

**Schedule Optimization Study  
Hanford RI/FS Program  
Volume 2: Final Report**

**December 1992**

**Prepared for  
Environmental Remediation Branch  
U.S. Department of Energy Richland Field Office  
under Contract DE-AC06-76RLO 1830**

**Environmental Management Operations  
Operated for the U.S. Department of Energy  
by Battelle Memorial Institute**



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Richland, Washington 99352

## Abstract

This report, *Schedule Optimization Study, Hanford RI/FS Program, Volume 2: Final Report*, documents the findings and recommendations made by the Schedule Optimization Study (SOS) team during its September 1992 two-week working session. The Environmental Management Operations (EMO) selected the participants, facilitated the working session, and organized the team's findings and recommendations into a complete document. Every effort has been made to preserve the original words of the SOS team, though minor editorial changes, factual corrections, and clarifications have been made to improve the document.

The companion document to Volume 2, *Schedule Optimization Study, Hanford RI/FS Program, Volume 1: Self-Evaluation*, was prepared to document the results of a self-evaluation that was conducted with Hanford staff. The self-evaluation was prepared to provide background material to the SOS team. Volume 1 documented the perceptions of those knowledgeable about the Hanford RI/FS Program relative to schedule constraints. To record perceptions, interviews were conducted with staff of Hanford contractors; U.S. Department of Energy (DOE) Richland Field Office (RL); U.S. Environmental Protection Agency (EPA), Region 10; and Washington State Department of Ecology.

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Finally, the entire SOS effort has been funded by DOE, Environmental Remediation Branch, under the direction of Julie Erickson, Branch Chief. Don Kane was the EMO SOS Project Manager and the primary architect of the study. Upon Don's departure from EMO on September 30, 1992, Darby Stapp was assigned project management responsibilities.

## Acronyms and Abbreviations

AFB	Air Force Base
ARAR	applicable or relevant and appropriate requirements
BOA	Basic Ordering Agreement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COE	U.S. Army Corps of Engineers
CPSR	Contract Procurement System Review
CX	categorical exclusion
DoD	Department of Defense
DOE	U.S. Department of Energy
DOE-HQ	DOE Headquarters, Washington, D.C.
DOJ	U.S. Department of Justice
DQO	data quality objectives
EA	environmental assessment
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
EM	DOE Office of Environmental Restoration and Waste Management
EMO	Environmental Management Operations
EPA	Environmental Protection Agency
ER	environmental restoration
ERMC	environmental restoration management contractor
FAR	Federal Acquisition Regulations
FFA	Federal Facility Agreement
FONSI	Finding of no significant impact
HPPS	Hanford past practices strategy
HRA	Hanford remedial action
INEL	Idaho National Engineering Laboratory
NEPA	National Environmental Policy Act

NPL	national priorities list
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Act
OU	operable units
PERT	performance evaluation review technique
PNL	Pacific Northwest Laboratory
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RL	DOE Richland Field Office
ROD	Record of Decision
RI/FS	remedial investigation/feasibility study
SAR	Safety Analysis Report
SOS	schedule optimization study
TPA	Tri-Party Agreement
TST	Technical Support Team
WHC	Westinghouse Hanford Company
WM	waste management

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## Executive Summary

A Schedule Optimization Study (SOS) of the U.S. Department of Energy (DOE) Hanford Site Remedial Investigation/Feasibility Study (RI/FS) Program was conducted by an independent team of professionals from other federal agencies and the private sector experienced in environmental restoration. This team spent two weeks at Hanford in September 1992 examining the reasons for the lengthy RI/FS process at Hanford and developing recommendations to expedite the process. The need for the study arose out of a schedule dispute regarding the submission of the 1100-EM-1 Operable Unit RI/FS Work Plan. This report documents the study called for in the August 29, 1991, Dispute Resolution Committee Decision Statement. Battelle's Environmental Management Operations (EMO) coordinated the effort for DOE's Richland Field Office (RL).

The findings of the study indicate that the most serious impediments to cleanup of the Hanford Site are related to a series of management and policy issues that are within the control of the three parties managing and monitoring Hanford: DOE, the U.S. Environmental Protection Agency (EPA) and the Washington Department of Ecology (Ecology), the partners to the Tri-Party Agreement. The impacts of these management and policy issues outweigh those related to technical issues.

### Cross-Cutting Issues

The SOS team believes that eight cross-cutting management concerns underlay major impediments to Site cleanup. These concerns include the following:

- The DOE and contractor management structure at Hanford still functions as a production operation. There is a lack of understanding and therefore commitment throughout the organization (RL and supporting contractors) to the environmental restoration mission at Hanford.
- The history of the Site and its focus on nuclear material production leads to overly conservative interpretations of regulations and requirements that are designed to emphasize nuclear safety and to prevent catastrophic events. That history, combined with a lack of understanding of the environmental mission, leads to a focus on process as defined by directives, rather than a substantive interpretation of what is relevant to the environmental restoration (ER) mission.

- There is little focus on the overall goal of Site cleanup. Milestones are beyond most employees horizon (e.g., many managers will retire before RI/FSs are complete in 2005), which shifts everyone's focus toward the administrative process and not the end product. A great deal of effort, time, and money is spent on generating "process" documents, reviewing them in great detail, and resolving the hundreds of comments generated by the Tri-Party Agreement members and their host of consultants. In short, "working the process" has become Hanford's goal rather than a means to a goal.
- The current structure at the Site hampers the integration of environmental restoration (ER) and waste management (WM) activities. This lack of integration may impede cleanup progress and could jeopardize the timely availability of adequate treatment, storage, and disposal capacity for waste generated through the ER program.
- There is a severe shortage of appropriate RL staff at the Site with the experience in ER work needed to plan and execute the EM mission. The culture and mission at Hanford cannot be changed without adequate strong, experienced DOE leadership and staff who understand what needs to be done and how to do it.
- The parallel and vertical DOE and contractor organizations, each focused on its own mission and functional areas, results in confusing lines of authority within and among contractors and lack of focus on the cleanup goals. This production oriented management structure results in a lack of project management accountability and a lack of empowerment at the field team level for achieving progress in ER.
- The shortage of DOE/ER staff also leads to a situation in which their ability to direct, oversee, and budget for technical work is severely impeded. Contractors appear to be running the cleanup activities at Hanford without directed authority and responsibility because there is insufficient ER staff with the capability to manage the program.
- There has been a severe lack of timely and effective communication and coordination among the Tri-Party Agreement partners that appears to stem from a lack of trust among the three parties. This mistrust, and lack of communication, has led to extensive time delays, rework, added unnecessary costs, and an attempt to build in quality through lengthy inspection and review processes. However, this situation is improving and the three parties are beginning to develop a cooperative relationship.

The SOS team focused its attention on the speed of the cleanup at Hanford. The team did not attempt to address any scoping or scheduling issues as they relate to the availability of funds, though this was recognized as a potential issue. It was the sense of the SOS team,

however, that budget shortfalls are not the real issues. The team believes that most of the recommendations could be implemented by directing efforts away from unnecessary work. The team also believes that the staffing needs of the ER program could be addressed by redirecting staff at RL (and possibly at HQ) toward the restoration mission, and away from processes that impede work and are not necessary. In addition, redirecting some funding away from management and operations (and the Environmental Restoration Management Contractor) efforts and toward providing technical assistance to RL ER staff can effectively serve as a force multiplier for DOE's effort at program control and direction.

## **Findings and Recommendations**

The SOS team's findings and recommendations are presented in Table E.1. The findings and recommendations are based on the team's experience in resolving similar problems and lessons learned in Superfund, other federal facility efforts, and private sector cleanup efforts. The findings and recommendations are the team's assessment of the most serious issues that are impeding ER progress (or are likely to). What is needed is management commitment to make change.

The 57 recommendations of the SOS team resulting from the two-week study, along with the related findings and issues, are discussed in detail in the report that follows. The list of documents available to the team during its study is provided in Appendix A. Brief descriptions of the SOS team participants are provided in Appendix B. To facilitate implementation of these recommendations, an implementation plan has been prepared as a companion document to the *Schedule Optimization Study Final Report*.

The SOS team was composed of 16 experts in different aspects of environmental remediation from across the country. The SOS team represented some of the best experience in environmental restoration from other federal agencies and the private sector. The individuals participating in the study represented themselves and not their agency or organization. No attempt was made to reach formal consensus; however, a broad informal consensus on major findings and recommendations was reached.

**Table E.1. Summary of Findings and Recommendations**

Section	Issue	Finding	Recommendation
<b>Management Structure and Processes</b>			
2.1.2	Applicability of DOE Orders.	DOE Orders do not recognize differences between production and ER activities.	<b>R-1:</b> Either exempt ER activities or clarify applicability to ER activities.
2.1.3	DOE audit/surveillance requirements.	Cause loss of ER productivity.	<b>R-2:</b> Implement a single annual performance audit of each area. Consider focused reviews of priority issues.
2.1.4	Program and project management systems.	Inappropriate for ER programs.	<b>R-3:</b> Streamline management systems to fit ER missions.
2.1.5	Lack of overall vision.	No clear vision for activities at site or future use of site.	<b>R-4:</b> Complete programmatic EIS. Refocus site-wide EIS.
2.1.6	Lack of experienced personnel.	Lack of experienced and available senior technical managers.  Insufficient RL staff with ER skills to prepare and review cost estimates and budget requests and to oversee contractors.	<b>R-5:</b> Establish an EM multidisciplinary project Technical Support Team (TST) onsite.  <b>R-6:</b> More work should be conducted by RL in-house. Increase ER workforce by shifting personnel.

**Table E.1. (contd)**

<b>Section</b>	<b>Issue</b>	<b>Finding</b>	<b>Recommendation</b>
2.1.7	Effects of multiple chains of command within DOE.	<p>Lack of integration among WM, ER, D&amp;D, and Technology Development.</p> <p>Unclear roles of DOE-HQ and field offices. Lack of delegation to field offices.</p> <p>Fragmented structure between DOE and its contractors undercuts management accountability.</p>	<p><b>R-7:</b> Streamline RL and contractor organizational structure to better fit ER mission needs. Use integrated project team approach and matrix management.</p> <p><b>R-8:</b> Decentralize management of ER and WM activities to the field office level.</p> <p><b>R-9:</b> Review and streamline roles and responsibilities of ERMC and other contractors onsite.</p>

Table E.1. (contd)

Section	Issue	Finding	Recommendation
<b>Technical Approach to Site</b>			
2.2.1	Implementation of Hanford Past Practices Strategy (HPPS).	<p>HPPS is a significant improvement for the Hanford restoration program.</p> <p>TPA milestones do not reflect the HPPS.</p>	<p><b>R-10:</b> Implement HPPS at all Hanford NPL sites.</p> <p><b>R-11:</b> TPA members should broadly apply the HPPS to all remediation activities at Hanford.</p> <p><b>R-12:</b> Reformulate TPA milestones and operable unit designations to reflect HPPS.</p> <p><b>R-13:</b> Set planning process goal of 30 months, but implement planning on a flexible basis.</p>
2.2.2	Integration of HPPS with existing activities.	HPPS will fail to facilitate remedial progress for the overall project if it does not integrate long-term ER planning.	<b>R-14:</b> Integrate ER planning into all ER and WM activities at Hanford. Use a conceptual site model that includes baseline qualitative risk assessment and treatment technology feasibility screening for overall delisting ROD for each NPL site.

**Table E.1. (contd)**

Section	Issue	Finding	Recommendation
2.2.3	Taking advantage of commonalities.	Taking advantage of common features and activities at sites can optimize schedules for RI/FS and other RCRA/CERCLA activities.	<p><b>R-15:</b> Use generic documents whenever possible.</p> <p><b>R-16:</b> Examine operable units under the HPPS for commonalities.</p>
2.2.4	Macroengineering approach.	<p>HPPS macroengineering and RCRA/CERCLA technical processes not integrated.</p> <p>Failure to develop budget strategies that support macroengineering will lead to failure of implementation strategy.</p>	<p><b>R-17:</b> Develop implementation strategy for incorporating viable aspects of macroengineering at the 100 Areas.</p> <p><b>R-18:</b> Develop budget strategy as part of implementation plan. Include phased funding.</p>

**Table E.1. (contd)**

<b>Section</b>	<b>Issue</b>	<b>Finding</b>	<b>Recommendation</b>
2.2.5	Technology development and transfer.	<p>Technology development and transfer program not developed to support ER program at Hanford.</p> <p>Funding levels only provide for long-term research.</p>	<p><b>R-19:</b> Streamline organizational interface between technology development and ER.</p> <p><b>R-20:</b> Align technology development with ongoing cleanup activities. Operable unit 100-KR-1 is a good candidate for a trial application.</p> <p><b>R-21:</b> Increase technology development funding and staffing to support Hanford site needs, beginning in FY93.</p>
<b>Sampling and Analysis</b>			
2.3.1	Failure of DOE to generate necessary supporting data.	<p>Inexperienced ER personnel results in inadequate sampling and analysis.</p> <p>Physical property data essential.</p>	<b>R-22:</b> RL should develop a comprehensive sampling and analysis strategy for the site, including providing appropriate staff training.

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**Table E.1. (contd)**

<b>Section</b>	<b>Issue</b>	<b>Finding</b>	<b>Recommendation</b>
2.3.2	Shortage of analytical capacity.	Analytical capacity shortfalls causing missed milestones. Long-term storage prior to testing is questionable practice.	<p><b>R-23:</b> Perform PERT analysis of all low-level mixed waste requirements for all RI/FS and treatability-type studies.</p> <p><b>R-24a:</b> Build low-level radioactivity waste sample analysis facility.</p> <p><b>R-24b:</b> Increase available private sector capacity by eliminating poorly designed SOWs.</p> <p><b>R-25a:</b> SOS suggests a team approach with regulators to set priorities for total program analytical requirements.</p> <p><b>R-25b:</b> Obtain RL permission to store radioactive samples for analysis.</p> <p><b>R-25c:</b> Make high-level radioactivity testing lab operational.</p>

Table E.1. (contd)

Section	Issue	Finding	Recommendation
2.3.3	Field team leader authority limited.	Organization/management structure not matched to project needs.	<p><b>R-26a:</b> Empower project managers and field team leaders with authority to organize and manage ER work.</p> <p><b>R-26b:</b> Establish matrixed project teams to meet specific project requirements.</p>
<b>Policy, Legal and Regulatory Issues</b>			
2.4.1	NEPA and the cleanup process.	Adding NEPA documentation to CERCLA process is of little value.	<b>R-27:</b> Change policy of applying NEPA to the CERCLA process.
2.4.2	NEPA/CERCLA integration.	<p>Decision authority for NEPA, CERCLA, and the terms of the TPA is undercut by lack of integration.</p> <p>Integration of NEPA EAs into CERCLA decision documents may lead to a challenge that a FONSI is unwarranted.</p>	<p><b>R-28:</b> If CERCLA/NEPA policy stands, empower CERCLA project managers with NEPA approval authority.</p> <p><b>R-29:</b> Designate the integrated document as an EIS instead of an EA.</p>
2.4.3	Documenting categorical exclusions.	Documentation and review to support categorical exclusion (CX) designation undercuts the CX.	<b>R-30:</b> File existing documentation in the Administrative Record and indicate which CX the activity falls under.

Table E.1. (contd)

Section	Issue	Finding	Recommendation
2.4.4	Hanford site-wide EIS.	EIS may be a significant obstacle to CERCLA cleanup unless revised.	<b>R-31:</b> Revise purpose to focus on range of future uses of real property, instead of cleanup methods or standards.
2.4.5	Integration of RCRA and CERCLA.	Using inconsistent RCRA and CERCLA authorities is confusing and threatens timely cleanup.	<p><b>R-32:</b> Design RCRA permit for Hanford to promote efficient cleanup and minimize bureaucratic hurdles.</p> <p><b>R-33:</b> Complete negotiations on RCRA permit to make permit consistent with TPA. Resolve issues to maximize flexibility.</p> <p><b>R-34:</b> Reconvene RCRA/ CERCLA Integration Group to address outstanding issues in the TPA. Use TQM and team building.</p> <p><b>R-35:</b> Include conclusions of negotiations as amendments to the TPA.</p>

Table E.1. (contd)

Section	Issue	Finding	Recommendation
<b>Document Review Process</b>			
2.5.1	Document review and approval process.	Parties reviewing and approving documents work independently of one another.	<p><b>R-36:</b> Emphasize team approach and communication among all parties from earliest stages.</p> <p><b>R-37:</b> Hold up-front, continuous, and frequent document scoping meetings to facilitate coordination.</p> <p><b>R-38:</b> Conduct public review process simultaneous with TPA partner reviews.</p>
2.5.2	Comprehensive reviews by multiple reviewers.	<p>Comprehensive reviews lead to continuous second-guessing and ongoing review and comment.</p> <p>Reviewers are providing numerous comments on wide range of topics, all of which require formal responses.</p> <p>Too many nonsubstantive comments are documented in formal response to comments process.</p> <p>Multiple formats of documents make review difficult.</p>	<p><b>R-39:</b> Define purpose of each party's review and focus review accordingly.</p> <p><b>R-40:</b> Identify and highlight key issues when forwarding documents for review.</p> <p><b>R-41:</b> Allow for informal resolution of nonsubstantive comments by all appropriate players.</p> <p><b>R-42:</b> Develop common report formats to facilitate document review.</p>

**Table E.1. (contd)**

Section	Issue	Finding	Recommendation
2.5.3	Strategic planning implementation.	<p>Planning has not been consolidated or implemented.</p> <p>Many documents contain recommendations for expediting cleanup.</p> <p>Future site use is a key planning issue.</p> <p>Stakeholders are unaware of extensive strategic planning already undertaken.</p>	<p><b>R-43:</b> Consolidate existing strategic/critical path planning activities.</p> <p><b>R-44:</b> Implement existing planning documents.</p> <p><b>R-45:</b> Complete land-use planning study and incorporate results into ER planning and decision documents.</p> <p><b>R-46:</b> Enhance communication among stakeholders.</p>
<b>Procurement of Goods &amp; Services</b>			
2.6.1	Fragmented ER program functional support organizations.	Neither RL nor WHC procurement is linked to ER.	<p><b>R-47:</b> Redirect service groups to facilitate procurement actions in support of ER.</p> <p><b>R-48:</b> Resolve conflicting programmatic and procedural issues within RL and develop an integrated set of guidelines and criteria for Hanford contractors.</p>

XX

Table E.1. (contd)

Section	Issue	Finding	Recommendation
2.6.2	Poor coordination of ER and procurement programs; lack of a decision maker.	Procurement process does not focus on supporting schedule commitments to TPA milestones.	<b>R-49:</b> At operable unit manager and appropriate higher DOE/WHC management levels, implement regular coordination effort that clearly defines Procurement's responsibilities in support of ER and TPA.
2.6.3	Procurement practices delay schedules.	<p>Procurement personnel want to "play it safe" to avoid claims or protests.</p> <p>Submission of PRE procurement plans delays ER process.</p> <p>Flexibility within procurement process is missing, leading to delays.</p> <p>WHC's procurement procedures are even more conservative and rigid than DOE's.</p>	<p><b>R-50:</b> Implement buying guidelines more broadly.</p> <p><b>R-51:</b> Eliminate all additional documentation that is not required under the FAR and that impedes the ER procurement process.</p> <p><b>R-52:</b> Revise procurement process flexibility to allow for modifications and regulatory revisions.</p> <p><b>R-53:</b> Reduce incentives that dictate conservative approach to procurement. Focus CPSR review on important issues. Recognize importance of TPA milestones and the ER process in performance and fee award criteria.</p>

**Table E.1. (contd)**

<b>Section</b>	<b>Issue</b>	<b>Finding</b>	<b>Recommendation</b>
2.6.4	Lack of commitment of procurement personnel.	Procurement goals do not support the ER program as a priority.	<b>R-54:</b> Ensure that the importance of the ER mission is clear to all levels of Hanford workplace, including RL and contractors. Modify the Hanford operations contract evaluation criteria for contractors to reflect this importance.
2.6.5	Procurement personnel lack relevant ER experience.	Personnel do not understand ER needs.	<b>R-55:</b> Train personnel on regulations, technologies, and procedures related to ER mission, as well as in understanding the TPA need.
2.6.6	Communicating management commitment to TPA milestones to staff.	Management commitment to TPA milestones is unclear.	<b>R-56:</b> RL and WHC need to show a unified commitment to accomplishing the TPA milestones. Dates and commitments must be viewed as unchangeable.
2.6.7	Improved planning for contracting actions.	Lack of planning may be causing delays.	<b>R-57:</b> Through a joint Procurement/ER program task force, develop a long-term contracting plan that ensures contracting capacity is in place on or before dates needed.

# 1.0 Introduction

This report presents the results of the Schedule Optimization Study (SOS), which was conducted by the U.S. Department of Energy (DOE) Richland Field Office (RL) to identify opportunities for accelerating schedules related to the Hanford Site Remedial Investigation/ Feasibility Study (RI/FS) Program. The study was conducted by an independent team of professionals from other federal agencies and the private sector experienced in environmental restoration. This team spent two weeks at Hanford in September 1992 examining the issues, producing findings, and developing recommendations. The Environmental Management Operations (EMO) coordinated the effort at the request of RL.

The remainder of this section describes the purpose of the study, the process followed for conducting the study, and the organization of the rest of the report.

