

We put science to work.™

Innovations

from Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

srnl.doe.gov

Out-of-the Box Thinking

Careful matching of technical approach to specific site conditions

Teams provide phased technical solutions that combine applied strategies with technologies that are carefully matched to site-specific conditions and issues. The teams then delineate steps to optimize and focus final selection and implementation of strategies. At SRNL, we focus on matching remediation technologies with real-world conditions and desired goals to achieve transformational outcomes for the Environmental Management program. This innovation and flexibility is vital in meeting the needs of our customers.

Contact Information

SRNL Office of Communications
803.725.4396



The SRNL Technical Assistance Program: When standard approaches don't work

For over two decades, SRNL has managed a dynamic and efficient national program sponsored by DOE Office of Environmental Management that provides teams of technical experts with a broad experience base to recommend strategies to address DOE's challenging environmental problems when standard approaches haven't worked. Industrial facilities typically select traditional approaches (e.g., pump and treat, soil vapor extraction) in the design and implementation of remedial strategies. At some sites, these approaches prove to be too costly, inadequate, or ineffective. Alternatively, other sites struggle with implementation of innovative but less well understood approaches. Since 2006, the Technical Assistance program has focused on providing support across the DOE complex. During this time, 25 teams have visited 11 DOE sites and made recommendations that yielded an estimated cost savings of \$100 million, generating a return on investment of 30:1 for the program.

Reduction of environmental risk, cost and time of remedial solutions

The Technical Assistance program is managed through the Center for Sustainable Soil and Groundwater Solutions at SRNL. The Technical Assistance program provides teams of nationally recognized experts from across the complex to support both DOE's smaller sites, such as Paducah, Portsmouth, Pinellas, Ashtabula, Fernald, Mound and Kansas City Plant, and larger sites such as Oak Ridge, Los Alamos, Lawrence Livermore and Savannah River.

- Solutions that reduce technical risk and uncertainty
- Focus on science and engineering issues and strategic implementation of remedial systems
- Independent reviews facilitate regulatory and stakeholder acceptance of solutions.



SRNL researchers deploy characterization tools at Oak Ridge National Laboratory to support site conceptual model development.

Innovations from Savannah River National Laboratory

Innovation from science to successful deployment

The Technical Assistance Program builds on two decades of SRNL success in developing and applying innovative and efficient technical solutions to challenging environmental problems. Examples of successful efforts include:

Issue: A deep groundwater plume contaminated with metals impinging the Los Alamos National Laboratory (LANL) site boundary.

- **Approach:** The Technical Assistance Team identified technical strategies including treatment and hydraulic control options that provide pathways to address contamination and avoid implementation of costly pump-and-treat remedial strategy.
- **Impact:** Significant cost savings associated with elimination of pump-and-treat system. Improved credibility with state regulators and stakeholders.

Issue: Depleted uranium present in shallow soils and sediments at Lawrence Livermore National Laboratory Site 300. Site regulatory groups favored soil washing as the preferred remedial alternative.

- **Approach:** The team determined that soil washing would not clean to desired levels and instead recommended an alternative phased remediation approach that included a radiological surface survey, strategic excavation, and off-site disposal of highly contaminated material.
- **Impact:** This strategy saves \$40 million and reduces impacts to sensitive ecological habitats.

Issue: Characterization and remediation of industrial solvent contamination and associated large groundwater plume has proved challenging in the complex geohydrologic setting at the Paducah Gaseous Diffusion Plant.

- **Approach:** The Technical Assistance Team identified opportunities for improvement of source zone thermal treatment operation, and recommended phased remediation to allow opportunities for changes in strategy to address areas where performance is inefficient or ineffective.
- **Impact:** Based on the current plans, cost savings resulting from the team efforts are projected at \$18 million with additional savings in the future resulting from natural attenuation science support.

Issue: At LANL, DOE needs an appropriate/defensible basis to regulate in-situ remediation of transuranic (TRU) waste, versus excavation and disposal at the Waste Isolation Pilot Plant.

- **Approach:** The Technical Assistance Team identified viable pathways to facilitate regulatory acceptance for in-situ remediation of TRU waste and identified key technical uncertainties for implementation.
- **Impact:** The cost savings for in-situ remediation options is estimated to be \$40-60 million with reduced hazards and risk.

Partners in Success

- DOE: Office of Soil and Groundwater Remediation (EM12), Office of Legacy Management, National Nuclear Security Administration
- National Laboratories: Savannah River, Lawrence Livermore, Oak Ridge, Los Alamos, Pacific Northwest
- Program Offices and Contractors at Savannah River, Lawrence Livermore, Oak Ridge, Los Alamos, Portsmouth, Paducah
- Private Industry: Redox Tech LLC, Praxis Environmental



The SRNL Technical Assistance Program identified improvements to storm water management practices during D&D to reduce risk and costs for waste water disposal.



Savannah River National Laboratory[™]
OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

The Savannah River Site and the Savannah River National Laboratory are owned by the U.S. Department of Energy, and are managed and operated by Savannah River Nuclear Solutions.