



## Shallow Subsurface Characterization & Monitoring Workshop

# DOE-EM Science & Technology for Subsurface Characterization & Monitoring

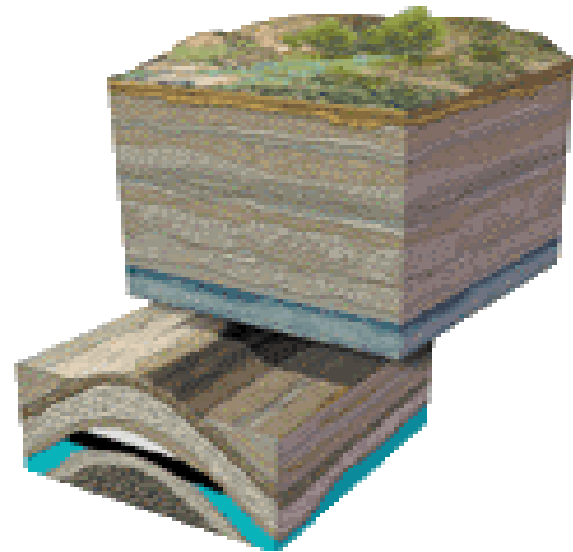
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**Salt Lake City, UT**  
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# Current Research and Technology Programs and Activities

- DOE EM - Alternatives Projects
- DOE EM - Technical Assistance
- DOE Closure Site Plans
- Other DOE and Federal  
Agencies





# Alternatives Projects Involving Subsurface Characterization and/or Monitoring

- Ongoing
  - Monitored Natural Attenuation (SRS)
  - Carbon Tetrachloride Source Term Location (Hanford)
- Planned
  - In Situ Delineation and Excavation of TRU Waste at Three Burial Grounds (Hanford)



# Monitored Natural Attenuation and Enhanced Passive Remediation for Chlorinated Solvents

- Goals
    - Develop next-generation MNA/EPR protocol
    - Include strategy for long-term monitoring and transition from active to passive remediation systems
    - Gain regulatory concurrence
    - Advance the science and broaden understanding
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# Monitored Natural Attenuation and Enhanced Passive Remediation for Chlorinated Solvents

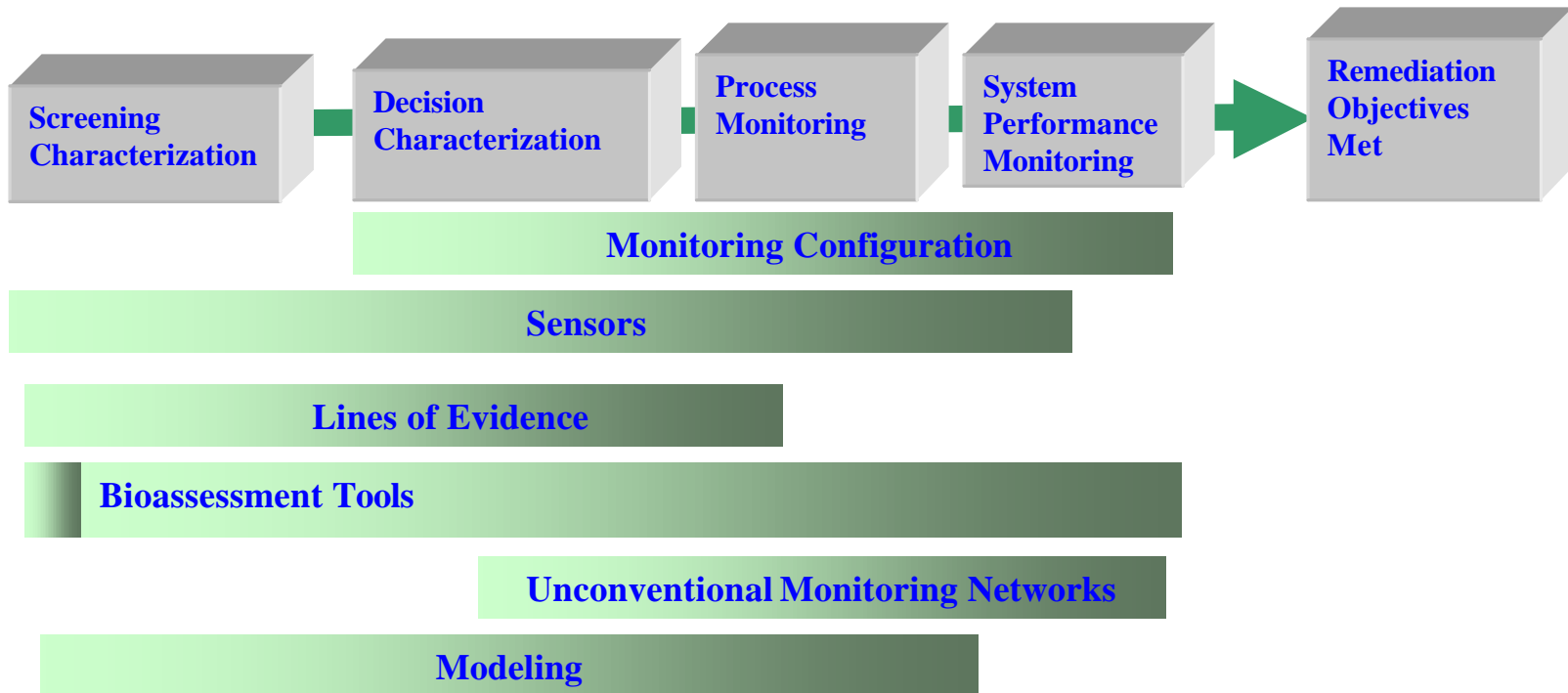
- Status
  - Prepared Implementation Plan
  - Completed science and technology targets document
  - Completed historical protocol review
  - Conducting public and regulatory stakeholder meetings with DOE SSAB's, state regulators, and ITRC