## 1.1 Purpose

The SOS originated out of a dispute resolution that arose from a schedule conflict regarding the Hanford 1100-EM-1 operable unit (DOE 1989, 1991). Under the Hanford Federal Facility Agreement and Consent Order (the Tri-Party Agreement [TPA]) signed by DOE, the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology), if an issue arises that cannot be resolved at the working level, it is elevated to the TPA Dispute Resolution Committee (DOE/EPA/Ecology 1989). During the summer of 1991, such a dispute arose when EPA and Ecology disapproved a request to extend a milestone related to the submission of the final RI/FS report for the 1100-EM-1 operable unit. DOE submitted the dispute to the Dispute Resolution Committee on August 6, 1991, and a decision statement<sup>(a)</sup> was released on August 29.

The decision statement provided the charter for the SOS, as the following excerpt from the statement indicates:

- DOE, in consultation with EPA and Ecology, will carry out a study of the processes that govern schedules in place for RI/FS work at Hanford, focusing on the 1100-EM-1, 200-BP-1, and 300-FF-1 and 300-FF-5 operable units. These specific units will be used as

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(a) Hanford Federal Facility Agreement and Consent Order, Dispute Resolution Committee Decision Statement, August 29, 1991.

vehicles to analyze the processes that would lead to accelerated RI/FS schedules at Hanford. This study will not assume there are areas that have prescribed time periods associated with them, but rather will challenge all areas governed by DOE, EPA and Ecology. The purpose of the study is to identify areas that are preventing accelerated completion of RI/FS activities.

The Committee Decision Statement also provided direction concerning the action that would be taken in response to the study's recommendations:

- The results of the study will be evaluated and adopted for all past practice activities at the Hanford Site, as considered appropriate by the three parties. RL and its contractors will make appropriate changes in their own internal procedures as rapidly as possible and will implement those changes to shorten the schedules for ongoing operable unit RI/FSs. EPA and Ecology will also make appropriate changes to their procedures to shorten RI/FS schedules.
- Where the procedures causing delays are controlled by DOE-headquarters (HQ) procedures, RL commits to requesting changes to these procedures. RL will keep EPA and Ecology informed of the issues and the status of the proposed changes for which DOE-HQ has responsibility. Likewise, where the procedures causing delays are controlled by EPA-HQ procedures, EPA Region 10 commits to requesting appropriate changes to those procedures. EPA will keep DOE and Ecology informed of the issues and the status of the proposed changes for which EPA-HQ has responsibility.

And finally, the Decision Committee Statement stated the goal of the three parties relative to the study effort:

- The goal of the three parties is to shorten the current schedule for completing adequate and technically sound RI/FSs to approximately 30 to 36 months (from work plan approval to proposed plan).

With these directions in mind, RL requested EMO to facilitate completion of the study.

## **1.2 Process Employed to Conduct the Schedule Optimization Study**

The SOS study took place in two phases over the summer and fall of 1992. The first phase was focused on gathering data for the study. A major part of this preliminary effort (Phase 1) was a "self-evaluation," which was conducted by interviewing over 35 selected field and man-

agement personnel at the Hanford Site (Stapp 1992). Personnel interviewed included the regulators (EPA, Region 10; Ecology), RL management and staff, field and management staff from the Westinghouse Hanford Company (WHC), and contractor personnel at Hanford. To plan the second phase, a review of the self-evaluation and other studies and related documents pertinent to Hanford issues was conducted by EMO to verify underlying causes for schedule delays. Based upon this review, a set of six topical areas was selected to structure the two-week working session (Phase 2).

The two-week period began with a series of presentations about Hanford and its cleanup program. The team then divided into three groups to focus the remainder of the first week on three topics: management structure, document review, and technical approach. Relying on their own experience, additional interviews with Hanford staff, and data that had been gathered previously, each group developed a series of recommendations related to key underlying issues to help improve the pace of cleanup activities. Although the three groups pursued each topic separately, there were daily cross-talks held to capitalize on everyone's expertise. At the conclusion of the first week, each group wrote up its issues, findings, and recommendations.

During the second week, the team followed the same process, forming into three different teams to address three new topics: sampling and analysis; procurement of new goods and services; and policy, legal, and regulatory issues. Toward the end of the second week, the SOS team presented all of its findings and recommendations to RL, EPA, and Ecology.

After the SOS team departed Richland, EMO and its subcontractor, Versar Inc., took the team's written material and compiled a draft final report. This was then submitted to the SOS team for its review and concurrence; the draft was also submitted to RL and WHC staff for factual review. Upon receipt of the reviewers' comments, the draft was revised and the final report issued.

### **1.3 Organization of the Document**

The remainder of this report is organized as follows:

- Section 2 contains the conclusions and recommendations of the SOS team for the six major topics.
- Section 3 describes the need for an implementation plan to facilitate implementation of the SOS team's recommendations.

- Appendix A identifies the documents used by the SOS team during its two-week effort.
- Appendix B provides brief descriptions of the individual team members.

## **2.0 Issues, Findings, and Recommendations**

This section provides the SOS team's results in six subsections, each containing a discussion of one key issue, followed by the findings and recommendations of the SOS team on that particular issue.

### **2.1 Management Structure and Processes: Delivering Work to the Field**

Ultimately the cleanup of Hanford requires delivering goods and services to the field to 1) characterize sites for cleanup and 2) design and implement remedies. At Hanford, delivery of these goods and services is governed by a complex relationship of organizations that include 1) the DOE Richland Field Office (RL), 2) DOE Headquarters (DOE-HQ), and 3) the regulators (U.S. Environmental Protection Agency [EPA], the Washington State Department of Ecology [Ecology], and numerous contractors reporting to any of these organizations).

The self-evaluation conducted by EMO in the summer of 1992 (Stapp 1992) identified a number of problems with the delivery of goods and services to the field. Central to the frustration of the Hanford field personnel interviewed in this self-evaluation is the difficulty in "coordinating work activities across and within contractor organizations and mobilizing goods and services to accomplish the work." The common field issues described in the self-evaluation include the following:

- The need to mobilize personnel resources from different organizations to conduct field work, and time lost due to missing staff during field work.
- The lack of availability of goods and services, such as analytical services and equipment (large and small), in a timely manner.
- The need to accommodate a wide variety of requirements (such as NQA1 standards for sampling and analysis, nuclear health and safety standards, and National Environmental Policy Act [NEPA]) that require what is viewed as excessive paperwork and documentation and add little value.
- Extensive audits and reviews to check and see whether all of these requirements are being met take away valuable staff time from the Hanford cleanup mission.

While it is difficult to pinpoint any one issue as a single cause of delays and excessive costs (there are often multiple causes), it is not particularly difficult to document the result. Well-drilling down-time at Hanford is reportedly up to 75% (6 hr) of the workday. Well drilling at Hanford is cited by interviewees in the self-evaluation as a particular exercise in frustration. Long lead times to get into the field, multiple contractors for which activities must be coordinated, nuclear facility orders, and health and safety requirements collectively result in excessive downtime. There is also evidence that implementing the wide variety of requirements associated with field activities leads to high costs. For example, it was reported that costs for cable tool well-drilling on Hanford average up to \$3,000 per foot. Although costs are higher in areas heavily contaminated with radioactive material, this is still very expensive. By comparison, at McChord Air Force Base, also in Washington state, the average is \$500-\$600 per foot for this type of drilling.

This section addresses some of the underlying management issues associated with excessive delays in conducting field work for the cleanup of Hanford. Specifically, this section addresses the manner in which work is managed and the impact of this arrangement on implementing the restoration mission.

### **2.1.1 The Production Culture at Hanford: The Underlying Issue**

The DOE's change in the mission at Hanford from radioactive materials production to environmental restoration (ER) was a significant agency decision. This mission change requires that the "culture" that developed and became entrenched within organizations and staff over decades, both at DOE-HQ and RL, change from one centered on producing specified quantities and forms of radioactive material (production) to one centered on cost-effective ER work leading to the eventual closure of the Hanford facility. Environmental cleanup work is a different kind of business that requires integrating resources and assigning project accountability centered around goals and objectives (i.e., end results).

The "production culture" is a major underlying impediment to the expeditious environmental cleanup of the Hanford site. The DOE and contractor management structure at Hanford still functions as a production operation even though the site is totally under Environmental Management (EM) control. The negative impact of this production culture on DOE's ability to clean up the Hanford site is evidenced, in part, by

- The broad application and conservative interpretation of a range of DOE Orders, designed for the former mission of the site, to the ER mission. An extensive and costly audit process, tied to the nuclear production-oriented culture from which the orders flowed.

- Lack of a clear vision as to the future use of the site, so that all parties at the site understand the goals and objectives to be achieved in the long term.
- Shortage of personnel experienced in ER programs.
- A separation of the waste management (WM) and ER programs in a manner that fails to understand both the nature of the WM program at Hanford and the importance of links between WM and ER.
- Management of the site by RL through parallel functional production-oriented organizations, of which only a small component is the ER program. It almost appears as if ER responsibilities and activities have been appended to the existing complex production organizations. Each of the functions theoretically provides support to the ER program, but report to the manager of the site through different line organizations. The result of these parallel organizations is a failure on the part of numerous organizations within RL to recognize the importance of the central cleanup mission of the facility.
- Multiple contracting organizations, responsible individually to both DOE and WHC, and each serving the needs for a portion of the ER mission.

### 2.1.2 Applicability of DOE Orders to ER Program

***Issue:* The use of blanket assumptions and interpretations for the applicability of DOE Orders to the ER program are impeding the mission of ER by creating unnecessary cost and schedule impacts that require duplicative documentation efforts and serve to diminish individual responsibility and authority.**

DOE-HQ issues orders that affect more than one DOE organization over a long period of time. Many of these orders were originally initiated during the 1970s and 1980s and reflect the production and construction missions of DOE. These orders cover a wide range of activities from project management to health and safety, sampling and analysis procedures, and planning for and managing procurement activities. In 1989, DOE's priorities shifted from production activities to reflect a stronger emphasis toward cleanup of the DOE nuclear complex. The orders created for an earlier purpose, however, continue to guide restoration activity.

The existing DOE Orders reflect the pre-environmental emphasis and a general lack of modification by the environmental management (EM) organization as to program applicability in support of the ER mission. Although in some cases EM is aware of the problem, the fact

that the Orders have been created by other organizations within DOE-HQ, but outside the EM program, has made change difficult. This causes the DOE field office and operational office activities to provide their own interpretation of applicability, which is best demonstrated by the RL's effort to support their delegated authority for approving NEPA categorical exceptions (CXs). The routine process of excluding a routine activity from NEPA that either has no environmental impacts associated with it or that fits within an already approved CX requires a specific form, request letter, and a 5- to 10-page information bulletin that effectively rejustifies the basis for not having to justify the action!

The ER management structures and processes are directly affected by policies and requirements established in DOE Orders for nuclear facilities. All ER sites have been classified as nuclear facilities unless specifically exempted by EM-1 (the Office of the Assistant Secretary for EM). Current Orders are addressed to production activities and associated nuclear safety concerns. Not all requirements in the Orders appropriate to production are appropriate to remediation activities. The audit requirements of DOE Orders and resultant responses and quality assurance efforts are in excess of that needed for ER. DOE Order 5480.23 is an example of this excessive requirement. Process documentation and audit appropriate to nuclear safety concerns are overemphasized in their implementation relative to their applicability to ER activities. This has resulted in schedule delays and costly documentation requirements.

The flexibility to identify that a documentation requirement is not applicable is often implicitly available in DOE Orders, but is apparently never invoked since it is not specifically allowed. Contractor and RL staff default to established patterns based on their operations experience. This reflects a strong cultural bias toward full compliance with directives for the sake of avoiding future liability (which is often associated with production or construction activities) as well as the absence of clear guidance on applying or tailoring Orders requirements to ER needs. This cultural bias is not compatible with the conduct of field investigations, which are based on qualitative estimates of field conditions, not quantitative design calculations, and which have an inherent risk factor that requires decision-making authority in the field and proactive communications among all parties.

The intent of the nuclear facilities designation Orders is to ensure that the potential for high-risk events is adequately addressed in the planning (Safety Analysis Report [SAR]) and implementation processes. It does not specifically exclude any activities, but it does counsel flexibility in the degree and extent of SAR scoping. Contractors may not be inclined to lobby for the minimum level of scoping if DOE is willing to pay for more. Why should the

contractor offer to take on that additional liability when DOE would not address it? Prior reviews by EMO (1991) and the draft DOE Hanford Mission Plan have identified the difficulties and effects of trying to meet such requirements.

***Finding:*** Current DOE Orders do not adequately recognize the significant differences between production and ER activities. The existing structure at Hanford does not have a bias for ER activities. The Hanford ER program is forced to weave its mission into the existing DOE production- and construction-oriented system. Resources and time are being wasted in an effort to comply with inappropriate or unnecessary requirements. Innovation to expedite ER is stifled by the cultural bias to comply with the letter of DOE Orders.

***Recommendation:*** DOE Orders must be reviewed and changes incorporated appropriate to the dynamic nature and uncertainties of ER. Inappropriate or excessive requirements for ER should either be annotated to exempt ER activities or clarified as to applicability to ER activities (screening criteria). Alternatively, separate Orders addressing ER activities could be promulgated. Innovation needs to be encouraged and rewarded (R-1).

Failure to make such changes will result in the continued wasteful expenditure of ER resources in attempting to meet unnecessary requirements. RL staff and contractors must aggressively pursue, when appropriate, the exemptions and alternatives available for in the Orders. Other government agencies are successfully addressing sites contaminated with radionuclides using appropriate radiologic protection practices. The Air Force, for example, is in the process of a sweeping review and change in its regulations, which are equivalent to DOE Orders, to identify and remove requirements and documentation that are not essential to effective operations in compliance with law.

### 2.1.3 Audit Process

***Issue:*** An extensive and costly audit process is tied to the nuclear production-oriented culture from which the Orders discussed above flowed. The extent and number of these audits are unnecessary and pull resources from the basic ER mission.

During the last calendar year, ER activities at RL were subject to 17 major audit and 35 surveillance inspection visits. The time spent preparing for, assisting with, and responding to these outside "assistance" visits is a severe distractor from the primary ER mission. RL spent over a million dollars to respond to the findings of a recent audit. A brief review of DOE

Orders documents that these audit/surveillance visits result from both direct requirements and implied taskings. For instance, DOE Order 5820.2A directs three separate offices to independently audit the WM process for adherence to DOE requirements. The same Order instructs area managers and contractor/subcontractors to audit the same process. These redundant inspections may have been needed to protect national interests during production activities, but serve no useful purpose during site remediation.

***Finding:* All facets of DOE ER activities are losing productivity as a direct result of DOE audit/surveillance requirements.**

***Recommendation:* A single annual performance audit of each major-area should suffice. Consideration should be given to focused reviews of priority issues (R-2).**

An audit team comprising representatives from each entity responsible for an audit area can be assembled to initiate a coordinated effort. Different entities could take responsibility for different areas requiring audits and disseminate the audit report/responses to all interested parties and provide contractors/subcontractors with guidance that clearly defines required DOE audits and surveillance expectations. The net result would be improved productivity with little or no loss in quality assurance. The military services have conducted focused oversight programs successfully for years through their HQ inspection agencies and intermediate command Inspector General functions and Command Staff visits.

#### **2.1.4 Management Systems**

***Issue:* Program and project management systems are also oriented inefficiently toward the production mission.**

DOE uses numerous program and project management systems (including the audits described above) that require far more detail than is appropriate for an ER program, diverting resources from environmental cleanup to producing and maintaining management systems. Little value is added by this effort because of the inability to predict required work effort prior to completion of RI/FS. The cost of providing this level of detail contributes greatly to the excessive overhead costs noted in the Interagency review of the DOE-EM program (IRG 1992).

DOE Order 4700 drives a work breakdown structure and baseline budgeting process that is implemented in great detail until the end of a project. Work is broken down into the smallest increment possible, and estimates are given based on individual activity costs (e.g., drilling a well, x feet). While in the near term (the operating year) this detail allows developing a vali-

dated budget, longer-term estimates are usually modified so much that they have limited value. As one is starting an operable unit RI/FS, there is too much uncertainty about the course that remediation will take to begin to estimate out-year design and construction costs with any degree of accuracy.

The Air Force ER program does not require this massive level of detail. Funds are programmed for sites by Intermediate Command and Base on the basis of a general statement of the site history, contamination, regulatory requirements, and the work to be accomplished during the next fiscal year. Funds are allocated in broad categories (i.e., RI Report, Field Investigation, FS, Design, etc.). Detailed estimates for out-years are not required. Project approval is the first step. Funds are allocated based upon a priority ranking system. When funding is provided to the Intermediate Command and Base, those funds are provided in bulk with bandwidth authority (+10%). This allows the redirection of funds at these levels for other unexpected work without having to get new approvals from Air Force Headquarters. This flexibility is limited only by the maximum authority provided by Air Force Headquarters. If growth exceeds the maximum authority, additional justification is required before more funding is provided. The programs of the other services (e.g., Army and Navy) function in a similar manner.

The Superfund program conducted as a fund financed program by the EPA also does not require this level of detail. Out-year estimates are built on default numbers derived from current trends in dollars and costs for a similar "global" activity (e.g., RI/FS). Near-term and budget-year estimates are built on more realistic costs assigned to a particular site, but to nowhere near the level of detail required by DOE. (The construction estimate for the out-year budget is derived from a detailed Record of Decision [ROD] estimate). With the exception of the remedial action construction budget, funding is provided to regional offices in bulk accounts (e.g., RI/FS account, research and development [R&D] account), to allow for flexible shifting of dollars between sites as appropriate.

***Findings:*** Management systems designed for predictable production processes are not appropriate for the inherent uncertainty associated with ER programs.

***Recommendation:*** Management systems must be streamlined to fit ER missions. Current systems are focused on production, requiring extensive reporting and documentation of activities and diverting resources from getting the real work done (R-3).

There is a constant tension between the need to develop and manage defensible budgets and to predict out-year costs, and the inherent difficulty in predicting out-year costs for projects for which site characterization is incomplete. The DOE has made substantial progress toward developing a baseline understanding of the costs of ER programs. However, in applying the same baselining methodologies for the development of current year budgets, and budgets several years out, DOE is requiring a substantial amount of costly work and documentation that is outdated as soon as it is completed.

### **2.1.5 Lack of Vision**

***Issue:* The lack of a clear vision for activities at the site and the future use of the site, so that all parties at the site understand the goals and objectives, hinders the required change in culture at Hanford.**

While EM leadership has made it clear that the primary mission of the site is cleanup, this message is understood differently by the different parties at the site and regulatory agencies having oversight responsibility for Hanford. Ongoing activities, the current site organization and management structure and the lack of a clear vision as to the future use of the site muddy people's understanding of this mission. Some of the factors involved in adding confusion to a clear vision for the future include:

- WM and ER activities are divided, with WM dominating the bulk of the site's resources. While many WM activities are identical to cleanup activities, the two offices often operate under different rules and procedures and do not appear to be well integrated. In addition, there is substantial uncertainty as to which office is responsible for the waste generated by the ER program.
- The site is seeking an operating Resource Conservation and Recovery Act (RCRA) permit and there is an ongoing discussion as to whether the WM facilities being constructed at the site will be used to handle waste from other facilities in the country.
- Some operating reactor facilities remain at the site (e.g., the Fast Flux Test Reactor) and there is some ongoing discussion as to whether certain research activities will continue into the future.

The site does not lack strategic plans, five-year plans, and mission statements. While all of these documents address in some manner the way in which ER goals will be achieved, none provide a clear vision for Hanford in the future, and, taken as a whole, they are not being implemented.

**Findings:** Development of a clear vision for the future use of the Hanford Site will help focus activities at the site, and assist in the movement from a production culture to an ER culture at the site.

**Recommendation:** Rapidly complete the programmatic Environmental Impact Statement (EIS), and refocus the site-wide EIS to develop such a vision for the future (R-4).

Rapid completion of the Programmatic Environmental Impact Statement is necessary to adequately address future use of the site. A critical question here is whether Hanford will play a role in meeting complex-wide treatment, storage, and disposal needs, and how Hanford's future fits with the ongoing, albeit more limited, production needs of the nuclear complex.

The site-wide EIS process is discussed at length in Section 2.4. Refocusing the site-wide EIS toward the eventual disposition of the site, including land use and eventual disposition of property, engages a public dialogue on these issues in a manner appropriate to the EIS process.

#### **2.1.6 Lack of Experienced Personnel**

**Issue:** There is a lack of experienced RL personnel to manage ER programs at the Hanford Site.

Facility operations and WM dominate both the organization and the budget of the site. Of the 450 employees at RL, less than 40 work directly for the ER program (although many support some part of the ER program). Most of those who work outside the ER program (and many within) have been on the site for a long time, and supported site activities when the primary mission was radioactive materials production. Some of these staff members lack understanding of the special needs of an ER program, and instead apply 40-year-old procedures to their new responsibilities. These procedures include excessively formal communications and documentation through paperwork and formal approval processes as a substitute for the extensive informal interaction needed of a project team involved in environmental cleanup work.

With approximately 16,000 employees at the site, and only a handful of these DOE employees, contractors essentially manage all aspects of site work. WHC operates as the site manager, and its organization mirrors that of DOE, with the bulk of the employees involved in facility operations and WM. With a contractor-to-DOE employee ratio of over 35 to one and

many of the DOE staff inexperienced in ER work, contractors, not DOE, are in control of the site. While that arrangement may have been appropriate for a series of defined production-oriented activities, it is not an appropriate approach for ER. With so much uncertainty involved in the restoration process (e.g., how much characterization is enough to make a decision), and risk-taking an inherent part of decision making, closer government control is necessary.

***Finding:*** The Hanford Site requires more senior technical managers experienced in ER to provide leadership and direction to contractors in the execution of its mission.

