DEPARTMENT OF ENERGY DEFENSE PROGRAMS ENVIRONMENTAL RESTORATION PROGRAM UPDATE

John C. Lehr
U.S. Department of Energy
Headquarters Germantown, Maryland 20874
L. Dean Eyman, W. William Thompson, Jr.
Hazardous Waste Remedial Actions Program Support Contractor Office*

ABSTRACT

Federal facilities are under increasing pressure to remediate inactive hazardous waste sites and associated off-site areas. The Superfund Amendments and Reauthorization Act federal facilities provision requires that the Environmental Protection Agency establish a public docket to list all federal sites contaminated by hazardous wastes or substances and to monitor the progress of investigations and cleanups against an established schedule. In addition, Sect. 3004(u) of the Hazardous and Solid Waste Amendments of the Resource Conservation and Recovery Act requires that operating permits for hazardous waste treatment, storage, and disposal facilities be issued only upon binding agreements that identify specific schedules for corrective action for all hazardous waste releases that have or are occurring at the facility. As a result of these regulations, Defense Programs (DP) must make remedial actions integral to its mission. Environmental cleanups are given increased emphasis with the new regulations/laws providing the right to private citizens and the states to sue to enforce these statutes and schedule commitments. Although past Department of Energy (DOE) DP management practices have been supportive of environmental improvements, some elements of Congress and the public have not been satisfied with the perceived progress in the area of remedial actions. Past budgeting practices have not given remedial actions funding desired visibility, and DOE-DP management priorities have not been primarily focused toward environmental remediation. This situation changed with creation of the DOE-DP Environmental Restoration Program in 1987. In its first year, the Program identified more than 3600 release sites with an estimated cleanup cost of between $35 and $63 billion over the next 30 to 50 years.

INTRODUCTION

With the FY 1988 budget, Congress created the Department of Energy (DOE) Defense Programs (DP) Environmental Restoration (ER) Program. Program management and execution was assigned to the Office of Defense Waste and Transportation Management (DWTM). The ER Program's purpose is to meet the remedial action responsibilities incumbent upon the Assistant Secretary for Defense Programs from several environmental statutes, primarily the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Superfund Amendments and Reauthorization Act (SARA); and Sect.3004(u) of the Resource Conservation and Recovery Act (RCRA).

Preliminary assessments are essentially complete, and, as a result, more than 3600 release sites have been identified within the 17 major DOE-DP installations currently involved in the ER Program as shown in Fig.1. The December 1988 DOE Environment, Safety, and Health Needs Assessment Report estimates that environmental cleanup of these sites could cost between $35 and $63 billion over the next 30 to 50 years. Completion of Decontamination and Decommissioning (D&D) Program activities, also part of the ER Program, could add an additional $2.5 to $4 billion to this total. These data are summarized in Table I. Contaminants at these installations include hazardous, radioactive, and mixed wastes ranging from petroleum hydrocarbons to radioisotopes. Remedial measures may involve source control remediations to stabilize wastes and prevent their migration; in situ treatment by microbial degradation; excavation and removal of soils, sediments, and groundwater; encapsulation; and installation of caps.

TABLE I
Environmental Restoration Program
Summary Data by Field Office[a]

	Number of Currently Identified ReleaseSites[b]	Estimated Cleanup Cost Maximum Case ($ in millions)[c]	Estimated Completion Date[b]
Albuquerque	793	2,349-2,982	Beyond 2010/TBD
Idaho	301	874-2,330	Beyond 2010/TBD
Nevada	726	523-781	2002
Oak Ridge	286	2,789-5,738	Beyond 2010/TBD
Richland	1,402	27,600-46,600	2045
San Francisco	12	137-377	Beyond 2010/TBD
Savannah River	119	260-4,140	2017

[a]All values are approximate.

[b]Source: "Environmental Restoration Program and Implementation Plan," draft, October 31, 1988.

[c]Source: "Environmental, Safety, and Health Needs of the U.S. Department of Energy," December 1988.

