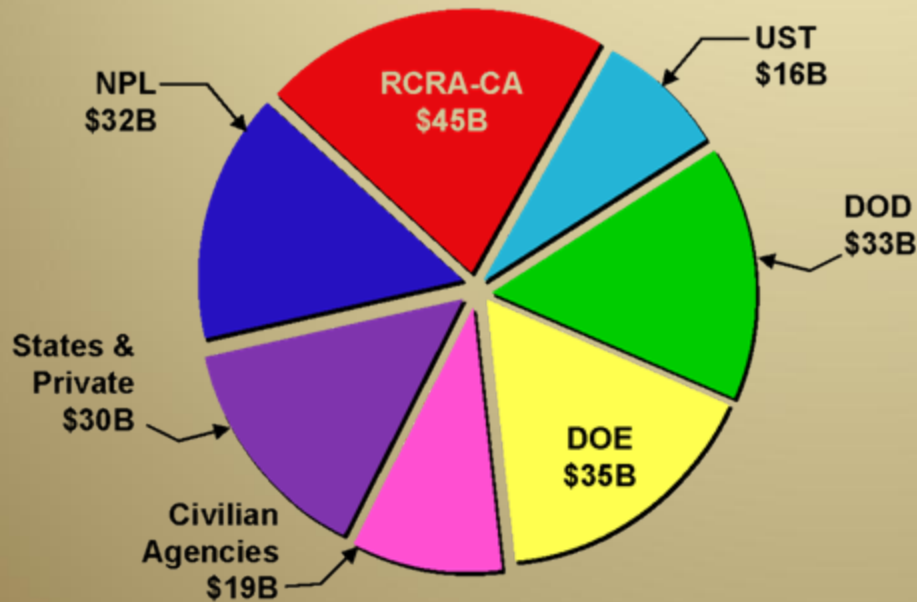


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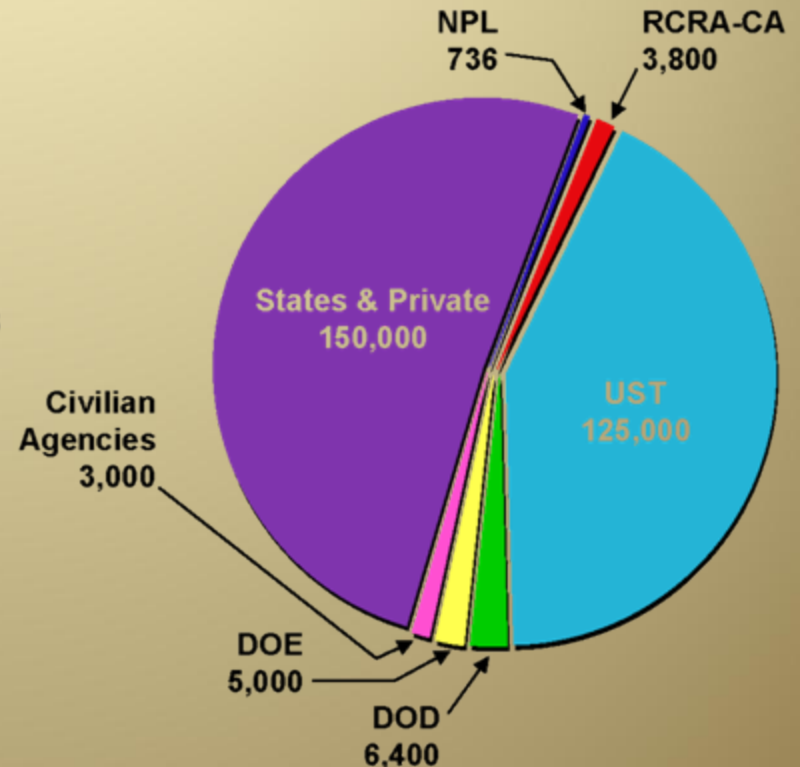
# Challenge #1 - Still A Lot of Work to Do

Estimated Number of Sites and Cleanup Cost  
(2004-2033\*)

Total = \$209 Billion



Total Sites = 294,000



Source: [www.clu-in.org/market](http://www.clu-in.org/market)

\*<http://clu-in.org/market>



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# Challenge # 2 – Managing Complexity

- ❖ Remediation is an inexact, continuously evolving science
  - ❖ Rapidly advancing technologies
  - ❖ Changing regulatory targets (e.g., arsenic, dioxin)
  - ❖ Technical views vary from professional to professional
  - ❖ Managing and using site data over lengthy project lifecycles
  - ❖ Inadequate characterization; ineffective remedy
  - ❖ Non-remedial requirements / influences affect end goals
  - ❖ Multiple stakeholder consensus / difficult PRP negotiations
  - ❖ Admin and legal processes to prepare properties for reuse
  - ❖ Resource constraints limit quantitative data
- ❖ EPA is under the microscope for each remedy from

