



Moving from State-of-Art to State-of-Practice

*Long Term Monitoring Workshop
ERDC-WES, Vicksburg MS
14-16 January, 2003*



Purpose of the LTS S&T Roadmap

- Create a shared vision for LTS based on the activities and associated capabilities needed now and in the future
- Communicate capability-based technical needs among cleanup and closure sites and the R&D community
- Leverage associated S&T activities for LTS across academic, public and private sectors
- Develop an acquisition and transition strategy S&T investment to optimize LTS life-cycle activities

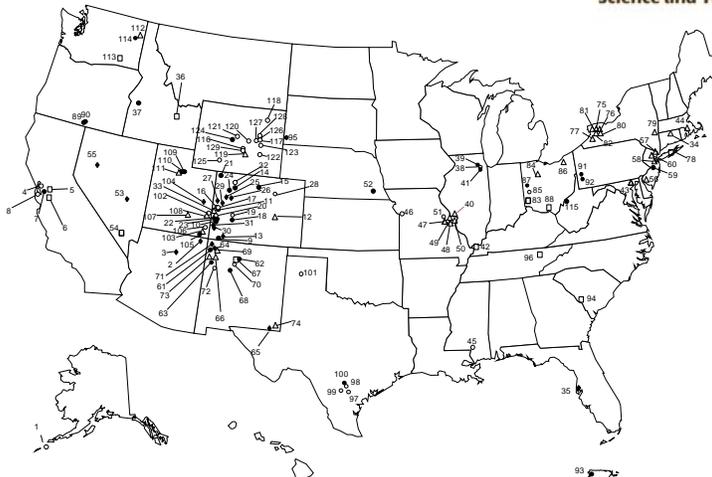
"We need these capabilities. . ."



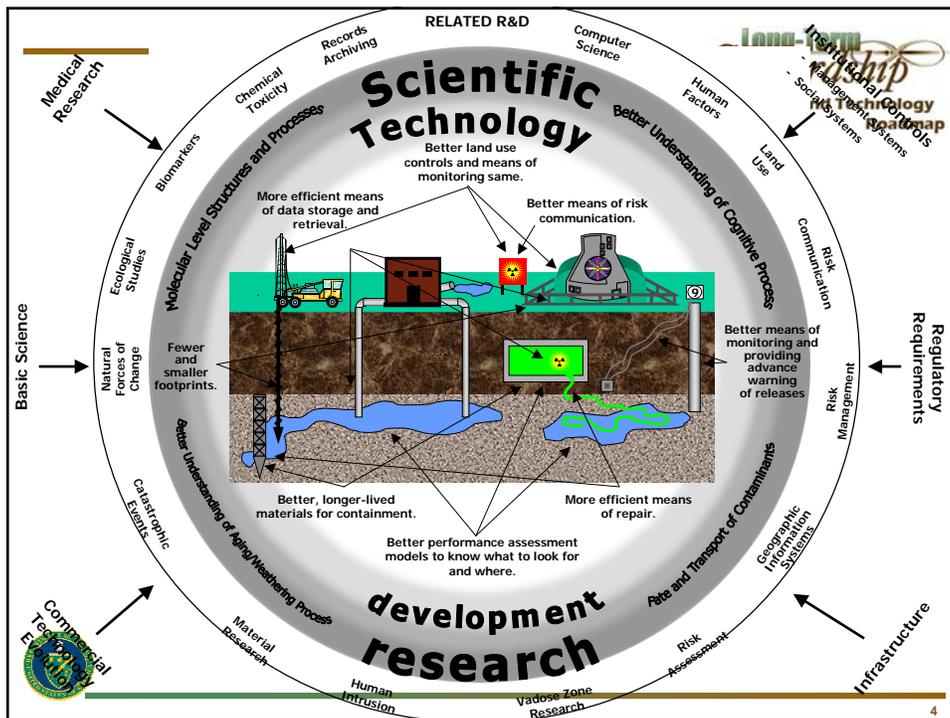
"We can supply. . ."