TBD = to be determined.

While some cleanup activities were already being undertaken in the field when the ER Program was created in 1987, first-year, program-level priorities focused on confirming the scope of the Program, identifying organizational responsibilities, and developing management systems for

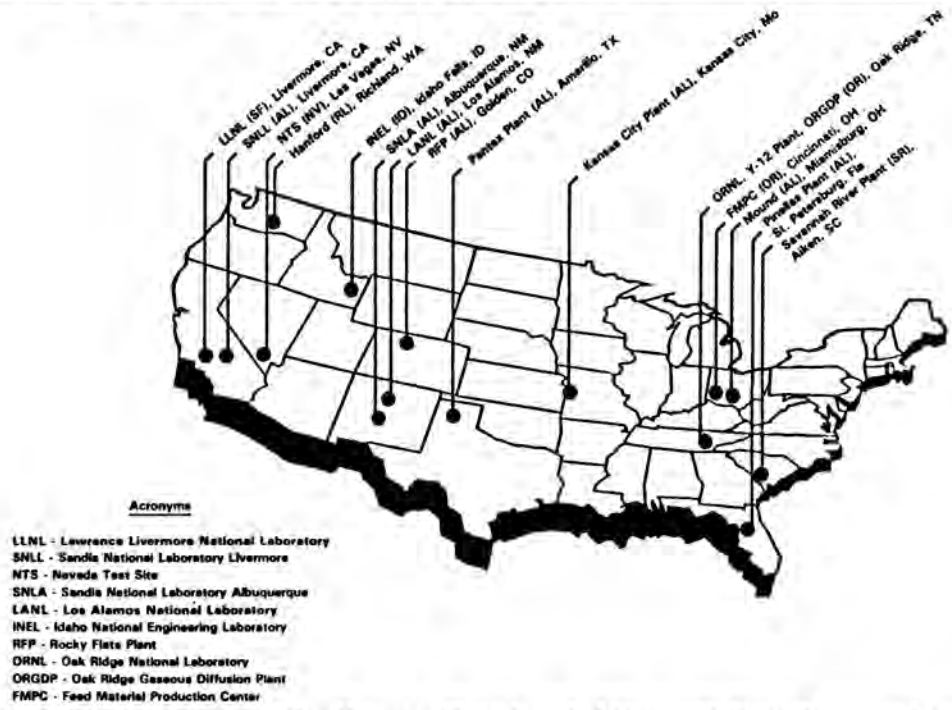

Fig. 1. Environmental Restoration Program Department of Energy Defense Programs Locations.

Program execution. The immediate program-level objective is to get interagency agreements at both the federal and state levels in place for all sites. The bulk of the field effort beginning in FY 1989 is devoted to waste site characterization. Any near-term remedial actions will be RCRA closures for the most part.

DP ER Program administration comes from the Hazardous Waste and Remedial Actions Division (HWRAD) within DWTM. HWRAD provides guidance and oversight and develops and defends budget priorities and requests. HWRAD also coordinates specific Program responsibilities divided among DP; the DOE Environment, Safety, and Health organization (EH); and the field offices. A unique aspect of the ER Program for DOE is that it is coordinated and managed directly from Headquarters (HQ) without a lead field operations office.

The Hazardous Waste Remedial Actions Program (HAZWRAP) Support Contractor Office (SCO) provides the principal technical support to HQ DWTM for Program implementation by helping develop management systems and procedures, technical and regulatory analysis, and technology transfer. The HAZWRAP SCO also supports field demonstrations of cleanup technologies that have wide DP applicability.

EH provides compliance policy; independent oversight for environment, safety, and health matters within the Department; coordination with the Environmental Protection Agency (EPA) HQ, the Occupational Safety and Health Administration, and the National Institutes of Health; and technical compliance assistance. The field offices have specific responsibilities in the direct management of their respective remedial actions activities. These responsibilities include all activities from preparing and conducting remedial investigation/feasibility studies (RI/FS) to implementing approved remedial actions and reporting postclosure monitoring results. Field offices also negotiate and execute SARA Sect. 120 Federal Facility Agreements and consent order/compliance agreements with EPA regional offices and their states.