***Recommendation:*** DOE should establish an EM multidisciplinary project Technical Support Team (TST) onsite at Hanford within DOE that will report directly to the site manager and act as a transition team to guide the implementation of the recommendations in this study and lay the foundation for integrating the new Environmental Restoration Management Contract (ERMC) to be put in place by July 1993 (R-5).

This TST should be empowered to direct all EM operations at Hanford. They should be directly accountable to the site manager and to the TPA project managers, and be responsible for ensuring that the TPA agreements are met. As a high-power technical resource, the TST will help develop integrated technical strategies for resolving issues within the overall Hanford vision, goals and objectives. The TST should be empowered to remove obstacles to achieving the EM objectives at the site and should identify systematic problems and develop mechanisms for permanently dealing with these obstacles. The goal of the team should be to pave the way for the integration of the ERMC at Hanford and to facilitate the necessary management and organization for the Hanford site to achieve its EM objectives. The TST would serve a transition function. With this in mind, it is further recommended that consideration be given to drawing senior professionals on a temporary basis, up to 18 months, from other federal agencies, regulators, and even the private sector. Federal employees could be brought on board through temporary agency transfers.

The EPA, Department of Defense (DoD), and the private sector are experiencing similar transitions. They have found that the transition can be made more efficient by first establishing a core capability to lead the effort. A model for the interdisciplinary team may be found in the U.S. Army Corps of Engineers (COE) technical support sections that serve in the lineback-role for COE ER work; particularly the Kansas City team, which supports environmental work in 22 states (five EPA regions). The COE has now designated key districts to

support its efforts across the nation and has established core technical teams in each of these districts to serve its DoD and DOE client needs. The private sector takes on major programs in a similar fashion. Typically, a prime contractor will pool resources, including subcontractors, under one management structure to establish a core technical support capability to serve its clients.

***Finding:*** RL has insufficient staff with the ER skills necessary to prepare and review cost estimates and budget requests and to effectively select and oversee contractors.

Contractors not only plan and conduct all of the ER work, they develop the budgets and then spend those dollars for the work that they planned. Although the SOS study team is impressed with both the quality of the contractor staff interviewed and their apparent integrity, experience and reason suggest that the contractor's interests in controlling costs are not likely to be the same as that of a government employee. Among other things, without close government staff, contracting staff may unnecessarily expand the nature of the work to ensure that product completely meets the perceived needs without the requirements of the laws/regulations.

***Recommendation:*** More work should be conducted in-house by RL staff to maintain staff expertise. Shift personnel to ER work to increase the DOE work force in this area. (A review of DOE Orders, and elimination of unnecessary components of these Orders, should produce most of the needed staff full-time equivalents [FTEs].) (R-6)

The important part of this recommendation is that for DOE to effectively manage the work of contractors, DOE staff must be skilled and must remain at the cutting edge of creative work in ER.

Several years ago, the Superfund Management Review (an internal management review of Superfund conducted by EPA) recommended that their regional offices conduct a limited number of RI/FSs with in-house resources. The purpose of this approach was to build regional skills and maintain a high level of interest and professionalism on the part of EPA staff. The program has been successfully implemented and has produced valuable expertise for EPA regional offices.

## 2.1.7 Effects of Multiple Chains of Command Within DOE

**Issue:** The fragmentation of authority and parallel and multiple chains of command within DOE-HQ, RL, and supporting contractors impedes decision making and confuses management accountability for the site.

Since the Hanford mission is changing, and many facilities are closing, the WM program is dealing with many of the same kinds of problems that the ER program is facing. The fragmentation among WM, technology development, and ER leads to uncertainties concerning who is responsible for which part of what is essentially a continuum of activities that are linked together. RL recognizes the risk that adequate treatment, storage, and disposal capacity for management of restoration waste from site cleanup; treatment and disposal of high-level waste contained in tank farms; and decommissioning and decontamination (D&D) of reactor and fuel reprocessing facilities may not be available in a timely manner.

The RL organization is divided into a series of parallel functions at the site providing support to the ER program (as well as the variety of other programs present at the site) but few of which report directly to the ER program.

Although the Hanford site as a whole reports to EM, the reality is that the different support functions at Hanford have strong ties to other organizations within DOE-HQ and follow documentation and procedures devised by those other organizations, often for other than ER programs. These other organizations often perform a strong oversight and even approval function that further emphasizes the parallel reporting structure at Hanford. For example NEPA documentation, although sent first to the EM organization at HQ, is approved by the Environmental Health and Safety organization (EH).

Work to accomplish the ER mission is divided up among many different contractors, and all share the responsibility for completion of almost any task. While the management and operations (M&O) contractor, WHC, manages the site and directs the overall site remediation effort, they must rely upon Kaiser Engineering Hanford (KEH) to conduct drilling and subsurface activities. Because of the mandatory use of the Hanford Support Services manual, several other prime contractors come into play, each of whom has an independent relationship with DOE and does not report to WHC. This system of having many contractors responsible for pieces of the whole may have been appropriate when it was created for the production mission, but will not work for ER. By fragmenting responsibilities, it has become impossible to establish accountability for performance. Bringing on the ERMC without a major change in the way business is done will not solve this problem. In the judgment of the SOS team, tying

the hands of the ERMC with the same fragmentation of functions with the many different contracts now in place will only add confusion to a bureaucratic, inefficient system that is failing to accomplish the ER program in a timely fashion.

***Finding:*** Lack of integration between WM, ER, D&D, and Technology Development runs the risk that technical and capacity needs may not be identified and addressed.

***Recommendation:*** Streamline the RL and contractor organizational structure to better fit EM mission needs. The ER, D&D, and WM activities especially require an integrated project team approach, applying matrix management principles where the focus of work is on completing a project and the project manager controls the resources (R-7).

The multidisciplinary nature of ER work requires an integrated team effort and the dedication of highly trained technical personnel at different points in the investigation and WM process. These disciplines can be as varied as engineers, hydrogeologists, archaeologists, community relations specialists, and lawyers. Private companies draw upon personnel throughout the company to serve the needs of a remediation project. The project team participants then report through the project manager and are accountable to the project manager to meet the needs of the site. A similar matrixed type organization within RL will ensure that project managers can, in fact, get the work done.

***Finding:*** The management structure is further complicated by a lack of clarity between the role of headquarters and the field offices, and by not delegating field decisions to the field.

DOE-HQ operations are too far removed from day-to-day operations to provide meaningful technical review of most documents. They impose excessive reporting and data requirements on the field office, diverting resources from critical site and contractor management activities.

***Recommendation:*** The DOE must decentralize the management of ER and WM activities and give decision authority to field office program managers (R-8).

The DOE-HQ role should be to focus on dealing with programmatic issues and helping to remove obstacles to the field office manager. For the most part, HQ should not be involved in day-to-day field activities, except in an oversight capacity or if issues of national precedent (or perhaps large dollar costs) are involved.

***Finding:*** The current contractor structure undercuts management accountability for the site.

***Recommendation:*** Review the roles and responsibilities of the ERM and other contractors onsite to ensure that the ERM contractor is accountable for ER work and has full authority to direct needed resources (R-9).

The SOS team strongly recommends that the ERM contractor not be burdened with the same morass of coordination and accountability without real authority that is currently burdening the WHC organization responsible for ER. There may be a number of ways to accomplish this, and the TST described earlier should make this issue a priority to ensure that when the ERM contract is awarded in June, the contractor is not impeded by current problems.

## **2.2 Technical Approach to the Site: Optimizing the Technical Process**

As a result of the original TPA negotiations, the four National Priorities List (NPL) sites (comprising approximately 1,100 contaminated areas) were divided into 78 operable units. These consisted of 74 separate surface units and four groundwater operable units. As DOE began to implement a schedule requiring a certain number of operable unit RI/FS work plans to be submitted to the EPA and Ecology regulators each year, it initiated a fairly traditional, linear process of site characterization, feasibility studies, ROD, and design and construct. For a variety of reasons, existing data was not utilized (including concerns of Ecology with quality), and few specific plans were made for early actions, either removal or remedial.

The results of early activities were RI/FS work plans with schedules lasting seven years and more and little cleanup performed for a great deal of money spent. Although this SOS study was initiated out of concern for the length of the process, by the time the study began, the TPA partners had developed a site cleanup strategy called the Hanford Past Practices Strategy (HPPS), based on a "bias for action," and a recognition that existing data would in many cases be sufficient to take early actions necessary to reduce risk (DOE 1992a). Another strategy described later in this section, the macroengineering strategy, was also developed to speed cleanup by recognizing that a number of areas within similar or related sites will require similar actions.

The SOS team found the HPPS (described in more depth in Section 2.2.1) and the proposed macroengineering approach to be significant steps forward in moving the site toward more rapid cleanup. (The SOS team felt that the management issues are a much more serious impediment to site progress than the current technical approach to the site, due to the proposed

innovations to the technical approach.) The issues covered in this section, therefore, focus on ensuring that all of the potential speed associated with the HPPS can be achieved, and that potential roadblocks are addressed early.

This section addresses some of the underlying issues that may directly impact long-term progress by reducing the focus of the technical approach on the program's goals and lessening the integration of its elements into an optimal process leading to final remediation. Specifically, this section addresses the goals and approaches that need to be either integrated into the process or discarded, to avoid conflicting priorities and objectives.

### **2.2.1 Implementing the HPPS**

***Issue:* Implementing the HPPS is a key element in optimizing the technical process at Hanford.**

The major attributes of the HPPS support a bias for early action at the site level. These attributes include

- Use of aggregate areas (groups of operable units, potentially as large as the entire NPL site) to examine existing data and determine
  - additional data needs
  - potential removal opportunities
  - potential combinations of cleanup activity that may expedite cleanup.
- Innovative techniques to obtain needed information; e.g., trenching instead of well drilling
- Use of the observational approach, rather than comprehensive planning, to identify the appropriate next steps at a particular operable unit or broader area
- Extensive use of removal and interim remedial actions in the initial, obvious steps to clean up parts of the site.

In using aggregate areas as the scoping level for cleanup activities, DOE and its TPA partners can qualitatively review certain assumptions about how the cleanup should be organized and structured. It also provides a much needed flexibility in creating restoration goals and priorities without jeopardizing overall site objectives.

The HPPS should be ready for implementation throughout the Hanford site in the near future. In addressing both early actions, such as removals and the RI/FS process, the HPPS allows for the continuous integration of data from both sources. The portion of the HPPS that addresses early actions provides a valuable framework for taking necessary action without the potentially arbitrary constraints of operable unit definitions. For example, contiguous or similar areas (or even types of contamination) can be studied together or addressed simultaneously through an accelerated response action, even though the sites may be managed within several operable units. Thus, there is a mechanism to address the limitations that result when the initial definition of certain operable units have proven inappropriate in light of subsequent data, without necessarily having to actually redraw operable unit boundaries.

The HPPS also provides for early actions through the development of decision documents as soon as sufficient information is available. By limiting data collection to essential information, the HPPS should greatly streamline all restoration programs. This will require that the initial focus be on the most obvious problems and the most achievable and cost-effective solutions. Any data needed to formulate a conceptual model and quantitative risk assessments should also be obtained. The strategy appears to be consistent with the National Contingency Plan (NCP) and with the streamlining efforts under way at EPA nationally and at other DoD facilities. This strategy is similar to that currently in practice at the Idaho National Engineering Laboratory (INEL). The INEL experience demonstrates that such a strategy can be implemented successfully at a DOE site.

***Finding:*** Development of the HPPS is a significant improvement for the Hanford restoration program.

***Recommendation:*** The HPPS should be implemented at all of the Hanford NPL sites upon the completion of appropriate baseline aggregate area studies (R-10).

Although the HPPS has been developed to apply to all of the Hanford sites, it is currently being initiated at only one (the 100 Area site). The SOS team believes that the HPPS should be actively considered for each of the other sites as quickly as possible.

***Recommendation:*** The TPA members should apply the HPPS broadly to all remediation activities at Hanford (R-11).

- The completion of aggregate area scoping studies is necessary to provide the baseline for implementing the HPPS at all Hanford sites.

- The TPA members should concur that HPPS implementation is not limited by current operable unit boundaries.
- TPA milestones should be reformulated to reflect implementation of the HPPS.

***Finding:*** Current TPA milestones do not adequately reflect the HPPS and, in particular, do not provide an aggressive focus for achieving cleanup.

Hanford has made an extensive effort to ensure that the original cleanup goal of the year 2018 is incorporated into all relevant planning documents, including the TPA action plan, as enforceable milestones. This has created a driving force that has significantly improved the group commitment to cleanup targets. The recent HPPS has also referenced a proposed 30-month goal for completing RI/FSs, but the TPA milestones do not reflect a commitment to the goal; in fact, the TPA milestones have yet to be revised to reflect the HPPS.

***Recommendation:*** Current TPA milestones and operable unit designations should be reformulated to reflect the HPPS (R-12).

***Recommendation:*** A 30-month study schedule should be the goal of the planning process, but implementation of this goal should be flexible, and it must be revised for complex sites (R-13).

While there are differing opinions on the benefit on using milestones to drive ER activities, there is consensus on the need to establish accurate milestones that reflect realistic program goals and objectives. There should be an element of flexibility in establishing milestones to account for the areas that are under way, have yet to be established, or are extremely complex. The ongoing scoping activities (e.g., area-wide aggregate baseline study) and the area-wide cleanup programs (300 and 1100 Areas) will need to be completed before finalizing the milestones resulting from those activities. Certain areas (e.g., the 200 Area groundwater plumes) are extremely complex and will certainly require additional time to address. However, for most sites, DOE and the regulators should explicitly acknowledge the 30-month goal as a mutual target for planning purposes and should implement it in all relevant planning documents, such as the TPA action plan.

This goal has been utilized at every federal NPL site in EPA Region 10, as well as at numerous other federal facilities. While Hanford does have certain large and complex sites, a vast majority of sites are not significantly different from other federal sites where the goal is being effectively applied, such as at McChord Air Force Base (AFB). For example, the ROD for the American Lake Garden Superfund Site was signed by EPA Region 10 and Ecology

approximately 37 months after the start date of the RI/FS. This result was made possible by awarding a single contract for the total RI/FS process, from drafting the project work plans through printing of the final ROD.

The SOS team recognizes the importance of not putting in place arbitrary and unachievable goals. Wherever possible (when actual plans based on the HPPS have been completed and agreed to by the TPA members), **actual** planning targets should be utilized, even if they exceed the 30-month goal. However, before these targets are finalized, every effort should be made by the TPA partners to examine their plans and determine if a 30-month goal is achievable. In the absence of detailed schedules that have been carefully evaluated, the 30-month target should be used as the "default" target, so that movement off that planning objective will occur only when all efforts have been made to streamline site activities and the "realistic schedule" still exceeds 30 months. In exchange for setting aggressive goals, the regulators (EPA and Ecology) should recognize that realistic tight schedules are the desirable outcome and express willingness to change milestone targets when unforeseeable conditions warrant.

### **2.2.2 Integrating the HPPS with Existing Activities**

***Issue: Integrating the HPPS and other existing strategic and programmatic planning activities with the long-term goals of remediation at Hanford is critical to continuing the optimization of the technical process as it moves forward.***

The HPPS will only be a short-term success of limited value if it sacrifices the long-term goals and objectives necessary to complete the overall remediation program and remove Hanford from the NPL.

The HPPS utilizes a modular approach in dealing with the technical process elements to minimize the required time frame for decision points in the process and to allow for remedial responses based upon the minimum data collection required. This approach has been successful at other federal installations, based on the assumption that all emergency and interim actions will be integrated into the overall site risk assessment that will lead to the final site delisting ROD.<sup>(a)</sup> This is the approach used at the INEL, where individual operable unit studies and interim actions are integrated into Waste Area Group comprehensive RI/FSs, which in turn lead to a single INEL-wide comprehensive RI/FS.

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(a) Currently, EPA has taken the lead in proposing several accelerated actions. As a result EPA is the one TPA signatory taking the risk. Through greater emphasis on team decision making, all parties should work to integrate the HPPS into site planning activities, thereby more equally sharing risk.

Successful integration of short-term actions with long-term goals requires focusing on key technical elements that are linked by the need for timely decisions and the overall site cleanup data/decision needs. Failure to integrate these key factors on a continuous basis from the beginning of the technical process planning phase until the completion of the delisting ROD can lead to potentially serious problems in achieving long-term cleanup goals:

- Completing a series of short-term actions only to find that more waste was removed than found necessary by the risk assessment, and that unnecessary funds have been expended.
- Completion of interim actions is not consistent with the long-term remedial response for the site and requires rework.
- Areas that have already been sampled must be sampled again to obtain adequate data for the quantitative (as opposed to qualitative) risk assessment needed for final decisions.
- Data collection is of insufficient quality for decisions or of unnecessarily high quality for specific decisions (either result leading to a waste of resources).

The key technical factors that should be integrated throughout the process include

- Definition of the known or suspected site contamination and associated potential risks that could be encountered (source of contamination, routes of exposure, and potential human and ecological receptors).
- Preliminary remediation goals based on future land use, applicable or relevant and appropriate contaminant-specific requirements (ARARs), and the operable unit points of compliance.
- Site cleanup objectives, including early screening of probable engineering options (treatment and/or containment) to establish preliminary objectives to drive data collection and interim decisions.
- Data quality objectives (DQOs) for each operable unit as incorporated into the HPPS for both short-term RODs to initiate immediate actions and the long-term risk assessment and feasibility study needs.

Although these factors are by their nature subject to change, changes should be in the areas of adjustments and refinements, not massive redirection due to changing objectives and the lack of defined baselines.

Once the site cleanup objectives are determined, setting site-specific DQOs can be implemented for each area and operable unit at Hanford. The ability to update or revise DQOs to specifically address both short-term RODs and long-term risk assessment and feasibility study needs is a major tool in optimizing schedules and progress. Careful use of well-defined DQOs can result in using a limited number of higher-quality confirmatory samples to identify clean closure or contamination contributions to identified routes of exposure. This could potentially lead to a situation where multiple response actions could result in an operable unit ROD without initiating a planned RI. INEL has successfully modified plans based on revised data quality needs that allowed using existing data and eliminated the need for a planned RI. These RIs were written based solely on existing data, with no further field work. This can routinely occur when the planning process integrates the achievement of the short-term cleanup objectives with a baseline qualitative risk assessment and treatment technology feasibility screening for compatibility with DQOs of the overall delisting ROD. This has been accomplished at other federal sites through use of a conceptual site model, which starts with the baseline risk assessment, site cleanup objectives, and relevant technology options to establish the DQOs for all areas on the site. The DQOs are then updated based upon the available and developing data as the usefulness of each data set is established.

***Findings:*** If the HPPS is not conducted in a manner that integrates ER planning it will fail to optimize the progress of remedial activities. Implementing the HPPS approach can be best optimized by defining the preliminary remediation goals, site objectives, and DQOs for each operable unit and area at Hanford, and allowing for their continuous adjustment or revision as appropriate to the technical process.

***Recommendation:*** The DOE ER planning process should be integrated for all ER and WM activities at Hanford, using a conceptual site model that includes a baseline qualitative risk assessment and treatment technology feasibility screening for the overall delisting ROD for each NPL site (R-14).<sup>(a)</sup>

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(a) The Streamlined Approach for Environmental Restoration (SAFER) project, which combines the best elements of the Observational Approach and Data Quality Objectives (DQOs), is addressing aspects of this recommendation at other DOE sites. Recommendations R-37 to R-42 are related to this issue. The SAFER Project is managed by Richard Dailey (DOE-HQ/EH-231).

All planning elements should use the site model as a living document or planning database to test the sensitivity of planning assumptions and to establish a mechanism for concurring with site cleanup objectives, DQOs, and remedial technology alternatives. Once established, this model would be an ongoing resource for coordinating ER and WM project managers, schedules, and budgets.

Immediate priority should be placed on establishing definitive schedules for all activities that impact setting site cleanup objectives, including WM and D&D program schedules, future land use planning efforts, and point of compliance requirements for the established ARARs.

The TPA agreement should be revised to incorporate the decisions on preliminary remediation goals (whether defined by ARARs or by the risk range) and points of compliance.

### 2.2.3 Taking Advantage of Commonalities

**Issue: The application of the Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA) response process at Hanford should take advantage of opportunities associated with "commonality"; i.e., common or repetitive activities, or related wastes and/or locations.**

Evidence can be found in recent letters from EPA, dated August and September 1992, that the current ER program, as defined by the HPPS, is now accepting and exploiting commonality. The EPA has proposed, and DOE and Ecology have agreed, to expand the investigation in the 1100 Area to take advantage of geographic commonality (bringing together units close to one another). In the 100 Areas, the parties have agreed to exploit the commonality among disposal sites by applying feasibility and treatability study results to a number of similar disposal sites.

A variety of other areas are ripe for exploiting commonality, e.g., field work and document requirements for the investigation process required by various environmental laws (e.g., RCRA, CERCLA) and the TPA. Every investigation of a waste disposal or spill site will have common elements beginning with a work plan. The work plan consists of an analysis of existing information, an approach and rationale for the field work, and a series of documents that are virtually identical (with mostly modest adjustments) from area to area. Some common components are a quality assurance plan, a field sampling plan, and a health and safety plan.

The *Environmental Investigations and Site Characterization Manual* (WHC 1988) is a current document that contains standard operating procedures (SOPs) for common elements of field work that is conducted by or for WHC. This document has not been accepted by the

regulators for use across the site and is not required to be followed by all performing contractors at the site.

A final area of commonality is the functional equivalency of CERCLA and NEPA. EPA and, to a lesser extent DoD, have determined that the CERCLA process meets the requirements of NEPA. DOE has not accepted the concept of functional equivalency and requires facilities to comply with all functional and administrative requirements of both laws. This requirement in the case of the 200-BP-1 operable unit is estimated to add over \$1 million of cost to the RI/FS, and unquantified time delays (DOE 1990).