# MNA and EPR: Characterization & Monitoring Ground Rules

- Develop clear strategies for distinct needs associated with each phase of the project
- Emphasize integrating measures
- Refine the idea of multiple lines of evidence; develop quorum of evidence
- Emphasize large-scale design and monitoring concepts
- Emphasize system and ecosystem monitoring concepts

# DOE MNA/EPR Acceleration Project





# Carbon Tetrachloride Source Term Location at the Hanford 200-West Area

- Goals (Phases I and II)
    - Develop DNAPL conceptual model
    - Recommend technologies and approaches for verification of the conceptual model
    - Demonstrate technologies for verification of the conceptual model
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# Carbon Tetrachloride Source Term Location at the Hanford 200-West Area

- Status
  - Open and competitive procurement
  - Awarded three contracts for Phase I to be down-selected for Phase II field demonstration
  - Phase I completed 3/04



# In Situ Delineation and Excavation of TRU at Three Hanford Burial Grounds

- Goal: Identify and evaluate alternative technologies
- Status
  - Open competitive procurement; multiple awards
  - Three-phased project
  - Phase I to be initiated 10/03



# Technical Assistance Program

- Goal
  - Provide technical expertise to solve specific problems
- Status
  - Focused on support to DOE Closure Sites
  - Requests from DOE site EM managers
  - Operating since 2002
  - Ten requests dealing with subsurface characterization and monitoring at Ohio sites



# Technical Assistance Program Examples

- Technologies to Address Leachate from Onsite Disposal Facility (2)
- Uranium Distribution Coefficient for Fernald Aquifer Restoration
- Uncertainties in Characterization and Delineation of Contamination at MCP
- Subsurface Characterization of Contaminated Soils and Sediments at FCP, ACP, CCP, and MCP
- Applicability of FIDLERS to Support Dig Face Characterization of Uranium Contaminated Soils
- Direct Push Technology for TCE Plume Delineation and Evaluation of Remedial Strategies
- NaI-Tipped GeoProbe for Subsurface Characterization of Uranium
- Origin of Groundwater at MCP
- Mound Rebound Test



## DOE Closure Site Plans for Long-term Monitoring

- Rocky Flats
    - Integrating Long-term Monitoring into Integrated Monitoring Plan
    - VOCs, U, nitrate to be monitored via surface water, some groundwater monitoring at passive reactive barriers
    - Landfill monitoring
  - Fernald
    - Preparing Long-term Monitoring Plan
    - Monitoring U in groundwater via wells
    - Shutdown of pump and treat system in question
    - Monitoring on site disposal facility
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## DOE Office of Legacy Management

- Long-Term Surveillance and Maintenance
  - Focusing on small sites, closing by 2011
  - Costs estimated at 1-2% of cleanup on annual basis
  - No driver for research program
  - Targeting 5% reduction in costs per year through innovative approaches and technologies; e.g., Weldon Springs will reduce # wells from 120 to 70



## DOE Office of Environment, Safety, and Health

- Inspector General Report (2000): Groundwater Monitoring Activities at DOE Facilities
    - Recommended more cost effective program through better site-wide integration and adoption of innovative technologies
    - Recommended single HQ office responsible and accountable
    - DOE 2003 response gives ESH responsibility for coordination and commits DOE program and field offices to regularly evaluating innovative technologies
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## Other DOE and Federal Agencies

- DOE Office of Science: EMSP, NABIR
- DOD: SERDP and ESTCP
- EPA: e.g., MNA guidance for metals and rads
- SBIR: DOD and DOE
- Homeland Security
- More ....?