Although funded entirely with operating dollars, ER funds are identified as "no-color" for maximum flexibility. Congressional approval was given for expenditure of ER funds on capital or construction projects connected with the ER Program. The total FY 1988 ER Program budget, including the D&D Program, was approximately $97million, of which $81million was for remedial actions. For FY 1989, the total increased to nearly $160 million, with approximately $142million committed for remedial actions. These figures include congressional add-ons for both of these years, reflecting a similar experience by the Department of Defense Defense Environmental Restoration Account. Table II shows FY1988 and 1989 funding allocations for the field offices.

Federal and state regulatory agencies typically set the pace of remediation and the scope of ER activities. Scheduling and prioritizing of activities are affected by many external requirements, including those mandated by statute, such as remedial actions for DP facilities listed on the EPA National Priorities List, those required by RCRA permit, and interagency Consent Order Compliance Agreements. DOE must be able to reallocate funds and resources to accommodate these external requirements that influence schedules and priorities. Thus, the ER Program is dynamic and evolving.

TABLE II
Environmental Restoration Program
Financial Plan Operating Expenses

	Operating Expenses FY 1988 ($ in thousands)	FY 1989 ($ in thousands)
Remedial Actions		
Albuquerque	4,410	2,974
Idaho	8,646	17,338
Nevada	343	1,486
Oak Ridge	23,426	47,124
Other[a]	5,134	15,920
Richland	14,193	23,165
San Francisco	10,045	10,770
Savannah River	13,853	22,893
Total Remedial Action	80,850	141,670
Total Defense and Decommissioning	16,948	17,655
Total Environmental Restoration	97,798	159,325

[a]Funds shown under "other" are dedicated for technical support by the Hazardous Waste Remedial Actions Program Support Contractor Office and for Environmental Restoration technology demonstrations.

The ER Program allows DOE to identify and prioritize the funding requests on a DP-wide basis, and the Program's structure allows for the assignment of management responsibilities and accountability for all remediation tasks. The Program also provides a centralized planning mechanism, a management tracking and reporting system, and remedial actions technical support through HQ.

Tasks within the ER Program scope are investigations to identify, confirm, and quantify contamination; FSs; remedial action plans and designs; and remedial action implementation. Development and demonstration of potential remediation technologies necessary to conduct cleanups and that have DP-wide application were part of the Program since its inception and will continue to be an integral part of the Program. Costs of installing, but not postremediation operation of, long-term monitoring systems are also part of the Program.

Specific Program studies have included developing risk assessment methodologies used to rank the DP facilities according to a number of environmental factors and public health impact. The Program also addresses RCRA closures of land units that were in operation before March1,1987. The Program includes requirements incidental to remedial actions (e.g., provision of a temporary source of drinking water to off-site residents whose water supply has been contaminated by a release from a DOE-DP site). Remediation activities of sites formerly used for disposal of transuranic wastes at DOE facilities are also included.

New waste management facilities, except as required as an integral part of the remedial action, are excluded, as are emergency responses to current spills. Also not included in the ER Program are Formerly Utilized Sites Remedial Action Program facilities.

Significant progress was made in the Program's first year. Notable accomplishments include (1) preparation of the first ER Program Management Plan (PMP); (2) preparation of the first ER Program and Implementation Plan (PIP) defining programmatic costs, schedules, and issues; (3)development of a format for, and initiation of, monthly reporting; (4)conduct of workshops in the areas of Research, Development, and Demonstration needs and RI/FS lessons learned; (5) development of the Program Optimization System (POS) and workshops on the application of the POS for FY 1990 budget allocations; and (6)establishment of a Work Breakdown Structure and a budget and reporting structure.