***Finding:*** A key area in optimizing schedules for the RI/FS (and all other RCRA/CERCLA) activities can be found in taking advantage of common features and activities at sites.

This commonality can include common physical characteristics such as geographic location of waste units, similar waste types, or administrative activities such as common types of documents required by the activity (or the CERCLA process). The use of generic work plans and SOPs to expedite field work has been proven by EPA, DoD, and other DOE sites. INEL and Rocky Flats use generic plans in implementing the remedial process.

***Recommendation:*** Generic documents should be used whenever possible to reduce redundant activities at the Hanford site. These plans should be negotiated and incorporated into the TPA as agreed-upon protocols, to the maximum extent practical. Generic plans can always be appended with site-specific details that would increase their effectiveness and reduce the length of the approval process (R-15).

***Recommendation:*** The operable units should be examined under the HPPS for commonalities related to location, type of unit operation, and type of contamination (R-16).

The macroengineering approach described below is one way in which commonality can be exploited.

#### 2.2.4 The Macroengineering Approach

***Issue:*** The macroengineering approach designed to speed cleanup of the 100 Areas is a promising approach that may run into procedural and regulatory barriers in its leap over the traditional process.

The technical process is typically a linear effort that defines the extent of the problem, assesses the risks, and evaluates the applicable technologies for mitigating the problem, in the order presented. Alternate approaches have been examined as possible ways to expedite the process. One approach, termed "Macroengineering at Hanford," (WHC 1992a,b) focuses on defining the remedial objectives for a number of similar units early in the study process and implementing these objectives without a detailed feasibility study of each unit. As presented currently at Hanford, this proposal would remove a vast quantity of contaminated soil from the 100 Area, for permanent disposal in the 200 Areas.

The macroengineering approach was developed at Hanford to describe large-scale remediation programs that cut across operable unit boundaries to provide reduced investigation timeframes by utilizing currently available technologies which remain applicable over a wide range of conditions, in terms of contaminants, transport media, and site conditions. It is driven by the premise for action and anticipates that when the activity is large enough, it will be more cost effective (through the economies of scale) to do the minimum site characterization necessary and then to make adjustments during the remediation phase to ensure mitigation of risk and achievement of site cleanup objectives.

Under the macroengineering approach, most (or all) of the remediation could be completed before the final ROD is issued. Even if we assume that Ecology and EPA have agreed with this approach there are a number of potential procedural hurdles. The normal CERCLA process involves characterization of individual operable units, and a feasibility study followed by a publicly reviewed ROD designed to meet the statutory findings required by the Superfund Amendments and Reauthorization Act (SARA) (that the remedy is protective of human health and the environment, meets ARARs, is cost effective, and represents permanent treatment to the maximum extent practicable). While interim remedies can be undertaken if they are consistent with the final remedy (and if necessary to protect human health and the environment), then the movement of the vast amounts of soil discussed in the macroengineering approach may not be viewed as an interim remedy. If not implemented carefully, the macroengineering approach could be perceived as circumventing statutory findings, as well as undercutting the associated public review process.

None of these hurdles appear to be insurmountable, however. It should be possible to reconfigure the operable units in the 100 Areas to recognize their commonality and treat them as one operable unit. The CERCLA process allows for a rapid screening of alternatives and particularly notes (in the NCP) that the appropriate solution for large volumes of waste will usually be containment. A carefully designed public involvement program, combined with appropriate statutory documentation, should anticipate these hurdles and ensure that the cleanup activity, if determined to be appropriate, can move forward.

***Finding:*** The macroengineering approach has viable elements that should be integrated with the HPPS and the RCRA/CERCLA technical processes.

***Recommendation:*** Develop an implementation strategy for incorporating the viable elements of macroengineering in the 100 Areas (R-17).

Construct an implementation plan that would show what products and services are required from other groups and what ER staff must do to achieve the earliest beneficial completion date for a macroengineered cleanup of the 100 Areas. This would include the following linkages:

- NEPA documentation
- SAR documentation
- D&D and removal of reactors in the 100 Areas
- Completion of water pumping at the N reactor crib
- Final location of disposal facilities
- Scheduled availability of disposal facilities.

Technology considerations should be qualitatively assessed early in the technical process, to better focus the establishment of DQOs and minimize the range of investigation and study required for a given area.

The macroengineering approach cannot be pursued as a separate program or special interest. It should be actively integrated into the CERCLA process and result in a formal ROD that meets CERCLA findings prior to implementation. The long-term development of a separate activity would be counterproductive to the ER program and might lead to legal challenges and resulting delays.

Review the risks that a final ROD might have a different set of cleanup levels than the interim ROD used for macroengineering (R-17).

A final hurdle to be considered is the budget. Most reviewers of the approach have observed that the macroengineering proposal will save resources in the long term; however, more money (estimated \$5 billion) will be required in the short term for expediting the cleanup and undertaking actual construction sooner.

***Finding:*** Failure to make an early decision on macroengineering and to develop appropriate budget strategies will lead to failure to implement the strategy in a timely manner.

***Recommendation:*** Develop a budget strategy as part of the implementation plan. Include appropriate phased funding as part of the strategy (R-18).

Implementing a \$5-billion cleanup will undoubtedly take a number of years. Phased funding requests can ease the federal financial burden. Initiation of appropriate budget requests two years prior to need is essential.

### **2.2.5 Interfacing ER Programs with Technology Development and Technology Transfer Programs**

***Issue:*** Ensuring that adequate technology development focused on Hanford's needs (especially for mixed radioactive/hazardous waste disposal issues and support of the HPPS) is available in a timely manner requires effectively interfacing the ER program with the technology development and transfer programs.

An indicator of the technology development problem at Hanford and other DOE plants is found in a recent recommendation from an EMO workshop.<sup>(a)</sup> The technology development program should be restructured to better integrate new technology developments with cleanup planning in the field. It is very likely that accelerated technology development and transfer will be required to support the aggressive cleanup approach described in the HPPS.

Although a number of active coordination efforts are under way, most of the DOE technology development milestones and parallel budget requests for the individual research proposals stretch from FY 1993 through FY 1998. An accelerated Hanford cleanup will likely require the application of innovative mixed waste handling and disposal technologies by the mid-1990s. Technology development resources (i.e., budget and staff) currently allocated for these needs may not be adequate to produce the supporting technology needed within the target time frame.

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(a) "EMO Arid Site Integrated Demonstration Technology Transfer Workshop." July 9, 1991. Environmental Management Operations, Richland, Washington.

During the EMO workshop, the work group validated the DOE Research, Development, Demonstration, Testing and Evaluation (RDDT&E) program and identified ten barriers to overcome in the technology development process. Additional recommendations were presented to significantly improve the existing system. These barriers must be overcome to achieve more effective support of the TPA and waste cleanup at Hanford. The SOS team believes that the EMO workshop recommendations may not be adequate to foster the level of change necessary to provide this support.

**Findings:** The technology development and transfer program was not developed to specifically deliver any products in support of Hanford's ER program within the time frame of the TPA. Current funding levels were developed for long-term research programs that are not user driven and would require an immediate increase in funding to respond to Hanford's needs.

**Recommendation:** Streamline the organizational interface between technology development and ER; realign the organization to link technology development with ER (R-19).

**Recommendation:** Hanford should directly link a technology development effort with the ongoing cleanup activities. Operable unit 100-KR-1 has a work plan that might incorporate the trial application of new technology as part of or subsequent to the interim remedial actions. The TPA members can incorporate a technology demonstration that enhances the remedial program if they remain focused on the overall objectives of the remedial program (R-20).

**Recommendation:** Increase technology development funding and staffing to directly support the Hanford site needs, beginning in FY 1993 (R-21).

As it stands now, the budget for technology development appears to be out of sync with the needs of an accelerated program.

## 2.3 Sampling and Analysis Activities at Hanford

Sampling and analysis is the heart of the technical work at Hanford and is where many of the costs lie. It costs from \$300,000 to over \$1 million to drill a single exploratory hole and between \$700,000 and \$1 million for associated analytical services. Recognizing the significance of these activities, the SOS study team examined the following four key elements for effectiveness:

- the overall data-gathering process and the experience of the staff performing the work
- the process of executing and managing field work
- analytical support capability
- data quality needs compared with achievements.

The self-evaluation conducted by EMO in the summer of 1992 (Stapp 1992) identified a number of problems with the delivery of services in support of the ER program. The field personnel interviewed focused on two areas of frustration: 1) the extensive efforts needed to mobilize and operate in the field and 2) the lack of adequate support such as analytical services.

Many of the sampling and analysis issues identified in the self-evaluation study reflect management structure and process problems that were addressed in Section 2.1 of this report. Among the management issues raised that are particularly applicable to sampling and analysis is the need for strong leadership and direction in establishing and clearly communicating the goals and objectives of data-gathering efforts at Hanford. Various plans provide milestones and schedules, but there is no clear technical plan to guide site investigations. The current organization lacks enough personnel experienced in ER, and the current organizational management structure impedes the effectiveness and efficiency of sampling and analysis support to the ER program. This has resulted in extremely conservative guidance and direction to contractors and poor communication with regulators.

Although Hanford's site characteristics and technical problems are often unique and complex, they are similar to the problems encountered by the EPA and DoD during the implementation of the Superfund program in the 1980s and which other federal agencies have faced in the past. The key issue is whether DOE wants to follow the learning curve at each facility or jump ahead of it by bringing in the experienced senior environmental professionals to provide direction and leadership to the technical program. DOE has many of these experienced personnel available within its ranks and from its contractors; it just needs to decide where it is most critical to place them to accelerate the ER program. The recommendation for a TST in Section 2.1 focuses on providing additional expertise outside of DOE to help direct technical efforts, including sampling and analysis.

### 2.3.1 Failure of RL to Generate Necessary Data

**Issue:** The failure of RL to generate the analytical data necessary for determining the extent of groundwater contamination, transport, fate, and effect is driving the investigation into more conservative directions.

Past experience in ER efforts support the notion that the scope and cost of site investigations often exceed what is really required, and continue to grow if there is no focus on resolving technical issues needed to support an assessment of risks at the site and the feasibility of alternative remedial measures (technologies). In the early days of Superfund, many RODs were flawed because there was insufficient technical support for the remedy selection decisions, resulting in schedule delays and additional costly investigations. This becomes an issue of quantity versus quality of data. EPA finally resolved much of this difficulty by integrating the RI/FS activities. This has resulted in focused treatability studies and the assessment of remedial options much earlier in the site investigation process. The issue is compounded for DOE because of the exotic waste streams and contamination problems it must address.

DOE appears to be falling into the same trap EPA did in the early days of Superfund: the major focus is on the RI to characterize the extent and type of contamination. For the most part, FSs appear to be scheduled sequentially to RI activities. This lack of focus on selecting an appropriate technology is best illustrated by the delay in getting the physical properties laboratory on-line. The analytical data collected to date for groundwater assessments is useless for supporting any hydrogeologic modeling because the physical property tests have not been conducted. A tiger team audit in 1990 identified the need for groundwater modeling support; however, WHC has not yet completed any of the nine actions identified in that audit as necessary to initiate modeling. Without proper data collection, the regulators will be forced to make conservative assumptions and decisions (based on interviews with Ecology), which we believe will be more costly and difficult to implement.

**Findings:** Lack of personnel with ER experience in the conduct of sampling and analysis activities is leading to delays in progress at Hanford.

**Recommendation:** RL should develop a comprehensive sampling and analysis strategy for the site to ensure that the data collection needs of the ER program are adequately planned, prioritized, and implemented (R-22).

### 2.3.2 Shortage of Analytical Capacity

**Issue:** There is a severe shortage of analytical capacity needed to support ER at Hanford, caused by the lack of a sense of urgency.

The result of this shortage in analytical capacity are major delays and/or cost increases in the RI/FS process. Three significant indicators of these delays/cost increases are 1) lack of physical testing data needed to support the RI/FS process at 200-BP-1; 2) significant delays in low-level mixed waste (LLMW) data needed to support site-wide investigations; and 3) missed milestones having significant budgetary and credibility implications to the ER Process.

Early in the environmental investigation process it was determined that certain samples would be too highly radioactive to be sent to offsite laboratories for physical properties testing. Therefore, a high-level radioactive physical properties testing laboratory was planned to be constructed on the Hanford Site in time to support these analytical needs. However, administrative delays have prevented this facility from being certified as ready to accept samples and will in all likelihood continue to delay opening this facility for at least two more years. Thus, high-level radioactive samples requiring physical properties testing are presently being stored awaiting analysis, which results in two significant dilemmas for the Hanford ER programs. First, long-term storage of samples prior to testing is a highly questionable practice, which should be undertaken only after concurrence of all parties to the TPA. Second, the RI/FS process at the 200-BP-1 Area has reached the point where the physical testing data from these high-level radioactive samples is critical to support a lower cost option presented by the RI/FS decision-making process. Initial indicators support the possibility that contamination in cribs at Hanford underwent a series of chemical/physical reactions when mixed with the soil; changes that made the native soil less likely to support migration of hazardous waste contaminants. If these reactions can be supported by validated physical properties testing data from high-level radioactive samples, it can be determined that the migration of contamination is much less than was theorized using data generated from physical properties testing of nonradioactive native soils from near the crib site. Due to the lack of high-level radioactive sample data, DOE must either delay the RI/FS process for the 200-BP-1 Area until the onsite laboratory becomes operational and can provide the needed data, or they can accept an RI/FS that overstates the volume of contamination by a significant margin. This in turn, will substantially increase the remediation costs. Either currently proposed alternative will have significant negative impacts on the program.

Currently, there is a nationwide shortage of capacity to conduct LLMW environmental determinations to the level of quality required to support comprehensive restoration programs. This shortage has been greatly exacerbated by the increased analytical demand resulting from

extensive DOE programs, and has caused significant delays in the analysis of LLMW samples and increased the cost per sample. A fallout of the shortage in capacity has been a reduction in the overall quality of data resulting from the hurried scheduling. Thus, the shortage of qualified facilities for conducting LLMW determinations is exactly counter to the SOS mandates of finding faster, better, and cheaper ways of conducting the Hanford ER.

Early in the program it was determined that the ER programs proposed at DOE facilities would greatly increase the demand for LLMW analytical services. Signatories to the TPA recognized this issue and agreed to lessen its effects on the Hanford ER work by agreeing to construct and operate an onsite LLMW laboratory. A facility was planned with sufficient capacity to handle the work load predicted to result from RL programs. Before the facility could be constructed, DOE decided it would prefer to use private sector low-level analytical capacity and, accordingly, greatly reduced the size and capacity of the proposed onsite laboratory. In fact, private sector capacity has been insufficient to meet demand and the onsite facility is now too small to make up the difference. This has resulted in the environmental programs at Hanford now waiting on LLMW data, and programs have been delayed by approximately 18 months.

In addition to capacity problems, the sampling of low-level radioactive waste (LLW) has encountered a number of quality problems. The following complaint summary, provided to the SOS team by a laboratory currently involved in work for DOE, lists why they no longer plan to participate and highlights some of these issues:

- DOE field teams need to screen samples to clearly define the amount of radioactive material present before shipment to insure the receiving laboratory's Nuclear Regulatory Commission (NRC) license limits will not be exceeded.
- RL needs to agree to accept all waste streams from the analysis of its samples for ultimate fate with the site from which it derived, to reduce laboratory LLMW sample stream/analytical disposal costs.
- TPA signatories need to come to agreement on the compendium of LLMW methods, contaminants of interest, and a multi-level quality assurance (QA) plan that would be used for all analytical determinations.
- Laboratory audits need to be reduced to one per year unless specific problems are identified; then audits should be consolidated with the regulators.

- Realistic schedules need to be determined based upon laboratory capacity, and coordinated with the laboratory before sample shipment.

In fact, to date the regulators have not accepted a single LLMW data packet and think that RL will not meet the new April 1993 deadline for completion of initial LLMW work. RL has changed its contracting mechanism and instituted a new sampling program; it remains convinced that deadlines will be met.

***Findings:*** Currently, analytical shortfalls in quantity and quality are causing missed milestones, increasing the amount of conflict between the three parties involved in this remediation effort. All parties to the TPA share some responsibilities for parts of this problem.

DOE-HQ/RL have made some poor decisions that have resulted in this analytical shortfall. In addition, the current DOE data validation program is not meeting the intent of the regulators. The regulators are also complicating the issue since they have mandated overly restrictive data QA levels and have required determinations of contaminants for which there are not standard methods. The net result is a standstill as the parties wait for acceptable analytical decisions upon which to base remediation decisions.

SOS interviews with representatives from each entity involved in the TPA demonstrate that each element has its own idea of analytical requirements that are not primarily related to the DQOs for each site and are not part of the primary mission of ER. The result is conflicting sampling and analytical requirements that often change during the course of the project.

***Findings:*** The long-term storage of samples prior to testing is a highly questionable practice, which should be undertaken only after concurrence of all parties to the TPA.

The RI/FS process at the 200-BP-1 Area has reached the point where the physical testing data from these high-level radioactive samples is critical to support a lower cost option determined by the RI/FS decision-making process.

***Recommendation:*** Perform a performance evaluation review technique (PERT) analysis of all LLMW requirements for all RI/FS and treatability-type studies to determine the critical path and establish priorities for using the existing capacity (R-23).

DOE-HQ/RL must develop a sense of urgency in the problem-solving process used to alleviate the shortage. The U.S. Army's Unitary Chemical Weapons Demilitarization Program would serve as an excellent model for this activity.

**Recommendations:** Increase available private sector capacity by reducing poorly designed statements of work (SOWs) which hinder laboratories from competitively bidding DOE work (R-24a).

**DOE needs to build an LLMW facility with sufficient capacity to meet projected requirements, to supplement private sector capacity, and perform QA oversight and methods-development technology functions (R-24b).**

This facility should be planned to meet DOE program needs since the Hanford site has been selected to be the lead facility for DOE's ER program. DOE should refer to the COE laboratory validation program to serve as a model for this effort. If these two initiatives are undertaken, LLMW analytical problems should be solved or reduced to a manageable level.

**Recommendations:** The SOS suggests a team approach (TPA signatories) to determine and prioritize total program analytical requirements (R-25a).

**RL needs to approach the regulators (EPA and Ecology) to obtain an agreement for permission to store high-level radioactive physical property samples for a period of time sufficient to ensure they can be successfully analyzed, since replacing these samples would cost several million dollars (R-25b).**

**RL needs to take whatever action is required to make the high-level radioactive testing laboratory operational as soon as possible, and then prioritize stored sample analysis based upon 200-BP-1 RI/FS needs to make the most informed decisions possible for the RI/FS report (R-25c).**

In short, the RL management needs to develop the same sense of urgency it used to solve problems in the former plutonium production mission to support 200-BP-1 RI/FS requirements since this program is a large segment of the site's only mission, ER.

### 2.3.3 Limited Power of Field Team Leaders

**Issue:** Field team leaders (FTLs) are not empowered to make field decisions and have limited operational control.

The primary function of field teams is to gather information according to the approved work plan. Although the FTL is designated as the technical lead and onsite manager for operational field activities, in actual practice he has little operational control of the team because of the current delineation of functions and responsibilities among the various contractors/subcontractors at Hanford. As a result, the FTL's ability to effectively manage and direct work is severely hampered.

The FTL must also deal with the different management and supervisory structures and union requirements that exist among the various contractors. Furthermore, as a result of this fragmented organizational structure, the overall purpose and importance of the work being performed by the field teams is lost within the functionally oriented "stovepipes" that exist within each of these organizations. All these factors contribute to inefficiencies and increased costs.

As an example, the study team was made aware of a several days' delay in well drilling of an RI site because a "regulated" drilling rig was not available. As a result, the drilling, sampling, and support personnel were kept idle, at an approximate cost of \$5,000/day, during the entire period. While recognizing that it may be DOE/contractor policy to keep the use of "regulated" drilling equipment at a minimum, there did not appear to be a clear delineation of authority or responsibility where this issue could be addressed in its proper context, e.g., where a decision based on consideration of the costs associated with retaining a drilling and support team during equipment "down-time" and the impact on the work schedule versus the impact of using a "non-regulated" drilling rig could be made. Too many players and unclear delineation of responsibilities makes such everyday operational issues extremely difficult and frustrating to even attempt to resolve in an expeditious manner.

It is recognized that the delineation of functions among various contractors generally applies to all operations and activities at Hanford and is not unique to ER. However, since ER work by its very nature requires an ability to rapidly respond to changing requirements, the resultant impact on program execution is much more adverse.

***Finding:* Failure to match the organizational and management structure to project needs results in gross inefficiencies and increased costs.**

The current organization and management structure of field teams, which includes multiple functionally oriented contractors and subcontractors, is very inefficient and significantly increases the cost and time required to do ER work.

**Recommendations:** Empower project managers and field team leaders with authority to organize and manage ER work without the constraints imposed by current contractual requirements (R-26a).

**Establish matrixed project teams tailored to meet specific project requirements and integrate the necessary resources (e.g., labor skills and equipment) into an organization where responsibilities are clearly defined and delineated, and operational decisions can be made in a timely manner, improving efficiencies and reducing costs (R-26b).**

This organizational approach and management structure is a common practice in the performance of ER work within DoD, the EPA Superfund program, and the private sector.