***Local communities***

***States***

***Press***

***PRPs***

***Taxpayers/Congress***

***NGOs***



# Benefits and Results of Optimization

- ❖ Benefits and results of optimization have been widely documented
  - ❖ Optimized >100 of ~1650 NPL sites (final + deleted)
  - ❖ Prepared 20+ documents; delivered 30+ trainings to communicate lessons learned
  - ❖ Trained EPA staff in all 10 Regions
  - ❖ Trained thousands of contractors and other professionals
  - ❖ Developed tools and protocols to be used by RPMs
- ❖ Optimization also applicable to other clean-up programs: Brownfields, RCRA, OUST





# Broad Applicability of Optimization

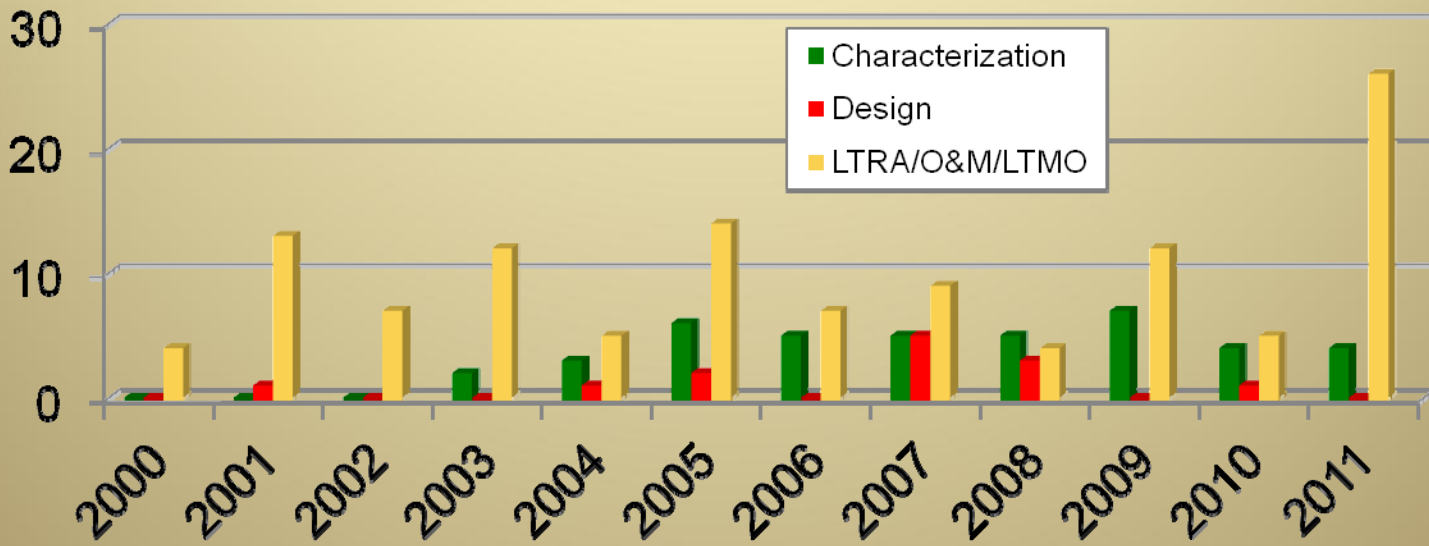
Types of Sites	Types of Remedies Evaluated
<ul style="list-style-type: none"><li>• Wood treating</li><li>• Industrial facility</li><li>• Landfills</li><li>• Dry cleaners</li><li>• Mine</li></ul>	<ul style="list-style-type: none"><li>• P&amp;T systems</li><li>• AS/ SVE</li><li>• Groundwater recirculation wells</li><li>• NAPL recovery</li><li>• Biosparging</li><li>• <i>In situ</i> thermal remediation</li><li>• <i>In situ</i> chemical oxidation</li><li>• <i>In situ</i> bioremediation</li><li>• Monitored natural attenuation</li><li>• Sediment capping</li><li>• Barrier walls</li><li>• Constructed wetlands</li><li>• Landfill gas collection</li><li>• Surface water diversion/collection/treatment</li></ul>

***Optimization can be applied to all site types and all remedy types***



# Technical Support Projects

## “Optimization” events conducted at sites since 2000



- 9 of the LTRA / O&M / LTMO support events were conducted at sites in the RCRA program
- 3 of the LTRA / O&M / LTMO support events were conducted at sites in the LUST program
- More than 20 of the above events were conducted at PRP sites
- Many of the characterization (e.g., Triad) support events were conducted in other remedial programs



# Excellent results for optimization conducted to date, but...

- ❖ Less than 10% of the 1650 Superfund NPL sites have been optimized, so only a fraction of the potential public health protection, time reductions, monetary, and energy savings have been realized.
- ❖ Regional management sometimes peripherally involved.
- ❖ Training is ad hoc.
- ❖ Few incentives to optimize.
- ❖ Limited tracking of recommendations
- ❖ Ongoing technical assistance sparse. Most reviews are considered one-time events.