The PMP develops the systems and procedures for managing the Program, including identifying roles and responsibilities, work breakdown structure, and documentation requirements. The PMP will be updated in FY1989 to implement requirements of DOE Order 4700.1, Project Management System. It is anticipated that the Order will increase the field offices' accountability to HQ as well as strengthen their program management structure. It is not anticipated that the overall ER Program goals or direction will change with the implementation of the Order; however, accountability and management oversight will increase.

A final draft of the "Environmental Restoration Program and Implementation Plan," dated October 31, 1988, represents the first comprehensive effort to develop an assessment of overall scope, cost, and schedule for the Program plans. It includes a summary of planned activities by participating program installations, regulatory drivers, cost and schedule summaries, and issues and conclusions. This document will be incorporated into the Defense Waste PIP as a separate chapter and updated annually.

Each of the participating program installations submit monthly summary reports, which are compiled into a Field Office Monthly Management Summary Status Report. The reports distill input from each of the field operations offices into a program-level summary format. These reports highlight field office program plans and milestones and actual versus planned spending levels.

A major challenge for the ER Program has been to establish a priority system that would ensure that available funds were applied to achieve the greatest benefit to health, safety, and protection of environment from further damage. Multiple HQ task group meetings starting in December1987 resulted in the development of a quantitative technique based on a multiattribute utility theory that meets this challenge. The priority system is called the Program Optimization System. Its scoring process concisely summarizes the best professional judgment of the effects of funding environmental remediation activities at several alternative levels. A basic tenet of the theory is that decision

alternatives should be evaluated according to the benefits they produce.

In this case, the alternatives are different funding and program levels for ER at the 17 major DP facilities. The benefit measures include the level of public health and safety, security of the DP mission, extent of regulatory responsiveness, level of public concern, avoidance of adverse effects from delays (e.g., contamination spread), and cost savings. With the aid of a computer, the particular funding allocations among field components are identified that produce maximum total benefits at minimum total costs. In this way, the POS seeks to identify funding distributions that make the most efficient use of limited ER funds. Use of this management tool began for the FY 1990 budget cycle, and full implementation is expected during FY1991. A peer review of the POS is planned for the second quarter of FY1989. An outreach program to familiarize federal and state regulators and local concerned groups with the POS will also begin in FY 1989.

The ER Program initiated an annual workshop for representatives from DOE field operations offices to discuss technology needs and to rank potential technology demonstrations. HQ provides funding for CERCLA-oriented technology demonstration projects worthy of DP-wide applications. Beginning in FY1989, three demonstration projects (Hexone Tanks, Burning Rubble Pit, and 116-B-6-1 Waste Crib) will move from the Compliance Technology Program to the ER Program. It is also planned that two projects (Waste Encapsulation and In Situ Detection of Organics) will move from the R&D Program into the ER Program technology demonstration phase in FY 1989 and that five new technology demonstration projects will be started. In addition, 4 ongoing demonstration projects will be supported, making a total of 14 technology demonstration projects being funded by the ER Program in FY 1989.

Other planned activities include initiation and development of the remedial actions cost-estimating support for the Program. DOE Order 4700.1 requires a demonstration of the validity of cost-estimating practices, which will be supported by the development of a Remedial Actions Cost-Estimating Model. It is intended that this Model also provide consistency in cost-estimating across the Program, as well as allow costing information transfer from one office to another. Also to be addressed in FY 1989 are preparation of an interim change control procedure to provide accountability for making changes in the field office plans, preparation of the ER Program FY 1988 annual report, and progress toward using the DP computerized Waste Information Network to transmit monthly reports.

The ER Program faces the challenge of cleaning up contamination at the DP sites, a process that will span decades and will involve enormous costs. The first year of the Program has seen significant progress in meeting this challenge, including program management systems to track the progress of the large number of component tasks and milestones and methods to aid in funding decisions for DP systemwide needs. Work is ongoing and evolving as the ER Program matures. The future holds the promise of increased public and congressional awareness of the DOE commitment and the actuality of getting the job done.