## **2.4 Policy, Legal, and Regulatory Issues**

During the course of the Hanford self-evaluation, a number of policy, legal, and regulatory issues were raised that may be impeding cleanup. Applicability of specific DOE Orders designed for nuclear production facilities to ER work is one policy arena (addressed in Section 2.1). Two other major areas of concern raised in the self-evaluation are:

- DOE's decision to have CERCLA cleanup activities comply with NEPA requirements.
- The integration of RCRA and CERCLA cleanup requirements at the site.

Among the concerns raised by the NEPA process are:

- Ongoing delays caused by the administration of the NEPA process as field actions await concurrence on whether or not a particular activity fits a categorical exclusion identified in the NEPA regulation.
- Potential delays caused by the Hanford site-wide EIS addressing areas critical to cleanup and perhaps falling behind the CERCLA process
- Potential delays caused by inadequate integration of the NEPA and CERCLA ROD processes at individual sites.

Since the Hanford facility is an RCRA facility that contains four sites on CERCLA's NPL, additional questions are raised regarding the integration of RCRA and CERCLA. Among the issues of concern are:

- potentially inconsistent standards
- potentially inconsistent management practices
- inappropriate procedural requirements impeding the speed of cleanup (e.g., permitting).

#### **2.4.1 Application of NEPA Requirements**

***Issue:* Application of NEPA procedures to the cleanup process adds an unnecessary level of complexity to that process.**

Currently, federal agencies disagree on the need to carry out NEPA procedures during remedial actions under CERCLA and RCRA. The Department of Justice (DOJ) has advised that the legal position of the U.S., which has been and will be that, as a matter of law, NEPA is inapplicable to CERCLA actions. The EPA has consistently taken the position that it is not required to create NEPA documents because its actions under CERCLA are "functionally equivalent" to those of NEPA, as are its actions under RCRA, the Clean Air Act, and the Clean Water Act. The Navy has asserted that, since its authority to carry out CERCLA is delegated to DoD in the same way that EPA is delegated CERCLA authority, it also can assert functional equivalency. The DOJ, EPA, and the Navy have presented other arguments for this view, including

- that CERCLA was created later in time than NEPA and is far more specific; therefore, it preempts the earlier statute where they conflict
- that CERCLA's focus on prompt response action is incompatible with NEPA's emphasis on delay to carry out studies and analysis, particularly with respect to removal actions
- that the ARAR process under CERCLA Section 121 substantially carries out the intent of NEPA by ensuring proper compliance with all applicable environmental protection laws
- that CERCLA Section 113 explicitly bars a court challenge to a CERCLA action until after remedial actions have been carried out, so that the only remedy under NEPA (actually, under the Administrative Procedure Act), an injunction to prevent action from being taken pending study, is rendered meaningless.

In fact, similar arguments were successful in persuading the U.S. Court of Appeals to rule that NEPA requirements do not have to be complied with in RCRA corrective actions. The NEPA office for RL recognizes that precedent, and does not ask for NEPA documentation for

RCRA-related cleanups. However, it still insists on strict NEPA compliance for cleanups under CERCLA.

DOE EH-20 issued on November 15, 1991, an explicit policy statement committing DOE facilities to apply NEPA procedures to CERCLA activities. That policy includes the preparation of (1) a programmatic EIS on cleanup methodologies and other issues, (2) a site-wide EIS at each DOE facility, and (3) NEPA documentation for specific removals and remedial actions. In DOE's NEPA regulations, issued in final form on April 24, 1992, it made two findings of categorical exclusions (CXs) affecting cleanup, ruling that (B3.1) "Site characterization/environmental monitoring" and (B6.1) "CERCLA removals/similar actions under RCRA or other authorities, meeting CERCLA cost/time limits or exemptions" were presumptively of no significant impact on the environment, and were excused from further analysis under NEPA 10 CFR 1021.

The DOE memorandum on this issue asserts that there is independent value in adding NEPA analysis to CERCLA documents. One argument is that NEPA allows consideration of "cumulative impacts" ignored by CERCLA. The SOS team makes the following observations on this assertion: First, the most important issue associated with the evaluation of "cumulative impacts" is whether a number of "not-significant" impacts evaluated under environmental assessments (EAs) are "piecemealing" a total impact, which is, in fact, significant and therefore deserving of analysis in an EIS; this issue focuses on the problem of finding the threshold between EAs and EISs. However, since DOE plans to do a site-wide EIS, that issue appears to be moot. Second, environmental impacts do not accumulate if they are mitigated in each case; yet the essence of CERCLA is to mitigate and remediate the environmental impacts of hazardous substances released into the environment. Therefore, we should not expect any material accumulation of impacts from CERCLA cleanups.

A second DOE argument supporting use of NEPA is that it evaluates environmental impacts outside the immediate cleanup site. However, there is an extensive program created by CERCLA Section 104 that vests the Agency for Toxic Substances and Disease Registry (ATSDR) with the responsibility to conduct evaluations of health effects of CERCLA sites on surrounding communities. Similarly, the Natural Resource Trustee program created under CERCLA Section 107 and the NCP requires careful evaluation of the damage contamination does to natural resources and the biosphere. In addition, the selection of remedy process (including ARARs) incorporates the substantive requirements of other environmental laws, both state and federal, regarding the levels of contamination allowed to remain after the cleanup and the environmental effects of the cleanup process itself.

***Finding:*** The addition of NEPA documentation to the CERCLA process adds only marginal value, if any, to the quality of the cleanup.

NEPA is not applied to the many RCRA corrective action cleanups which will be undertaken at Hanford, and preparing documents does not provide a greater shield against injunction than the explicit bar of CERCLA Section 113 against court challenges to pending remedial actions. It does not provide any environmental analysis that is not or could not be carried out under other provisions of CERCLA or other statutes.

***Recommendation:*** DOE should alter its policy of applying NEPA to the CERCLA process (R-27).

Although DOE has recently published its NEPA regulation, several major CERCLA activities (e.g., removal actions and site investigations) are part of the CX process. There is ample legal support (described above) to suggest that it is not necessary to apply NEPA to CERCLA cleanups.

#### **2.4.2 Integrating NEPA and CERCLA Procedures**

***Issue:*** Implementing NEPA procedures at Hanford may cause substantial schedule delays. If DOE is unwilling to reverse its CERCLA/NEPA policy, improved integration of NEPA procedures into the CERCLA process can ensure that NEPA requirements do not slow cleanups.

Whether the NEPA process will actually delay CERCLA cleanup depends on how it is implemented. Changes in the implementation of this policy can avoid potential problems and bottlenecks.

The most fundamental part of integrating NEPA with CERCLA is integrating the decisions under both statutes into the same office. Bifurcation of decisions under the two statutes can only lead to conflicts, then negotiation to resolve conflicts, and thus unnecessary delays. Because both laws allow for discretionary judgment by the decision makers, allowing the decisions to be made by separate offices is a prescription for recurring disagreement with rational arguments on both sides; such disagreements will then tend to be resolved on the basis of relative bureaucratic power or a tie-breaking vote of an even higher-level official, whose involvement is not intrinsically necessary to a rational decision and who is already fully occupied by other matters, thus slowing the process even further.

There is another legal reason for combining the decision-making authority for both statutes: CERCLA requires that all major decisions about cleanup, particularly the choice of remedial actions, must be made jointly between EPA and DOE, with state participation. This requirement is implemented in the TPA. Failure to integrate the decision authority under NEPA with the decision authority under CERCLA creates a conflict with DOE's commitments under the TPA and its duties under CERCLA. If NEPA and CERCLA decisions are not integrated and unified, it will not matter how much else of the two processes is supposedly integrated.

RL has been successful in obtaining delegation for CXs and prescribed EAs and EISs to the manager of RL. DOE should ensure that all decisions on NEPA documents are devolved to this level, where the active CERCLA decisions are also made, so that full integration can take place. NEPA procedural compliance should not take precedence over the mandate of CERCLA to combat the risks of hazardous substances in the environment. What is more, such unification of decision authority is essential to consistently implement the recommendations on this issue.

***Finding:*** Full integration of NEPA and CERCLA and the terms of the TPA are undercut if NEPA and CERCLA decision authority are contained in different organizations.

***Recommendation:*** Empower the project managers responsible for the CERCLA process with the responsibility and authority for approving the adequacy of NEPA documentation (R-28).

The DOE policy guidance memorandum of November 15, 1991, recommends that 1) individual cleanup actions be handled with CXs, 2) EAs be combined with engineering evaluation/cost analysis (EE/CA) documents prepared for non-time-critical removal actions, and 3) EAs be combined with RI/FSs. The policy memo estimates that only 10-25% of cleanup actions will need to be analyzed by an EIS.

However, if NEPA documentation is to be integrated into an RI/FS, it should be termed an EIS, rather than an EA. The RI/FS process already requires scoping issues to be studied (during review of work plans for site characterization); already requires analysis of alternative courses of action; already requires public comment, potentially including hearings, on the draft study; and already requires issuance of a ROD. The usual advantages to performing an EA rather than an EIS are that an EA includes less detailed analysis and no delay due to public comment. However, if the CERCLA document being integrated into NEPA already includes detailed analysis (e.g., an RI/FS) and delays for public comment (e.g., an RI/FS), RL might

as well title and constitute the integrated document as an EIS, because there is no additional cost in time or effort. But it yields benefits over an EA in protecting the decision from attack under NEPA.

This deserves explanation, since it probably seems counter-intuitive to federal employees who have spent their careers trying to push down the level of NEPA documentation from EISs into EAs, and from EAs into CXs. An EIS has an advantage over an EA because it eliminates the threshold issue of whether there is "significant impact"; significant impact is presumed. An EA may in fact not support a finding of no significant impact (FONSI); RL would then be faced with the choice of honestly delaying further CERCLA action while an EIS is completed, or dishonestly issuing the FONSI, taking the risk of a lawsuit that could halt the cleanup and force an EIS to be prepared. While a court order is recognized as a force majeure under Article XLVII of the TPA, and thus good cause for an extension on milestones, such a last-minute delay will have an adverse effect on CERCLA project funding, remedial action planning, and relationships with EPA and Ecology. In addition, while the FONSI may be reasonable for the individual action, the EA would also be vulnerable to the charge that it had failed to consider cumulative impacts that were significant. Thus, the choice which best guards the cleanup and avoids the risk of delays is to *designate* each RI/FS as an EIS.

***Finding:*** Integration of NEPA Environmental Assessments (EAs) into CERCLA decision documents risks the unnecessary challenge of those documents on the grounds that a finding of no significant environmental impact (FONSI) is unwarranted.

***Recommendation:*** Since the CERCLA process already includes detailed analysis and public comment, the integrated document might as well be designated an EIS instead of an EA (R-29).

This recommendation does not require that RL do extensive additional writing, since NEPA-CERCLA integration means that a single document serves both CERCLA and NEPA purposes. Designating an RI/FS as an EIS rather than an EA does not mean that more verbiage will have to be added; RI/FS documents are already exhaustive in their analysis. It should be remembered that NEPA itself does not prescribe the length or format of an EIS or an EA; the guidance in the regulations of the Council on Environmental Quality (40 CFR 1500) is explicitly flexible on these matters. There is no legal reason why a 10-page analysis cannot serve as an EA, or a 50-page analysis as an EIS.

On the other hand, there is no reason to designate an EE/CA as an EA. An EE/CA is a document prepared under CERCLA to support a decision to perform a non-time-critical

(longer than six month planning time) removal action. Since removal actions come under an explicit CX (noted above), there is no need to prepare an EA unless there are special issues of concern (e.g., endangered species that may be affected) in the area of the cleanup. In most cases, designation of an EE/CA as an EA is unnecessary and actually raises the issue of whether the impact is significant.

### **2.4.3 Documenting Categorical Exclusions**

***Issue:* Implementation of the process of documenting categorical exclusions is unnecessarily paper intensive.**

Removal actions and site characterization actions that are undertaken using the CX are currently supported by 5- to 10-page Information Bulletins (IBs). These IBs, a local RL procedure, are additional documentation (beyond that required by DOE or Council on Environmental Quality regulations) that bolster the assertion that the proposed action qualifies for a CX. CERCLA actions involving site characterization and removal actions are already supported by documents such as work plans, action memoranda, and EE/CAs, so there is no need to prepare additional documents to verify that the actions qualify for a CX determination. Nor should there be any need for review of documents by outside parties to determine that the CX is indeed appropriate.

***Finding:* Documentation and review required to support CX designations undercuts the purpose of the CX and has the potential for causing delays in site work.**

***Recommendation:* Complete no additional documentation (or documentation review) to justify a categorical exclusion. Simply file existing documentation in the Administrative Record that indicates which CX the activity falls under (R-30).**

Simply filing a statement in the official files or administrative record that the action fits a CX category and attaching existing documentation should be sufficient. This will eliminate delays (currently being experienced) due to preparation of lengthy justifications (in the form of IBs and memos and reviewed by several offices in RL and HQ). The documentation and reviews now under way to justify a CX appear to be re-justifying on a case-by-case basis the CX that has already gone through an extensive Federal Register review process.

The process that is currently used to justify a CX finding is untenable and unnecessary. It adds one more unnecessary layer of review before action can occur. Recently, a removal action (which falls squarely in the approved CX category) had to be deferred because the approvals of the CX were not received in time to begin action.

#### 2.4.4 Hanford Site-Wide EIS

**Issue:** The apparent current direction of the Hanford site-wide EIS is poorly defined and will not facilitate restoration objectives.

In the public information brochure for the Hanford Remedial Action (HRA) EIS, the purpose is described as addressing the issue of the method of cleanup to be used at Hanford. However, in the DOE policy memo on NEPA/CERCLA integration, the site-wide EISs are described as addressing the cumulative impacts of cleanup actions and treatment, storage, and disposal (TSD) facilities (much of it related to RCRA rather than CERCLA). And yet a third case: in conversations with RL NEPA personnel, the HRA EIS was described as examining the issue of "how clean to make the areas of contamination"; i.e., the exact issue that is subject to the NCP site-specific decision making process under CERCLA. This lack of clear focus makes the value of the HRA EIS questionable. An EIS is created to advise and ultimately support a decision, but if the decision is not well defined, or not useful, there is no value to the EIS.

Each of the three possible purposes of the HRA EIS is problematical. First, the information brochure version presents a range of alternatives that is useless. A "no-action" alternative is considered as part of each operable unit, but will be rejected unless there is a finding of no risk (defined as risk within the  $10^{-4}$  to  $10^{-6}$  risk range) in the baseline risk assessment. The EIS is not a suitable vehicle to select cleanup methods for individual sites, and to say that it is selecting a range of cleanup methods for the facility as a whole means that any new method would require a supplemental EIS before it could be used consistent with NEPA. Most fundamentally, the selection of remedial method is prescribed by CERCLA Sections 120 and 121, and this EIS is not integrated with that process; in fact, it explicitly conflicts with it. This version of the HRA EIS would make the remedy selection decision prematurely.

Second, the impacts of TSD facilities, some of which will be RCRA permitted, should not be a precedent for CERCLA action. The need to assess cumulative impacts of cleanup actions, as opposed to RCRA TSD actions, is questionable, since the CERCLA actions are remedial in purpose and result; the greatest cumulative impact will result from failure to act. As discussed above, the most important reason to assess cumulative impacts under NEPA is to address the threshold issue of significance; constituting each RI/FS as an EIS virtually eliminates that as an issue. The most troublesome aspect of the memorandum version of the site-wide EIS is the statement, "Once the site-wide EIS is completed, however, any earlier decisions for specific projects that have not been implemented should be examined to determine if they conform to the later decisions arising from the site-wide EIS or if changes in the projects need to be made." This threatens ongoing CERCLA actions with being halted and restudied

solely to make them consistent with the site-wide EIS. Rather than serving cleanup, the site-wide EIS would become the master, elevating bureaucratic procedure over substantive cleanup. Again, rather than being integrated into the CERCLA process, the site-wide EIS would be in direct conflict with the TPA and DOE's obligations to EPA and Ecology.

Third, the NEPA managers' view that the HRA EIS will select cleanup levels is directly in conflict with the provisions of Section 121 of CERCLA, which delineates the selection of remedy risk management process, the ARARs process, and the rights of the State of Washington and EPA to participate in that selection. An EIS is a poor instrument to carry out selection of cleanup standards, and the selection of standards in 1993 or 1994 to govern all cleanups through the year 2018 is not logical. This premature action under NEPA would simply make the HRA EIS an obstacle to every remedy selection process.

What is the proper role for the site-wide HRA EIS? In this case, DOE can draw on the substantial experience of DoD with the base closure program. It should be recognized that the decision to halt future production at Hanford and turn the purpose of the facility to cleanup is exactly the same as the decision to close all operations at a military installation. Many of the bases designated by Congress for closure are on the NPL and are governed by CERCLA federal facility agreements like the TPA. The decision to close bases has been a difficult one because of its susceptibility to attack on NEPA grounds, so Congress specifically exempted that decision from NEPA when it passed the base closure statutes. Nevertheless, NEPA analysis of the future uses of the base properties is still required. While the decision to effectively close Hanford was not made with any NEPA support, the future use of the property is a legitimate object of NEPA study involving the community, just as for any closed DoD installation.

These base-reuse EISs examine a range of possible dispositions of various parcels of the installation property. They do not address CERCLA cleanup decisions, since such decisions must await full characterization of the various operable units. These reuse decisions can later be factored into the ARARs process when individual operable units are studied for cleanup.

***Finding:*** If the HRA EIS is not redirected into a different path, it will become a significant obstacle to CERCLA cleanup, rather than an aid to it.

***Recommendation:*** The purpose of the HRA site-wide EIS should be reformed to focus solely on the range of appropriate future uses of real property, instead of on cleanup methods or standards (R-31).

## 2.4.5 RCRA Versus CERCLA

**Issue:** Attempting to incorporate state hazardous waste law processes into the cleanup of some sites under state lead, and applying only CERCLA authorities to clean up others, presents a confusing and potentially conflicting regulatory framework that threatens to delay cleanup.

The Hanford Site contains a large number of locations where solid, hazardous, radioactive and/or mixed wastes are or have been treated, stored or disposed. Many of these waste management units that were active after the various effective dates of the RCRA regulations qualify for interim status and have pending hazardous waste management permit applications, which would normally trigger the application of RCRA at the entire Hanford Site. As of the passage of the Hazardous and Solid Waste Amendments (HSWA) of 1984, any facility with interim status is subject to corrective action orders to address site-wide hazardous waste releases, and any RCRA permit (for operating or closing treatment, storage, and disposal units) that is issued must require all corrective action necessary to address releases from solid waste management units at the entire facility. However, four areas of the Hanford Site have been separately listed on the NPL under CERCLA. Hence, there is the potential for substantial overlap between state law, RCRA authorities, and CERCLA authorities at the same "past practice areas" on the four NPL sites.

The potential for overlapping application of state law, RCRA, and CERCLA is an issue common to all federal facilities, and is further complicated by the potential for confusing and overlapping state/federal jurisdictional and regulatory authorities. Ecology has the authority to administer its own state hazardous waste laws in lieu of the federal "base" RCRA program--that program in place prior to the passage of HSWA. The EPA Region 10 RCRA program has the responsibility for implementing the HSWA-related corrective action requirements. (It is also anticipated that Ecology will someday be authorized to administer its state-law corrective action program in lieu of the federal RCRA corrective action program.) The EPA Region 10 CERCLA program has the responsibility to oversee the cleanup of the Hanford NPL sites.

This problem of overlapping authorities led to litigation between the United States and the state of Colorado concerning the cleanup at the Rocky Mountain Arsenal, a federal facility with solid and hazardous waste management past practice units listed on the NPL and undergoing a CERCLA cleanup. In that case, the state sued the United States Army and issued an administrative order seeking to require the Army to take certain cleanup actions and seek permits under state hazardous waste management laws. The United States successfully argued that under CERCLA section 120 the cleanup at federal facilities listed on the NPL is

controlled by the CERCLA process, that the substantive requirements of state laws and RCRA apply to such facilities through the ARARs process, and that under CERCLA 113(h) the state was without authority to independently enforce state laws. United States v. Colorado (1991). The case is currently on appeal to the 10th Circuit Court of Appeals.

There are three types of units at Hanford which present the greatest potential for overlapping/conflicting statutory and regulatory jurisdiction on the four NPL sites that are contained in the Hanford Facility. These include active TSD units that will continue to operate, do not require a CERCLA response action, and must obtain a state hazardous waste management permit from the state of Washington; TSD units that have had interim status but are being closed/remediated (hence potentially subject to both CERCLA and state law); and solid waste management units that have never had interim status under RCRA and must be closed/remediated (hence potentially subject to CERCLA, RCRA corrective action and state law).

This problem of which authority controlled the process was a significant issue during the negotiations that led to the TPA. However, the three parties chose to side-step the question by agreeing to the existing process, which was intended to allow DOE to move forward with the cleanup with the goal of applying the CERCLA process and state processes, and in the event of substantive disagreements, all parties reserved their legal rights on the "state law versus CERCLA" question if formal dispute resolution did not resolve the problem. This allowed the parties to deal with the reality of resource constraints on each regulator that made it impossible for either regulator--regardless of who might have final legal authority-- to provide oversight of the entire cleanup. Although this approach has the merit of allowing the parties to focus on cleanup issues rather than engaging in costly and resource-intensive litigation, it also creates a cumbersome and duplicative process that is delaying efficient cleanup decision making at Hanford. Nevertheless, the Interagency Agreement (IAG) process is intended to serve as a roadmap to the cleanup of Hanford and to integrate the TPA, signed in 1989. Although it provides a framework for conducting the cleanup program at Hanford, it does not fully integrate cleanup requirements under a single framework.