Map of 129 Sites that May Require LTS

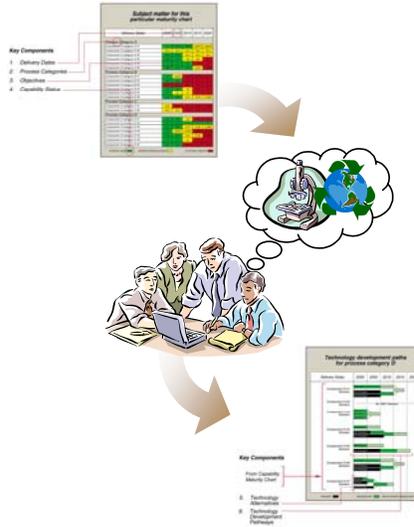


- 34 sites where cleanup has been completed and DOE is conducting long-term stewardship activities as of 2000
- 33 sites where cleanup is expected to be completed and DOE will conduct long-term stewardship activities by 2006
- ◻ 29 sites where portion(s) of the site are expected to require long-term stewardship by 2006
- ◻ 12 sites with geographically distinct portions requiring long-term stewardship by 2006
- ◻ 33 sites where DOE may be responsible for long-term stewardship, if long-term stewardship activities are necessary
- ◆ 17 sites where surface cleanup is completed by 2006 and will require long-term stewardship but subsurface characterization and remediation activities will be on-going after

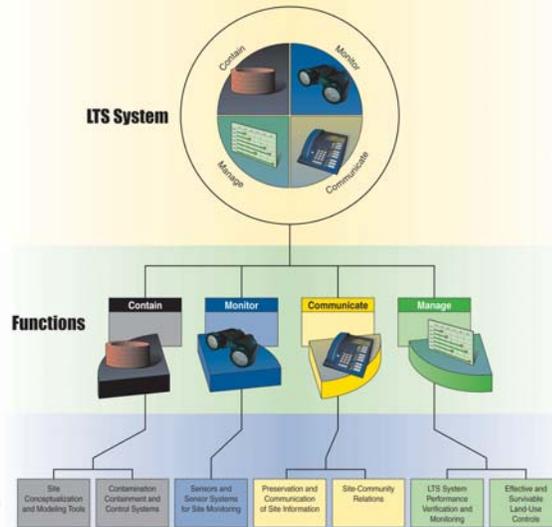


LTS S&T Roadmap Approach

- Identify needed stewardship capabilities and compare with current capabilities and practices
- Identify science and technology that will provide needed capability improvements
- Identify activities to complete research and development, and put capability improvements into practice



The Roadmap is a System



Key Capabilities

Contamination Containment and Control

- Alternate technologies that detoxify or immobilize contaminants at the source and reduce the volume of ground water needing to be treated.
- Cover and subsurface containment systems that mimic natural processes and accommodate environmental change.
- Models, natural analogues, and indicators that improve design, planning, decision making, monitoring, and maintenance.
- Technologies that significantly reduce the need for maintenance of containment systems.

Monitoring and Sensors

- Validation of containment and safety system performance.
- Monitoring systems that can adapt to changes in knowledge of the geologic, hydrologic, chemical and biologic processes at the site.
- Improved multimedia monitoring capabilities.
- New methods that utilize advances in wireless, miniaturization, non-invasive, and remote interrogation technologies.
- Monitoring for surrogates and indicator parameters to reduce costs and improve accuracy.
- Information management systems that address validity, access, outreach, education, and visualization.

Decision Making & Institutional Performance

- Improved institutional credibility and community interaction to best maintain trust and confidence
- Continuous improvement of LTS decisions to sustain stakeholder support and reduce life-cycle costs.
- Institutional mechanisms that sustain and improve LTS.

Safety Systems & Institutional Controls

- Approaches to select standardized, risk-based safety systems that enhance efficiency of cost and operations.
- Criteria for analyzing data to ensure the integrity of security and access control systems.
- Technology that preserves site information for intergenerational continuity.
- Legal strategies and associated instruments to facilitate handoff of closed sites to stewards.



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Enhancing LTS Capabilities Benefits Site Closure

- *Allows sites to reach closure sooner*
- *Expand land reuse options*
- *Reduce LTS life-cycle costs*
 - *Waste generation*
 - *Remedy monitoring and permanence*
 - *Workforce productivity*
- *Enhances credibility with stakeholders and regulators*
- *Estimated \$110 million investment over 10 years*



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Summary Schedule and Annual Investments for
Developing Near-term R&D Targets



**Web Site and Contact
Information**

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