# Maximizing the Benefits of Optimization

- ❖ Sites that are likely to benefit from optimization (based on past experience/current Regional practice)
  - ❖ Sites with protectiveness concerns, high uncertainty
  - ❖ Sites with technological challenges
  - ❖ Sites with data gaps in the CSM
  - ❖ Sites with high costs or high projected costs for remedial activities
  - ❖ Sites with interim remedies
  - ❖ In advance of a FYR
  - ❖ After a FYR – with recommendations for optimization
  - ❖ Before LTRA Transfer



# National Optimization Strategy

- ❖ Supports Integrated Clean-up Initiative (ICI)
- ❖ Expands optimization to more Superfund remedial sites (20 to 30 sites per year)
- ❖ Expands effort to RI/FS and RD where appropriate
- ❖ Uses the optimization tools, BMPs, lessons learned, and expertise of OSRTI, Regions and other stakeholders
- ❖ Leverages Regional and OSRTI resources
- ❖ Develops Regional optimization programs/expertise
- ❖ Tracks optimization results for all sites



# Unifying Existing Methods as Optimization

- ❖ National Strategy unifies historically freestanding optimization methods
  - ❖ Triad / IDR / RSE / LTMO / Green Remediation
- ❖ Strategic Objectives
  - ❖ Eliminate redundant activities common to methods
  - ❖ Remove technical barriers between methods to ensure projects benefit from best-fit approaches
  - ❖ Leverage all best management practices
  - ❖ Simplify process and improve support to Regions
  - ❖ Increase access to technical resources
  - ❖ Enhance capabilities and technology transfer



# How Optimization Supports ICI

(from 8/4/10 Draft Implementation Plan)

Optimization included as Action 10 in the ICI – Opportunities to provide greater support in clean-up of Superfund sites

ICI Objective	Optimization Strategy
Integrate EPA's CERCLA Programs to more effectively leverage CERCLA Authorities	Conduct outreach and training with staff from OUST, ORCR, OBLR, and states
Introduce new interim performance goals to more accurately convey progress	Optimization reviews provide a structured path forward that can be used to document progress
Provide greater transparency for EPA's CERCLA programs	Optimization utilizes increased stakeholder participation, which increases transparency
Implement additional measures (e.g., removals) to further/speed progress	Optimization reviews typically recommended new measures (e.g., source area remediation) to speed remedy progress





# ***“National Strategy to Expand Superfund Optimization from Remedial Investigation to Site Completion”***

- ❖ Draft National Optimization Strategy prepared
- ❖ Comprised of four elements
  - ❖ Planning and Outreach / Communication and Training
  - ❖ Implementation / Measurement
- ❖ Developed by nationwide Workgroup
  - ❖ Led by Superfund HQ
  - ❖ Includes key Superfund HQ groups & Regional members
  - ❖ Reports to Leadership Steering Committee
- ❖ HQ/Region review complete. ASTSWMO Review complete. Comments from ICI posting to be considered in final Strategy.





# Update

## ❖ Schedule

- ❖ Finalize Strategy and Begin Implementation – by the end of FY2011
- ❖ Full Strategy Implementation – by end of FY2012

## ❖ Progress

- ❖ Steering Committee Formed – June 2010
- ❖ Management Briefings – Fall 2010
- ❖ OSWER and OSRTI Management
- ❖ Regional Division Directors and Branch Chiefs



# Update – continued

## ❖ Highlights of Current Progress

- ❖ Outreach to Internal Stakeholders
  - ❖ Superfund HQ Divisions and Branches – Ongoing
  - ❖ Regions – January 2011
- ❖ Workgroup formed – Superfund HQ, Regions, ORD
  - ❖ Conference calls monthly – Started in January 2011
  - ❖ Reviewed “Draft Strategy”
  - ❖ Concurrence on programmatic definition of “Optimization”

## ❖ Numerous sub-element tasks completed and ongoing



# Anticipated FY12 Activities

- ❖ Finalize Strategy
- ❖ Initiate optimization at ~20 - 30 sites
- ❖ Refine tracking and reporting
- ❖ Identify incentives for/disincentives to optimization - Solve
- ❖ Identify methods to incorporate optimization into new and existing guidance - implement
- ❖ Initiate development of training program



# Contact Information

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# Questions...?



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