The TPA provides for EPA to administer approximately half of the 78 operable units using CERCLA authorities. Ecology is to administer the other half. As a matter of policy, Ecology has determined that it will use the CERCLA process (embodied in its Model Toxics Control Act) for those sites that have not been operating TSDs and are therefore subject to RCRA only through the corrective action requirements, and will use the state's RCRA authority and procedures for sites which are subject to RCRA base program requirements. These RCRA sites include TSDs units which are subject to specific closure requirements under RCRA.

The draft site-wide permit, issued by Ecology in January of 1992, raises numerous concerns, such as its enforceability (under the *United States versus Colorado* (1991) analysis) to the extent it addresses any sites in the four areas listed on the NPL, the legal rights in the TPS, and integration of the parties' intent with regard to state law/RCRA/CERCLA processes. Discussion between the parties is continuing on these issues. Ecology indicates it expects to issue the final site-wide permit by the end of the calendar year.

As a result of the parties' agreement in the TPA to reserve legal rights but to attempt to apply both state law/RCRA and CERCLA authorities, there is a potential for significant delays and inefficiencies in the Hanford cleanup. Some of the issues include:

- Criteria for cleanup levels at both closing TSD units and past practice units that are inconsistent with the unit-specific, risk-based criteria used by both CERCLA and the RCRA corrective action program
- Permit requirements for closing and past practice units (when CERCLA specifically exempts cleanup actions at CERCLA sites from onsite permits)
- Waste manifesting requirements normally applicable to offsite shipments of waste and which DOE has sought to make applicable to the movement of waste from one part of the facility to another
- Procedural oversight requirements that are potentially redundant to the established (but potentially more flexible) oversight requirements of the TPA
- Lack of coordination of schedules between RCRA units and the past practice units that often surround the RCRA units.

CERCLA cleanup actions are required to meet the substantive requirements of federal and state environmental law. Hence, strict application of all RCRA procedural requirements is likely to divert resources from more important cleanup actions, could result in extensive delays while the site obtains necessary permits and approvals, and would not result in any definable environmental enhancements.

DOE, Ecology, and EPA are well aware of the issues and have initiated a dialogue on many of the most pressing matters. However, so long as all parties remain committed to attempting to resolve CERCLA/RCRA/state law integration issues by agreement without any party waiving its formal legal rights, senior-level commitment needs to be made by all parties to ensure a more workable program integration of such requirements that, while meeting DOE

and EPA legal requirements under CERCLA, incorporates state-law procedural requirements in a manner that eliminates unnecessary duplication of effort, program delays, and program inefficiencies while focusing on achieving environmental results.

Solving CERCLA/RCRA/state law integration problems is achievable only if the parties work together toward common restoration goals through judicious application of legal authorities in a manner that provides the most expedient cleanup, without sacrificing necessary legal compliance or meaningful input, and without excessive emphasis on bureaucratic regulatory processes.

***Finding:*** The draft RCRA permit addresses significant RCRA/CERCLA integration issues in a manner that will place unnecessary procedural restrictions on an already complex cleanup process at Hanford. If placed in the permit, and later found to be unnecessary and time and cost consuming, change can only be achieved through the sometimes lengthy permit modification process.

The draft permit contains detailed provisions for cleaning up all past practice sites and TSD facility closures that are subject to cleanup under RCRA. As such, it provides a detailed framework that must be followed by Hanford in conducting remediation at those sites that are also subject to the TPA. Since Ecology is one of the three signatories to the TPA, the additional requirements spelled out in the RCRA permit are unnecessary for Ecology to exercise its oversight responsibilities, and adds a less-flexible oversight mechanism than agreements to modify the TPA.

***Recommendation:*** The RCRA permit for Hanford should be designed to promote the expedient and efficient cleanup with a minimum of unnecessary bureaucratic hurdles. The permit should recognize the *United States versus Colorado* (1991) decision (R-32).

The recommendations below will ensure 1) an expedient and efficient cleanup, 2) that all parties continue to actively participate in all decisions in a meaningful and substantive manner, and 3) that legal requirements are applied in a reasonable manner that fully meets all environmental objectives. The recommendations emphasize the need for all parties to focus on results, rather than process; look for ways to streamline requirements, rather than increase requirements; and not establish additional control when existing processes provide adequate assurance that substantive concerns and requirements will be addressed.

Streamlining the 30-year and \$100-billion cleanup can be achieved only if the parties work together to reduce unnecessary requirements and refrain from establishing additional requirements whose environmental benefits cannot be identified. The parties made a notable effort to define such a streamlined process in the execution of the TPA. In the years since execution of that framework agreement, the issue of RCRA integration has arisen. The opportunity is upon the parties to create a complex, burdensome, duplicative and bureaucratically partitioned process or to develop a streamlined, efficient, flexible process based on meaningful cooperation and coordination among the three equal parties.

***Recommendation:* Ecology and Hanford should continue to make substantial efforts to complete negotiations on the draft permit so that a final RCRA permit can be finalized, recognizing that cleanup of past-practice units will take place under the auspices of the TPA (R-33).**

The final RCRA permit should be consistent with the TPA, which was signed only three years ago by DOE, Ecology, and EPA, and with the *United States versus Colorado* (1991) decision; TPA's stated goal was to ensure consistency with RCRA, and it provides an efficient process for ensuring total site restoration and comprehensive environmental protection.

The final RCRA permit should reference the TPA as the source of corrective action requirements for past-practice units. Any other approach may lead to significant inefficiencies without providing any greater protection for human health or the environment.

The issues that should be deferred to the TPA to optimize flexibility of cleanup of past-practice and RCRA units are, at a minimum, the following:

- Cleanup standards (addressed already through the ARARs process of the CERCLA remedy selection process)
- Data quality and management requirements for past-practice waste
- Site characterization practices
- Permitting requirements for onsite facilities managing restoration waste only should be eliminated, as envisioned by CERCLA. (The environmental benefits of requiring a permit for a facility that is required to meet all substantive standards cannot be established and indicates rigid adherence to regulatory interpretations)

for the sole purpose of establishing additional control. CERCLA uses the ROD public involvement process to ensure public review of onsite TSD plans and does not require onsite permits.)

- Oversight of removal and remedial construction activity.

**Recommendation:** The RCRA/CERCLA Integration Group should be reconvened to address all issues not well addressed by the TPA, including those RCRA/CERCLA issues raised by the draft permit. The principles of total quality management (TQM) and team building should be actively applied to ensure the success of the group (R-34).

A number of issues identified above have been initially addressed by a RCRA/CERCLA integration group involving all members of the TPA. The last meeting of the group was held in December 1991. Given the need for increased communication among the TPA parties, the group is an ideal forum for addressing many of the complex integration issues that are currently facing the site, as well as those which arise in the future.

**Recommendation:** The conclusions of these negotiations should, for the most part, be embodied in amendments to the TPA rather than in the final permit (to the degree that it is necessary to document agreements in a legally enforceable agreement) as it is a more flexible document and more easily amended if all three parties agree than is the site-wide permit (R-35).

## 2.5 Technical Document Review Process

The Hanford cleanup program offers many opportunities for acceleration. With over 1,100 waste sites grouped into 78 operable units, the Site is among the largest and most complex in the nation. In 1989, the TPA was negotiated and remediation milestones established. The TPA also addresses the review process of "primary" and "secondary" documents. Primary documents for the CERCLA RI/FS process were identified as RI/FS Work Plans, RI Phase II Report, FS Phase I and II Reports, FS Phase III Report, and the Proposed Plan. Another series is called secondary documents. In theory, these go through a simplified approval process, and the regulators in the TPA may or may not choose to comment.

The focus of this section is on the primary document review process. A number of issues are identified that cause review and approval of that process to be extremely time- and resource-consuming. Issues identified in relation to the primary document review process can

and should be extrapolated to the process of review and approval of a wide range of documents and other activities.

A recent cost-time management study of a single operable unit (300 FF-1) conducted by WHC (DOE 1990) concluded that report review and approval took 30 months (or 41%) of a total planned RI/FS duration of 74 months. Figure 2.1 presents a process flow chart of the current review process as it has actually occurred for work plan approval. This process totaled 570 elapsed days. While neither the process flow chart, nor the time-management study is anything more than a snapshot in time for a particular activity, one can clearly see vast amounts of potentially non-value-added effort and redundancy.

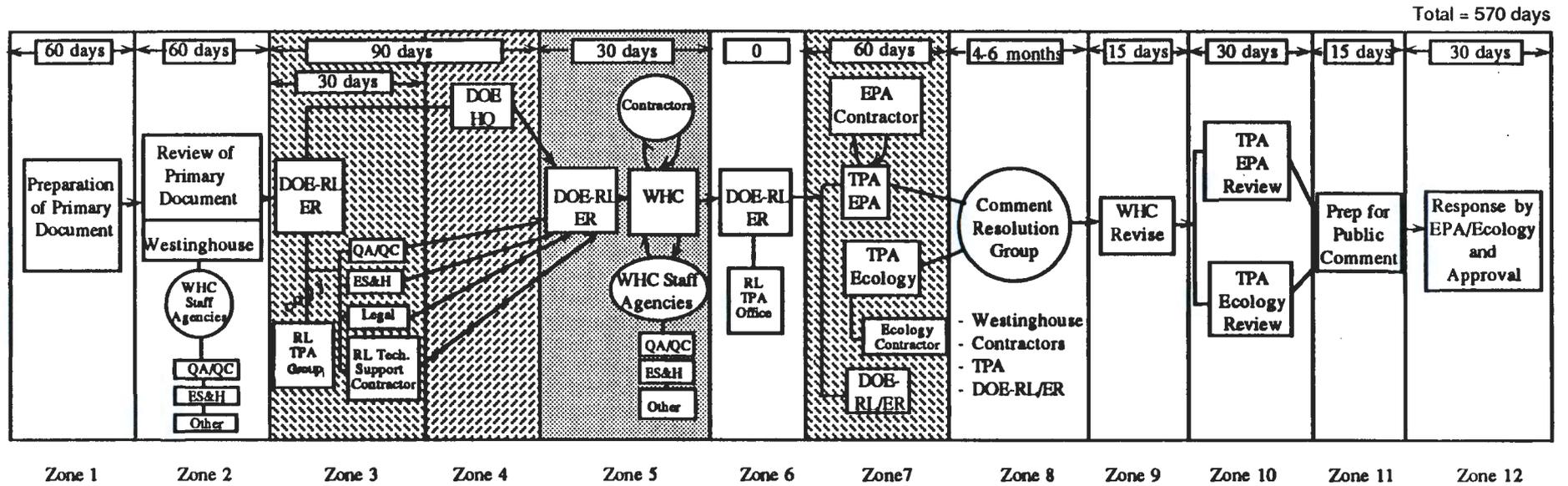
In addition to what the SOS team deems to be an excessive document review process, several related factors were identified as having equally significant impacts on the timeliness of the restoration program. Accordingly, the workgroup expanded its evaluation to address both matters related to streamlining the ER document preparation and review process (i.e., reducing the time required for each primary review, as described in the TPA) and more systemic issues related to streamlining the overall process (i.e., reducing the number of documents that are generated and must be reviewed).

The overall approach to developing issues and recommendations in this chapter relies on the philosophical underpinnings of total quality management (TQM). Those responsible for the work should be empowered to conduct the work. A team approach including all players in a process is essential. Quality should be built in up-front; reliance on inspection is inefficient. Non-value-added activity should be eliminated.

### **2.5.1 Reviews Lengthen Process**

***Issue:* Sequential reviews of primary documents contribute to a substantial lengthening of the RI/FS process.**

In the TPA the primary document approval process is fairly straightforward. A document is sent to TPA parties; Ecology and EPA have 45 days to review it; if there are no problems, it goes final. If there are issues, DOE has 30 days to prepare a response and update the plan, and the TPA parties have another 30 days to review the response. If there are serious concerns, the document goes to dispute resolution. Finally, some of the documents then



\*Public review process is not associated with all documents

Figure 2.1. Actual Management Review Process: Primary Documents

undergo a public review process. As one can see, this sequential process of reviews, while fairly straightforward and traditional for an oversight process, is nonetheless inherently time-consuming, even if there are no major issues that require dispute resolution. The reality, however, is even more complicated.

Before the document ever gets to the TPA members, it goes through extensive review cycles within the contractor's organization, within the RL organization, and, as of October 1991, within DOE-HQ. Each review may involve numerous individual reviewers, including other contractors, all of whom are conducting a comprehensive review and sending comments that require response. The TPA regulators also use contractors, and for primary documents (at least to date) there are usually numerous comments, both substantive and nonsubstantive. In developing the initial work plans--the major primary documents to date--numerous disputes over both schedules and technical approaches have led to substantial delays in approvals and a lengthy comment resolution process.

As illustrated in Figure 2.1, the current review process is lengthy and complicated and involves many players at each organizational level within DOE, regulatory agencies, and their respective contractors. More importantly, the specific purpose or focus for conducting a review at different organizational levels within each of these organizations (i.e., the value added by conducting the review) is not clear. In addition, much time and effort is spent providing written responses to comments that either do not identify important deficiencies or are not substantive in nature. A review of comments received on selected documents conducted by WHC indicated that only 30% had meaningful impact on the document, and that the remaining comments were of no substantive value, but required time and effort for response. It also indicated that similar types of documents, because they were prepared by different subcontractors, were sometimes different in focus, content, and organization, making review of these documents more difficult.

***Finding:*** Interested parties within the document review and approval process work largely independently of one another. Primary communication occurs at the point of document review, comment, and response.

***Recommendation:*** Emphasize a team approach that builds continuous, ongoing communication among all interested parties from the earliest stages of document preparation onward (R-36).

Discussions with Hanford employees, contractors, and regulatory agency personnel, along with comparisons of current procedures at Hanford with those at other federal facilities on the NPL, show that substantial improvements in the document development and review process

can be made through greater emphasis on a team approach. The team approach consists of extensive and intensive early involvement of all stakeholders (such as regulators, DOE-HQ, and, in some cases, the public) in all stages of the document preparation and review process. As such, the team approach embodies the TQM principle of empowering the persons who are responsible for execution with the ability to control and improve the process. In the opinion of the SOS, such a team approach at other NPL sites has resulted in a streamlined ER process and improved the quality of the ER program. Implementing a similar approach at Hanford would create a fundamental shift in the site's ER program.

The SOS team believes that there are several key actions that could be taken to facilitate a more team-oriented approach to document preparation and review. Each of these recommended actions is discussed in greater detail below.

***Recommendation:* Up-front and continuous TPA scoping meetings should be held frequently to ensure that all parties participate in essential decisions early, and that there are no surprises when primary documents are ready for review (R-37).**

Documents should be created only after a scoping meeting of the assigned principal author(s) with the responsible RL operable unit manager and his or her counterparts in EPA and Ecology. This meeting should also include the appropriate supporting contractor and/or subcontractor personnel. In addition, since DOE-HQ will participate in the review of the document, a representative of DOE-HQ should also be involved to the extent possible, either present, linked by a conference call, or at a minimum sent a summary of the issues addressed at the meeting. (Unavailability of the DOE-HQ participant should not prevent the meeting from occurring, however.) At this meeting, the parties will have an opportunity to focus on the format and contents of the planned document. Such scoping meetings are standard at similar sites, including INEL, and typically last one-half to two days.

As document development proceeds, there should be a continuing series of regular meetings, on a schedule agreed to by the parties to the TPA. This series of meetings will minimize the amount of effort spent trying to anticipate regulator comments without actually knowing what they are, and will also provide valuable guidance to the author(s) which can improve the quality of the document and should reduce the extent of the written comments and responses during the document review process, both within and outside of DOE. In fact, the same type of team approach could be extended throughout the formal reviews conducted by both EPA and Ecology; many comments can be offered and answered informally, so that only those issues that are not fully resolved in meetings will need to be offered and responded to in writing. (See discussion under "Institute alternative means to resolve or reduce comments," under issue below.)

The SOS team believes that precedents exist for the recommended actions. For example, The SOS understands that a proposal was discussed in 1990 to conduct discussions on documents prior to drafting and to perform EPA/Ecology reviews of a given document upon submission to RL and DOE-HQ.<sup>(a)</sup> This proposal appears to have been accepted on a preliminary basis, but was not endorsed by DOE-HQ. While DOE may arguably have legitimate concerns regarding provision of a contractor-produced, draft product to EPA and Ecology (with the possible implication of DOE's endorsement of the product prior to review within DOE), there is no comparable basis for rejecting early input from the regulatory agencies to the draft document.

INEL, EPA, and the State of Idaho conduct intensive several-day scoping meetings prior to drafting all major documents. This up-front regulator involvement has been credited with substantially reducing the time required to obtain document approval. Its use is also being promoted at other NPL federal facility sites throughout the nation (e.g., McChord AFB, Washington, and DoD bases in California).

At DoD installations on the NPL (such as McClellan AFB and Sacramento Army Depot in California), documents in development are the subject of discussions at the periodic meetings of the program managers representing the facility and regulators. While this process does not guarantee complete agreement, it has no deleterious effects and gives the installations an earlier understanding of potential points of disagreement.

***Recommendation:*** The public review process should be conducted simultaneously with reviews by the TPA partners (R-38).

Using the team approach, there is also the possibility of condensing review times by conducting the public review of documents (when applicable) in parallel with either the first or second stage of regulatory agency review. At the very least, the SOS team perceives no risk to DOE if the public review of a document occurs after RL has prepared a revised draft based on the first round of review comments from EPA and Ecology. The SOS team feels there would be an even more significant time saving if the parties to the TPA are willing to have appropriate draft documents submitted to the public for review simultaneously with their submittal to EPA and Ecology for the initial round of formal comments. A concern exists that a draft document submitted to public scrutiny under this approach may not have full EPA and Ecology support in the face of public criticism. Responses to this concern are as follows:

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(a) EPA Region 10 letter to RL, dated January 22, 1990, and the reply of April 16, 1990.

- Close coordination and communication with EPA and Ecology during the document development process, as proposed above, would materially reduce the possibility of major EPA or Ecology disagreement over the content of the draft DOE document, since that draft would reflect the consensus of the three parties, arrived at through this team approach.
- Regardless of whether EPA, Ecology, and RL work closely to draft documents, a simultaneous, parallel, public review of a draft document would have the benefit of providing the public an opportunity to comment at a time when draft revisions can be more easily accommodated and before the parties to the TPA have invested additional weeks or months in negotiation, which increases DOE's and the regulators' reluctance to revisit issues on which they have reached agreements. Public comment would therefore be more meaningful, and citizens would have greater confidence in the process reducing the likelihood of citizen lawsuits. This approach would also serve as evidence of DOE's good faith and administrative consideration of all public arguments, and would ultimately strengthen DOE's position in the face of any later legal challenge by citizen groups.
- RL and DOE-HQ should have a high degree of confidence in the draft document by the time it is released to the regulators, given the internal DOE reviews that have already occurred. (If that confidence is lacking, the internal review process is serving DOE poorly.) The draft document becomes part of the public administrative record when first offered for EPA and Ecology review, so there is no issue of loss of confidentiality. Certainly, when DOE or another federal agency prepares an environmental impact statement under the NEPA, the document is offered for comment simultaneously to both the public and the affected federal and state regulators with the explicit understanding that the document is NOT final, and is being offered specifically so that it can be improved through the public review and comment process. Since DOE has decided to integrate NEPA compliance into its CERCLA processes, it would seem appropriate to follow the NEPA procedure in seeking concurrent input from both regulators and the public.
- Replies to public comments could be accomplished concurrently with the discussion of and replies to substantive EPA and Ecology comments. Under a team approach, the responses to public comment could be considered jointly by all three parties to the TPA.

Finally, it should be noted that recommending a parallel public review of draft documents is not intended to create a requirement for public comment periods beyond those already required or mandated by law. Rather, it is meant solely as a technique for moving public involvement forward in the process, minimizing the degree to which the public comment period becomes the final hurdle to approval. Parallel public reviews of draft documents could

result in a reduction of 45 to 60 days in the comment, review and approval cycle, allow better coordination with NEPA requirements, increase public confidence in the process, and create a stronger shield against possible legal challenges.

Air Force Federal Facility Agreements (FFAs) (including those for March, Edwards, and Luke AFBs) generally stipulate that proposed deadlines (i.e., milestones) will be submitted simultaneously to the regulators and the public for comment within 45 days of the execution of the FFA. Similarly, the Air Force/EPA document review process provides for EPA and state review of a draft document, with comments and response incorporated, which then becomes final within 30 days if the regulatory agencies do not invoke dispute resolution. The 30-day review process is also standard for DoD/Region 10 EPA FFAs, such as those for McChord AFB, Washington, and Fort Lewis, Washington.

This is clearly indicative that, for those documents requiring public comment under the NCP, such comment will take place concurrently during the initial lengthy regulator review period, rather than delaying implementation of the final version of the document.

## 2.5.2 Document Preparation and Review

***Issue:* Each of the reviewers appears to conduct a comprehensive review of the documents, rather than focusing on the parts of the document that contain information reflecting special interests of the reviewer.**

As described above, each of the major reviewers appears to review the entire document, including the quality of the technical information that has been generated by RL and WHC. This approach raises several concerns:

- Many of the comments to which responses are required appear to be nonsubstantive. Questions are raised as to what value is added by either the time that the reviewer spent, or the response to comments. (The documents are DOE's. Should EPA and Ecology care about format and editorial concerns, or is their only concern content?)
- To the degree that comments by subsequent reviewers are substantive, and perhaps catch serious technical problems, concerns are raised about whether quality is being built in at the right place. The team approach described above should ensure that technical concerns are built into the process early, so that latter reviewers can focus on appropriate policy considerations, for example, rather than correcting the technical adequacy of the data.

***Finding:*** Comprehensive reviews by multiple reviewers leads to continuous second-guessing of documents and a never-ending cycle of review and comment.

***Recommendation:*** Define the purpose of each party's review and focus review accordingly (R-39).

All groups (i.e., organizations internal to the WHC and RL, DOE-HQ, regulatory agencies and contractors) involved in the document review process must clearly define and delineate the specific purpose and focus of each document review. Although it is recognized that review responsibilities will remain closely linked to such organizational issues as delegation of authority, responsibilities, and accountability, any clarification and separation of review responsibilities would greatly reduce duplication and redundancy in the conduct of reviews. For example, reviews conducted at DOE-HQ should primarily focus on substantive issues such as national policy implications, precedence, and funding impacts. The DOE-HQ reviews should not be all-encompassing or focus on site-specific, technical issues; these are best addressed by RL, where the necessary expertise and experience must reside. This approach would be similar to the EPA-HQ Superfund program approach, where the headquarters review focuses on precedence and funding issues. Similarly, with DoD, "management-by-exception" at the headquarters level of the military services focuses on policy or funding impacts. And with the team approach described above, the EPA and Ecology focus can be on the decisions embodied in the document (most of which they will have already agreed to) rather than the quality of the technical data.

***Finding:*** Multiple reviewers present numerous comments but fail to differentiate those that are most important to them. Thus, all comments receive attention in the formal response to comments.

***Recommendation:*** Key issues should be identified and highlighted when forwarding documents for review (R-40).

Once the purpose and focus has been defined, reviews can be greatly facilitated by identifying the key issues that the reviewers should focus on. This can be done either by highlighting issues in the transmittal letter or incorporating a checklist that identifies key issues and also indicates those areas or issues that have already been addressed by others. Not only will such documentation draw the next-level reviewer's attention to the key issues, but it will also reinforce the fact that his/her review should remain focused on those issues.

***Finding:*** Too many nonsubstantive comments are documented in the formal response to comments process, draining time and resources from the ER process.

**Recommendation:** Allow for informal, verbal resolution among all the appropriate players of many non-major comments (R-41).

To decrease the time and effort necessary to respond to written comments, alternative means to address and resolve comments should be established. One option is to maximize direct and informal communications among various parties, including contractors, to clarify or resolve comments. This can be accomplished by conducting frequent meetings of the involved groups, where questions or concerns can be discussed, clarifications provided, and issues resolved, and by encouraging one-on-one discussions to clarify issues (see team-building discussion above). To further facilitate such interaction, the contractor personnel providing review services to each TPA party should be encouraged to discuss technical matters directly with other parties and contractor personnel. This approach not only reduces the need for extensive written comments by reviewers but also reduces the time and effort currently required by DOE to respond to comments which have little, if any, substantive impact.

A related option is for reviewers to classify their comments into two or more categories such as "deficiencies" and "recommendations." The "deficiency" category would consist of comments that must be addressed or incorporated to make the document acceptable to the reviewer, and must be responded to for inclusion in the administrative record. The "recommendations" category would be considered nonsubstantive suggestions for improving or clarifying the document, but would not require a response or need to be incorporated into the administrative record.

The regulatory agencies and DOE-HQ use contractors to assist them in reviewing documents. Concerns have been expressed that many of the comments were primarily submitted to demonstrate that the contractor had in fact conducted an in-depth review, rather than to provide substantive input to the document. While regulatory agencies do need assurances that in-depth review has indeed been conducted by the contractor, other means to demonstrate this may serve all parties better. An alternative approach could be for contractors to submit a summary or checklist to indicate the scope and depth of their review (i.e., indicate the various areas their review addressed), rather than simply providing extensive comments. This would not only provide the regulatory agencies a better measure of how encompassing the review was, but also will subsequently reduce the number of nonsubstantive comments that require additional time and effort by all parties to address and resolve.

**Finding:** Because similar documents are prepared by different contractors (and subcontractors), multiple formats emerge. These multiple formats make reviewing documents difficult, as reviewers have trouble finding important pieces of the document.

**Recommendation:** Developing common formats for document preparation may ease review and reduce time frames (R-42).

Guidance should be developed or revised to ensure that similar documents prepared by different contractors will be consistent in content and organization. Lack of consistency among similar documents has been identified as a factor that contributes to delays in the review process because of the additional time and effort required to review such "unfamiliar" documents and the additional comments that result from these reviews. Recognizing that each contractor, unless provided explicit guidance to the contrary, tends to use its own "style" in preparing documents, sufficiently detailed guidance must be provided to ensure consistency. This problem is especially true when new types of documents are being created for which no guidance exists; this seems to be the case with the focused remedial investigation, focused feasibility study, and qualitative risk assessment documents established under the HPPS.

The COE has extensive experience in developing such guidance and has been successful in ensuring consistency among similar documents prepared by different contractors. RL and WHC could benefit by reviewing COE guidance and either developing similar guidance or revising existing guidance for document preparation by their own contractors.

### **2.5.3 Strategic Planning**

**Issue:** Effective Strategic Planning can facilitate the streamline of document review by establishing common understandings of key issues.

Careful planning is essential when performing extremely complex engineering projects. Much like any other major construction activity, the success and efficiency of the Hanford ER program depends of the degree of effective upfront planning. As with any such effort, however, the benefits of such planning will only be realized if the results of the planning activities are implemented. It is noteworthy that the SOS team determined that there has been more analysis and strategic planning of the ER/WM program at Hanford than at any other federal facility in the nation. Unfortunately, it also appears that there has been very little implementation of these planning efforts. This recommendation attempts to build on the efforts that have already taken place by recommending highlights of existing processes and certain additional activities.

**Finding:** Extensive, detailed strategic planning has been done at Hanford, but the results have not been adequately consolidated or implemented.

**Recommendation:** Consolidate existing strategic/critical path planning activities (R-43).

DOE currently undertakes numerous strategic planning activities. In addition to the national efforts, such as the programmatic EIS on ER/WM, there are a variety of efforts performed at RL. Often, these field-level activities represent similar or overlapping efforts. Many of the field and headquarters efforts provide an excellent roadmap for concerned stakeholders, but many key stakeholders, including onsite RL personnel contractor staff, and regulators, are apparently not aware of the relevant documents or their contents.

Of additional concern is the fact that planning efforts often overlap (or address the same issues at a different level of analysis), consuming resources and creating uncertainty in the users as to which document is current or most relevant.

In FY 1992, the following DOE ER-related documents were prepared:

- *Hanford Management Strategy*
- *Hanford Mission Plan* (draft)
- *Hanford Environmental Restoration Program Road Map* (DOE 1992b)
- *Hanford Site-Specific Five-Year Plan*
- *Hanford Milestone Report*.

Finally, the plethora of planning documents severely diminishes the value of each document. A consolidated set of planning documents would enable DOE to better define its needs (e.g., for sample capacity planning) and better respond to project changes or delays (e.g., funding shortfalls or untimely submission of regulator comments). Furthermore, such planning would better enable DOE to address the significance of any delay in reaching TPA milestones.

An example of successful strategic planning at a large federal installation can be found at McClellan AFB in California. There, a single Master Environmental Plan has been developed to provide a road map for all essential ER activities. This includes milestones for critical activities and requirements for external needs such as waste management capacity. By consolidating all such material in one source, the Air Force, EPA, and California state regulators have been able to more effectively utilize the document. As a result,

communication has been improved and the ER program has operated more efficiently. The Air Force experience has proven to be so successful that development of a single comprehensive base-wide restoration Management Plan is now required for all Air Force installations throughout the world.

***Finding:*** Many of the strategic planning documents that do exist contain numerous recommendations for expediting the cleanup process at Hanford.

***Recommendation:*** Implement existing planning documents (R-44).

Most of the issues identified in this study have been identified and addressed by previous studies as well. Extensive improvements in the efficiency, effectiveness, timing, and quality of the ER program can be achieved simply by implementing the recommendations of previous studies. For example, the FY 1992 ER-related documents listed above contain recommendations for enhancing the availability of mixed-waste laboratory capacity as well as low-level waste disposal capacity. These are critical path activities which must be implemented in a timely manner to avoid major delays to other site restoration activities. Failure to implement existing plans in a timely fashion has already resulted in delays and disputes under the TPA and will continue to do so.

***Finding:*** A key planning issue that must be resolved to expedite cleanup is the future land use of the site.

***Recommendation:*** Complete land-use planning study and incorporate results into ER planning and decision documents (R-45).

A significant number of ER decisions, each bearing on the overall cost and duration of the ER program, are dependent on determination of the ultimate land-use objectives. The ongoing Hanford Future Site Uses Working Group Project is a noteworthy effort by which a broad consensus can be achieved. The project is expected to complete its activities by the end of 1993, and a report is due at about that time. The report promises to be a very valuable tool which should form the basis for making site-wide land planning decisions. It was noted by the SOS that the HRA site-wide EIS is not planned for completion until late 1995, well past the date when certain site-specific cleanup decisions will be made and well past the time when the ER program could most benefit from input on land-use planning objectives. Accordingly, the ER program must make use of any land-use information as soon as it becomes available, and not wait for completion of the HRA EIS. Therefore, it is recommended that the ER program

base its planning primarily on the results of the Hanford Future Site Uses Working Group Project. (Concerns about the DOE decision to conduct an EIS as part of the cleanup process are discussed in Section 2.4.)

***Finding:*** Many stakeholders appear to be unaware of the extensive strategic planning efforts that have been undertaken at Hanford.

***Recommendation:*** Enhance communication among stakeholders (R-46).

DOE must make every effort to ensure that RL staff and contractor/subcontractor personnel are aware of the relevant planning documents. Additionally, at a minimum, relevant information must be shared with the regulators and highlighted as well as reviewed at the monthly unit managers meeting. Additional discussion of this topic is addressed under conducting a team approach to the ER process, as discussed above.

## 2.6 Procurement of Goods and Services

During the course of the Hanford RI/FS Program Self-Evaluation, interviewees expressed frustration or concern with the process by which services and materials were acquired to support the ER mission. At its simplest, interviewees felt that the procurement cycle necessary to obtain unanticipated goods or services was too lengthy and unrealistically difficult, given the uncertainties of ER activities. The procurement procedures are perceived as inappropriately inflexible for a sometimes unpredictable ER process. Among the examples cited, it was indicated that the procurement procedures, combined with the budget planning process

- were major factors preventing timely acquisition of adequate laboratory/analytical capacity
- resulted in turnaround times of several days at a minimum to acquire inexpensive, common tools
- limited access to state-of-the-art technologies and instrumentation because of the long procurement lead times
- limited operational flexibility by appearing to emphasize purchase of major equipment (drill rigs) over leasing
- are slanted toward funding discrete, identifiable activities with clear-cut periods of performance and tangible end-products.

Procurement of goods and services at Hanford is governed by the Federal Acquisition Regulations (FAR), as interpreted and implemented by DOE and WHC. The FAR is the standard guidance document underlying all federal procurements on all federally funded programs nationwide. While all federal procurements are subject to the same basic regulations and requirements, there is a sense that implementation at Hanford is somehow more time-consuming and presents a greater impediment to accomplishing ER activities than would typically be encountered.

The SOS team identified the following issues as having the greatest impact on how the procurement process functions at Hanford:

- The procurement and ER organizations within WHC and RL operate in parallel chains of command that report to separate line managements and are driven by separate missions.
- The procurement/contracting process seemingly works to meet its own objectives and goals without necessarily coordinating with the ER program to ensure that schedules, milestones, and TPA commitments are met.
- No clearly discernible decision maker could be identified at the point of contact between ER activities and the procurement organization. The cognizant RL and parallel WHC managers responsible for ER activities operate at levels within the Hanford organizational structure that are well above and disconnected from day-to-day communication and coordination with procurement personnel.
- Present procurement practices at Hanford are based on objectives that do not aid optimization of the RI/FS process or implementation of TPA schedules. Interviews with procurement personnel revealed a distinct lack of incentive to accelerate the restoration process; the attitude seems to exist that TPA milestones are not performance drivers.
- The procurement mission statement does not identify support and assistance to the ER program as a priority. RL's stated performance goals and evaluation criteria for the procurement organizations of its Hanford contractors are virtually silent with regard to supporting the ER program. There is very little indication that ER program needs have been translated down to the level of the buyer.

### 2.6.1 Fragmented Support Organizations

**Issue:** As described in Section 2.1, the different functional support organizations for the ER program within RL, DOE-HQ, and the contractors (e.g., WHC) operate within parallel chains of command that do not report directly to the ER program, and therefore do not share the mission of the ER program.

The WHC staff charged with TPA compliance are mostly within the Restoration and Remediation (R&R) Directorate. Since WHC is restricted as to the number of in-house staff, the majority of goods and services are therefore obtained through contracts with outside providers. Thus, successful compliance with TPA milestones depends heavily upon the degree to which Procurement supports ER projects.

Based on a review of organization charts, inferred mission statements, and discussions with Hanford staff, it appears that Procurement has no direct connection or relationship with ER that would prompt its staff to expedite ER requests necessary to achieve TPA compliance.

A review of organization charts within WHC shows that TPA program management and responsibility for compliance are primarily located in groups positioned two levels below the R&R Director. Day-to-day procurement support is provided by groups positioned two levels below the Director, Human Resources and Administration (HR&A). To find a unifying level of command one must go higher, to the Office of Executive Vice President. It is apparent that this vertical line management arrangement does not lend itself to providing a project-deliverable focus for procurement work.

The process by which WHC's Procurement group is evaluated for the cost plus award fee (CPAF) is discussed more fully under Sections 2.6.2 and 2.6.3 below. However, for purposes of this discussion, it is clear that Procurement's evaluation criteria are all procedural and administrative. No criterion emphasizes shared goals with programmatically driven staff, nor are there any criteria associated with shortening the duration of procurement actions or producing procurements that minimize overall costs. Achieving a certain level of competitive awards is listed as a major goal, but that is not the same as overall cost minimization.

RL and WHC organization charts show a close correlation, so it appears that each RL division is directing a corresponding, parallel WHC group in a manner intended to achieve certain performance goals for that division as opposed to optimizing Hanford operations overall. The current draft award fee document (Award Fee Performance Evaluation Plan) provides only about 5 points out of the 100 possible for TQM and TPA compliance combined. It is not apparent that RL has arranged its own "support groups" such as Human Resources, Site

Infrastructure, and Procurement in such a way that a major part of their evaluations is based on the effectiveness of service given to ER. Unless RL speaks with a unified voice to its contractors, there will continue to be horizontal disconnects within WHC, or between whatever organizations, including ERMC, which might be assigned ER responsibilities.

The SOS team looked for evidence of a matrixed management support arrangement, wherein Procurement staff are clearly tasked to facilitate ER's project requests through the procurement process. Instead, evidence was found of extreme compartmentalization, in which Procurement is committed to meeting the expectations of its line management (i.e., a vertical reporting chain) where the focus is on procedural compliance. Thus, the SOS team concluded that Procurement does not regard ER as a primary client (i.e., there is not a strong horizontal loyalty) and therefore does not provide matrixed, directed support to the ER program. Rather, Procurement's function merely processes procurement actions done in a manner intended primarily to minimize risks (e.g., the risk of failing a Contract Procurement System Review (CPSR) audit, or the risk of a protested procurement action) and to maximize award fee evaluations, not to accomplish the primary RL mission - environmental restoration.

***Finding:*** Neither RL nor WHC procurement are tied vertically (line management) or horizontally (program management) to ER.

***Recommendation:*** Service groups, such as Procurement, must be redirected by RL and WHC management to become the agents for facilitating procurement actions, rather than barriers that ER managers must continually confront (R-47).

To implement the recommended actions, one approach would be to develop a management model in which vertical reporting chains are de-emphasized and team or project managers are tasked with building project- or mission-oriented teams with the skills to accomplish the mission. Thus, Procurement staff would be assigned to and held accountable for a particular project, and individual performance criteria would reflect the team's mission. Performance evaluations would be done by the team/project manager, rather than by Procurement line management. If additional stimuli were required to empower the team/project managers, the team could be organized as a special projects group reporting directly to the WHC Executive Vice President. Such a management concept has been successfully implemented by the Air Force Material Command with headquarters at Wright-Patterson AFB, Ohio.

An alternative approach to improving procurement responsiveness would entail leaving the present, vertical-line management systems more or less unchanged. Instead, one or more procurement staff members could be designated as "coordinators," co-located with and directly responsible for assisting the ER groups with their procurement requirements. Thus,

each project or mission-oriented team within the Environmental Division would have direct access to a procurement coordinator. The coordinator would provide guidance to each team's staff, assisting and proactively strategizing both anticipated and unanticipated procurements. The coordinator would be responsible for preparing procurement documents that would best support the needs of the hosting team or project. For a coordinator to be most effective, he/she must be experienced in the Hanford procurement process and in tune with Procurement's procedural needs, and thus able to develop the most effective strategies to expedite ER actions.

***Recommendation:* RL must resolve conflicting programmatic and procedural issues within itself and then develop an integrated, consistent set of guidelines and criteria for all Hanford contractors (R-48).**

### **2.6.2 Poor Coordination Between ER and Procurement Program**

***Issue:* The ER and procurement programs lack the day-to-day close coordination required for achievement of TPA milestones. This lack of coordination is exacerbated by the lack of a clearly defined decision maker with authority over all players responsible for making the process work.**

The signatory and the project manager for RL with responsibility for DOE's participation in the TPA operate at a high level and are very visible in the organization. Conversely, the people tasked with accomplishing individual restoration projects according to TPA milestones (i.e., the operable unit managers) reside deep within the WHC and RL organizations. No close staff or line organizational relationship exists between the operable unit managers and the procurement/contracting organizations of WHC and RL.

The TPA milestone commitments are essentially entered into by DOE with the concurrence of the operable unit managers. Most TPA commitments require that procurement/contracting actions be completed on a set schedule. While schedules may be coordinated in advance with the procurement/contracting office, target dates are often missed by months or years, as shown by such examples as a planned soil treatability study and the mobile laboratory proposal. In both cases, it appears that the TPA target dates were missed due to Procurement's extraordinary diligence in ensuring that all substantive and procedural requirements of the procurement process were fulfilled.

The bottom line is that the authority of the most important decision maker (i.e., the operable unit manager as empowered by the WHC and DOE site managers and the DOE TPA project manager) does not extend to/through the procurement process. TPA regulatory sched-

ules have little or no meaning during the procurement process, whether or not there was advance procurement coordination of the schedules.

Agreed-upon schedules must be met through the procurement process. Everyone must work together through the procurement process. Single-minded decision making must prevail throughout the overall organization and its parts.

SOS participants included individuals who are very experienced with procurement activities under the FARs within the DoD. In most cases, anticipated procurement schedules are met on an Air Force or Army base. In a minority of cases, the procurement schedule takes longer than anticipated.

On a DoD installation, the project engineer or restoration manager must maintain a very close working relationship with the assigned procurement official. In a close working relationship, procurement authorities will "cut procedural corners" when possible. When corners cannot be cut, added steps in the process are completed in the most efficient, expedited manner possible to meet schedule commitments. At naval facilities, the activity commanding officer signs the FFA and ultimately the ROD. He meets with representatives of the ER team, contracts, public affairs, and the legal department on a weekly basis. There is no doubt that the commanding officer is in charge. This type of responsive, informal, and trusting working relationship appears to be missing at Hanford. An informal working relationship is unlikely to occur considering the existing organizational structure.

The Contracting Division of the COE Tulsa District has always been very responsive to the contracting needs of the ER program for the Army, Air Force, and DOE programs managed by Tulsa District. The contracting officer works directly for the district commander, not several layers below the final decision maker. This support manifests itself in a willingness to work through almost any issue and provide an honest appraisal of the options available. The usual procedure has been for the chief of the Contracting Division, or his designee, to thoroughly discuss the issues, scope of work, and the FAR requirements. The project manager would outline contract requirements and the contracting officer spell out the conditions that had to be met to get the work done.

***Finding:*** The possibility exists that numerous TPA milestones will continue to be missed as a result of a procurement process that does not focus on and is not obligated by higher management's schedule commitments to TPA milestones. Failure to meet milestones by the timely acquisition of goods and services can almost be guaranteed without a fully empowered decision maker in close coordination with Procurement.

**Recommendation:** Operable unit managers and appropriate higher authorities in DOE and WHC management must implement a regular coordination effort or process that clearly defines Procurement's responsibilities and goals in support of ER and the TPA (R-49).

Identification of the ER procurement goals would serve to ensure that TPA project schedules are met. The goals must be part of an integrated process that meets regulatory requirements (i.e., compliance with environmental law) and TPA commitments, and stays within the limits of local implementation of the FAR.

### **2.6.3 Procurement Practices Delay Process**

**Issue:** Procurement practices do not aid the ER process or the implementation of the TPA schedule.

The SOS found extensive evidence that the RL and WHC procurement organizations are oriented to accomplish an internal set of objectives unrelated to the needs of ER. A particular "culture" and its associated operational processes has grown up around those objectives, and that culture itself and its procedures create further impediments to expediting ER-related procurements.

The "play it safe" attitude is prevalent at Hanford and especially in the procurement process. As has been cited before, the CERCLA process requires some risk taking not only in the technical approach, but in the procurement process as well.

The "play it safe" attitude in procurement is both driven by and exemplified by the CPSR, a detailed audit that takes place annually. The CPSR focuses not only on compliance with the FAR, but also on compliance with a wide variety of guidance and orders through which DOE implements the FAR. Like so much in the DOE system, the Orders related to contracts contain conservative procedures and documentation that go far beyond those used by other agencies. If a contractor such as WHC fails the CPSR, its authority to procure services on behalf of the government will be rescinded. This is perceived as such a draconian result that procurement officials throughout DOE and WHC have a tendency to be ultra-conservative in their interpretation of the FAR and SAR to be sure they never have a "problem" procurement.

**Finding:** Procurement personnel interviewed displayed an attitude of "always play it safe." A predisposition exists to avoid claims or possible protest.

**Recommendation:** A broader interpretation of buying guidelines is required (R-50).

Obviously, the SOS cannot instruct procurement personnel to avoid lessons learned in the past, thereby ignoring the "safety nets" built into the system, but the SOS team unanimously felt that some flexibility is necessary to keep the process moving.

**Finding:** Procurement directives require the submission of pre-procurement plans. This process is an internally mandated activity that adds to the delay.

The pre-procurement plan, or acquisition plan as it is sometimes called, is a document that defines the terms and conditions for acquiring a contract. It is significant because WHC can award contracts up to \$10 million but RL retains the authority for approval of all pre-procurement plans for contracts of \$1 million or more. Approval of the pre-procurement plan delays starting the actual acquisition of the contract. Thus, WHC has a \$10 million contracting authority that it cannot use without RL approving how and what the contract will contain.

**Recommendation:** Eliminate all excessive "safety nets" or additional documentation not required under the FAR that impede the ER procurement process if not essential to meet the spirit and letter of the FAR (R-51).

This broad recommendation requires a careful assessment of current procurement procedures and the needs of the ER program to target specific requirements that should be deleted or modified.

**Finding:** Flexibility within Procurement is missing. In all cases reviewed by the SOS team, an ultra-conservative interpretation of the FAR was the norm. Regulatory review of contract documents will often result in a revision to the contract scope which adds to delays.

**Recommendation:** The procurement process must be flexible enough to allow for modifications and regulatory revisions to be easily incorporated (R-52).

It is not the intent of the SOS to advocate revision of the FAR, even though, in many cases, the FAR can impede schedules. The missions of the ER and the procurement groups do not coincide. Experts in FAR should be appointed within both RL and WHC to serve as champions to advocate interpretations of the FAR that are most suitable to meeting ER goals

and TPA milestones. The FAR system is flexible enough to be managed such that TPA compliance can be achieved. (Examples of this can be supplied by those federal activities represented on the SOS team.)

***Finding:*** WHC's interpretation of procurement procedures is apparently even more conservative and rigid than DOE's.

***Recommendation:*** Reduce the incentives that dictate a "play it safe at all costs" approach. Properly focus the CPSR review on the most important substantive issues. Recognize the importance of the TPA milestones and the ER process in the performance and fee award criteria (R-53).

#### **2.6.4 Lack of Commitment**

***Issue:*** There is an apparent lack of commitment by procurement personnel to the ER mission. This lack of commitment is driven by a lack of incentives tied to the Hanford mission.

Contract performance award criteria are developed by RL to reward or penalize WHC for past performance and to shape future behavior. The contract performance criteria provide a powerful message to WHC as to what RL considers important and what its expectations are. The criteria could be used to drive development of an integrated program that would optimize all activities to supporting the ER mission, and giving TPA compliance a high priority. Instead, the contract performance criteria currently in place are fragmented in the extreme, showing RL's own lack of mission clarity, which is then passed downward to WHC and other Hanford contractors.

Procurement is not significantly tied to TPA milestones but rather to competitive contract awards, socioeconomic goals, and the CPSR process.

The SOS team determined that the only goals established for WHC Procurement are derived from the contract evaluation criteria established by the Award Fee Performance Evaluation Plan (SOS-099). This is not surprising, since RL procurement goals are virtually silent regarding support for the ER mission. The total mission of the WHC Procurement organization is directed toward compliance with the FAR and satisfying RL Procurement. Delays in acquisition of services, materials, and equipment have real impacts upon the deliverables required by the TPA. Failure to acquire needed support materials, equipment,

and services translates directly into program delays. Failure to have a responsive procurement organization has serious impacts (both short and long term) on the cost of the RI/FS and schedule compliance. Time cannot always be bought back by expending more money later.

The Award Fee Performance Evaluation Plan provides the defacto mission statement of WHC Procurement. The procurement performance criteria are listed as follows:

- 85% of all subcontracted dollars to be awarded competitively.
- Meet all socioeconomic goals as reflected on the subcontracting plan.
- Prepare for the Contractor Procurement System Review.

Percentages of the award fee associated with management are the following:

- Management section . . . . .25%
  - Environment Safety and Health . . . . .16%
  - Planning, Productivity, Efficiency & . . . . . 9%  
Responsiveness (TPA compliance 1/3 of this)
- Program Execution Section . . . . .75%  
(TPA compliance is mentioned in only one of the eight criteria)

***Finding:*** Procurement goals do not include support to the ER program as a priority.

***Recommendation:*** Management needs to ensure that the importance of the environmental mission is clear to all levels of the Hanford workforce, including RL and all contractors. RL should immediately modify the Hanford Operations Contract evaluation criteria for contractors to reflect the importance of the environmental mission (R-54).

Adequate statements of the ER mission are missing from the procurement-specific criteria. During the initial briefings, the SOS team was told that the RL mission was now environmental compliance and cleanup. Apparently, that new mission has not yet been transmitted to the worker level. The need for procurement support to the ER program is lacking in the "program objectives" (the Award Fee Performance Evaluation Plan). No

portion of WHC's award fee depends on the priority procurement of services, materials, and equipment needed to support the ER program. In fact, in one interview, a WHC procurement person stated that the ER mission had not been sufficiently defined to justify providing more than normal services.

### **2.6.5 Experienced Personnel Needed**

***Issue:* Procurement personnel must be experienced in the application of the FAR to the ER mission.**

An additional point noted by the SOS during discussions with procurement and ER personnel was that there is a shortage of procurement personnel trained in the specialized needs of the ER program. The lack of individuals with a background in and awareness of CERCLA, RCRA and the TPA sometimes causes acquisition decisions to be made without regard for the actual priorities of ER.

***Finding:* There appears to be little understanding of ER needs on the part of procurement personnel.**

***Recommendation:* Training in regulations, technologies, and procedures related to the ER mission, as well as an understanding of the TPA, needs to be provided for personnel in procurement responsible for ER program support (R-55).**

The COE Tulsa District has recently begun to use a cost-plus contract for remediation. All previous contracts for professional services and construction were fixed price. To provide the appropriate level of support to run this contract, a separate office has been established and is run by an experienced environmental engineer with extensive experience in ER. Included in this office is a senior contracting officer with significant experience in acquiring environmental contracts. Having an experienced contracting officer as a team member responsible for the administration of the contract has greatly simplified the process for preparing contracts, awarding delivery orders, interpreting administrative requirements, and executing the work. The flexibility of this system is difficult to compare with traditional government contracting organizations, but the approach does seem to offer significant advantages.

A similar process is followed at Navy Lakehurst. The key is that the contracts person is experienced (especially in FAR), understands priorities, and works closely with the technical people to define and implement effective procurement.

## **2.6.6 Communicating Commitment to Staff**

***Issue:*** Management commitment to the TPA milestone is not communicated clearly to some key staff.

During the SOS interviews, the importance of meeting and/or complying with the TPA milestones was downplayed by both RL and WHC procurement staff. This finding represents a major weakness in the system's dedication to accomplishing the ER mission. Based on the results of the SOS interviews, it would appear that the indifferent attitude is prevalent throughout Hanford operations. If the Hanford management (both RL and WHC) downplay the importance of the TPA, how could anything more than a casual attitude exist at the working level?

When the issue of the TPA schedules was discussed with WHC procurement personnel, it was stated that the TPA schedule did not have the force of law; therefore, why should efforts be made to find a way to optimize or streamline the procurement process? The implication was that the risk associated with optimizing contract capabilities by speeding up procurements or adopting more liberal interpretations of the regulations was not worth the risk unless a law was being broken. The proof offered by one individual in procurement was that when TPA schedules were missed, "Nothing happened." This same attitude toward the "flexibility" of the milestones in the TPA apparently extends to the highest levels in RL and WHC, as evidenced by the individuals who spoke to the SOS team. The conclusion of the SOS team is that Hanford management feels that the schedules specified by the TPA are not as important as other priorities at the Hanford site.

***Finding:*** Management commitment to TPA milestones needs clarification throughout RL and WHC.

***Recommendation:*** RL and WHC need to show a unified commitment to accomplishment of the TPA. When dates or commitments to accomplish work are agreed to, those dates must be viewed as unchangeable by RL, WHC, and all subcontractors (R-56).

### **2.6.7 Improved Planning**

***Issue:*** Some potential procurement delays can be addressed by improved planning.

Since the speed at which new services or equipment can be acquired is limited by the FAR, improved advanced planning must be implemented to ensure that contracts are in place to support ER program needs. As an example, it is apparent that the size of the current Basic Ordering Agreement (BOA) contracts is much smaller than what is needed for an installation of Hanford's size and complexity. Individuals interviewed did not know if new BOA contracts are being developed, even though the current contracts expire in one year. Since it may take one year or more to complete the procurement cycle, the process should be under way now, so that with or without an ERMC, Hanford would have the needed contracts in place. There was a sense that the ERMC will be available in time. But even after the ERMC contract is awarded, there will be a time lag before the contractor becomes fully familiar with the Hanford ER program and begins to function at full efficiency. During the interim, there is a concern whether adequate contracting capacity will exist to maintain ER program momentum and progress toward TPA deadlines. As a further example of the problem, there is little evidence that adequate planning is being done to prepare for the even larger contractual needs that the ER program will require as remediation starts up.

***Finding:*** Lack of planning for contracting actions may be causing needless delays.

***Recommendation:*** A joint Procurement/ER Program task force needs to put together a long-term contracting plan that will ensure that contracting capacity is in place on or before the dates needed (R-57).

### 3.0 Implementation of Recommendations

The TPA Steering Committee must decide whether to implement any or all of the recommendations of the SOS team. If the committee decides to implement them, a schedule for implementation must be established and a person must be chosen and empowered to make it happen. Given the size of DOE and the complexity of the Hanford Site management structure, implementing these recommendations will be challenging. It was noted in the Hanford RI/FS Program Self-Evaluation that recommendations from previous studies never were implemented. The SOS team is encouraged that an implementation plan will be submitted by DOE to facilitate implementation of these recommendations and encourages the TPA Steering Committee to move swiftly. It would be advantageous to have as many recommendations as possible implemented by the time the transition to the ERMC is complete July 1, 1993.

The Hanford mission is important, but as currently operated, the cost to taxpayers is too high. If the TPA partners make implementing the recommendations their highest priority, Hanford costs and schedules can be reduced significantly. But such results will require the cooperation, commitment, and hard work of those at the highest levels of DOE, its contractors, EPA, and Ecology to solve current problems.

## 4.0 References

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## **Appendix A**

### **SOS Bibliography**

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-001	INTERAGENCY REVIEW OF THE DEPARTMENT OF ENERGY ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT PROGRAM	04/29/92	N/A
SOS-002	HANFORD SITE ENVIRONMENTAL RESTORATION COST ANALYSIS AND REVIEW	06/29/90	N/A
SOS-003	EVALUATION OF THE HANFORD RI/FS COST PROJECTIONS VOLUMES 1 OF 2 & 2 OF 2	06/30/91	EMO-1033
SOS-004	GENERAL TOPICS UNIT MANAGERS MEETING	09/18/91	N/A
SOS-005	GENERAL TOPICS UNIT MANAGERS MEETING	10/16/91	N/A
SOS-006	1100-EM-1 UNIT MANAGERS MEETING	09/18/91	N/A
SOS-007	REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN FOR THE 200-BP-1 OPERABLE UNIT HANFORD SITE, RICHLAND, WASHINGTON	03/31/90	DOE/RL 88-32
SOS-008	REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN FOR THE 300-FF-1 OPERABLE UNIT, HANFORD SITE, RICHLAND, WASHINGTON	06/30/90	DOE/RL 88-31
SOS-009	REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN FOR THE 300-FF-5 OPERABLE UNIT, HANFORD SITE, RICHLAND, WASHINGTON	06/30/90	DOE/RL 89-14
SOS-010	REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN FOR THE 1100-EM-1 OPERABLE UNIT, HANFORD SITE, RICHLAND, WASHINGTON	08/31/89	DOE/RL 88-23

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-011	REMEDIAL INVESTIGATION PHASE 2 SUPPLEMENTAL WORK PLAN FOR THE HANFORD SITE 1100-E-1 OPERABLE UNIT	04/30/91	DOE/RL-90-37
SOS-012	COST EVALUATION PROJECT SECTION 1 U.S. DEPARTMENT OF ENERGY HANFORD SITE RICHLAND, WASHINGTON	10/31/90	N/A
SOS-013	HANFORD ENVIRONMENTAL RESTORATION PROGRAM ROADMAP	06/30/92	DOE/RL-92-45
SOS-014	HANFORD PAST PRACTICE INVESTIGATION STRATEGY	08/13/92	N/A
SOS-015	FEDERAL FACILITY AGREEMENT AND CONSENT ORDER CHANGE CONTROL FORM	08/11/92	M-15-91-2
SOS-016	ENVIRONMENTAL RESTORATION COST TIME MANAGEMENT EXPERIENCE AT HANFORD	05/21/92	N/A
SOS-017	APPLICATION OF COST TIME MANAGEMENT TO THE SAMPLING AND ANALYSIS PROCESS	06/15/92	N/A
SOS-018	LIGHTNING RODS	01/31/92	N/A
SOS-019	DOE ORDERS WITH THE POTENTIAL TO UNNECESSARILY INHIBIT REMEDIATION ACTIVITIES AT DOE SITES	06/30/92	N/A
SOS-020	MAKING SUPERFUND WORK: RECOMMENDATIONS TO IMPROVE PROGRAM IMPLEMENTATION	01/31/89	N/A

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-021	IMPROVING REMEDY SELECTION: AN EXPLICIT AND INTERACTIVE PROCESS FOR THE SUPERFUND PROGRAM	10/31/90	N/A
SOS-022	WHAT WORKS? ALTERNATIVE STRATEGIES FOR SUPERFUND CLEANUPS	09/30/91	N/A
SOS-023	HANFORD ACTIVITY DATA SHEET REVIEW	05/31/92	EMO-1071
SOS-024	DOE DEVELOPMENTS: LESSONS DOE SHOULD LEARN FROM EPA'S IMPLEMENTATION OF SUPERFUND	08/13/91	N/A
SOS-025	REGULATORY AND INSTITUTIONAL ISSUES IMPEDING CLEANUP AT U.S. DEPART. OF ENERGY SITES: PERSPECTIVES GAINED FROM AN OFFICE OF ENVIRONMENTAL RESTORATION	05/31/91	PNL-7692
SOS-026	STREAMLINED APPROACH FOR ENVIRONMENTAL RESTORATION	08/13/92	N/A
SOS-027	THE ROAD TO ROD: TIPS FOR REMEDIAL PROJECT MANAGERS	01/31/92	N/A
SOS-028	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY: CONSIDERATIONS IN GROUND-WATER REMEDIATION AT SUPERFUND SITES AND RCRA FACILITIES--UPDATE	05/27/92	9283.1-06
SOS-029	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY: GUIDANCE ON IMPLEMENTATION OF THE SUPERFUND ACCELERATED CLEANUP MODEL (SACM) UNDER CERCLA AND THE NCP	07/07/92	9203.1-03

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-030	HANFORD AREA TOUR SCRIPT	05/08/92	N/A
SOS-031	ENVIRONMENTAL RESTORATION PROGRAM PROPOSAL	07/31/92	N/A
SOS-032	HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER	05/31/89	N/A
SOS-033	RCRA FACILITY INVESTIGATION/CORRECTIVE MEASURES STUDY WORK PLAN FOR THE 100-NR-1 OPERABLE UNIT, HANFORD SITE, RICHLAND, WASHINGTON	12/31/91	DOE/RL-90-22
SOS-034	1988 AGREEMENT AND PENSION AND INSURANCE AGREEMENT BETWEEN WHC AND HANFORD ATOMIC METAL TRADES COUNCIL	06/22/88	N/A
SOS-035	KAISER SENT DRILLERS HOME TO EMPHASIZE SAFETY	08/29/91	N/A
SOS-036	FEDERAL REGISTER: PART II DEPARTMENT OF ENERGY	04/24/92	N/A
SOS-037	DRAFT: NATIONAL ENVIRONMENTAL POLICY ACT PROGRAM PLAN	08/31/92	N/A
SOS-038	DRAFT: A CROSS-WALK OF THE ISSUES AND RECOMMENDATIONS CITED IN THE MAY 1991 WORKSHOP REPORT AGAINST ISSUES AND ACTIONS THAT ARE EITHER...	04/23/92	PNL-7692
SOS-039	OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT (EM) ANALYTICAL SERVICES PROGRAM FIVE-YEAR PLAN	01/29/92	EM-513

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-040	HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER DISPUTE PROCESS	08/13/92	N/A
SOS-041	HANFORD ENVIRONMENTAL RESTORATION REMEDIAL ACTION PROGRAM DOCUMENT HIERARCHY	08/13/92	N/A
SOS-042	CDM FEDERAL PROGRAMS CORPORATION: RI/FS STREAMLINING	06/02/92	N/A
SOS-043	FEDERAL FACILITY AGREEMENT AND CONSENT ORDER	12/04/91	N/A
SOS-044	U.S. DEPARTMENT OF ENERGY SITE MANAGEMENT PLAN (DRAFT)	04/06/92	N/A
SOS-045	ENVIRONMENTAL QUALITY ASSURANCE: QUALITY TRAINING AND RESOURCE CENTER "CREATING A QUALITY CULTURE"	03/31/91	QAMS-004/80
SOS-046	ENVIRONMENTAL QUALITY ASSURANCE: OVERHEADS	08/13/92	N/A
SOS-047	ENVIRONMENTAL QUALITY ASSURANCE: QUALITY TRAINING & RESOURCE CENTER	05/31/92	OSH-100022, REV.
SOS-048	1992 HANFORD MISSION PLAN	06/30/92	DOE/RL-92-07
SOS-049	THE SUNDAY OREGONIAN: SIPPING ON HANFORD'S LEGACY--TANKS AT HANFORD COULD EXPLODE (CONT. PG. A20 & 21)	06/19/92	N/A
SOS-050	1988 AGREEMENT AND PENSION AND INSURANCE AGREEMENT BETWEEN WHC AND HANFORD ATOMIC METAL TRADES COUNCIL	05/08/88	N/A

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-051	DATA QUALITY OBJECTIVES FOR REMEDIAL RESPONSE ACTIVITIES	03/31/87	EPA#540/G-87/00
SOS-052	QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR NUCLEAR FACILITIES	09/15/89	N/A
SOS-053	ENVIRONMENTAL RESTORATION PROGRAM QUALITY ASSURANCE SYSTEM REQUIREMENTS FOR HANFORD SITE	06/30/92	DOE/RL-90-28
SOS-054	INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS	12/29/80	N/A
SOS-055	QUALITY ASSURANCE	08/21/91	DOE 5700.6C
SOS-056	ENVIRONMENTAL RESTORATION REMEDIAL ACTION QA REQUIREMENT DOCUMENT	03/18/91	DOE/RL-90-28
SOS-057	U.S. ENVIRONMENTAL PROTECTION AGENCY/STATE OF WASHINGTON DEPARTMENT OF ECOLOGY	08/12/92	92-EPB-054
SOS-058	RESOURCE CONSERVATION AND RECOVERY ACT	03/15/92	ORNL/M-1897
SOS-059	ENVIRONMENTAL GUIDANCE PROGRAM REFERENCE BOOK: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT	09/01/91	ORNL/M-1572
SOS-060	A COMPENDIUM OF SUPERFUND FIELD OPERATIONS METHODS	12/31/87	P-87 001
SOS-061	HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER VOLUME 1 OF 2, FIRST AMENDMENT	08/31/92	89/10 REV.1

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-062	GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROGRAM PLANS	09/20/80	QAMS-004/80 REV
SOS-063	NUCLEAR HEALTH AND SAFETY: MORE CAN BE DONE TO BETTER CONTROL ENVIRONMENTAL RESTORATION COSTS	04/30/92	GAO/RCED-92-71
SOS-064	IMPLEMENTATION OF A HANFORD PAST PRACTICE INVESTIGATION STRATEGY FOR THE 100 AREAS	08/27/92	N/A
SOS-065	HANFORD SITE PAST PRACTICE INVESTIGATION STRATEGY - LESSONS LEARNED	08/27/92	N/A
SOS-066	HANFORD SITE PAST PRACTICE STRATEGY	03/17/92	DOE/RL-9104
SOS-067	ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT EM PROGRESS TRACKING SYSTEM FIELD OFFICE 2.0 BETA VER. USERS MANUAL APPENDIX E	08/31/92	N/A
SOS-068	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE PROGRAM	09/17/92	N/A
SOS-069	HANFORD SITE DRILLING SERVICES	03/15/89	N/A
SOS-070	200 AREA HANFORD PAST-PRACTICE SITE CLEANUP AND DISPOSAL CONCEPTUAL STUDY	07/31/92	WHC-EP-0454
SOS-071	HANFORD PAST-PRACTICE SITE CLEANUP AND RESTORATION CONCEPTUAL STUDY INTEGRATED STUDY AND SUMMARY	07/31/92	WHC-EP-0456

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-072	100 AREA HANFORD PAST-PRACTICE SITE CLEANUP AND RESTORATION CONCEPTUAL STUDY	07/31/92	WHC-EP-0457
SOS-073	300 AREA HANFORD PAST-PRACTICE SITE CLEANUP AND RESTORATION CONCEPTUAL STUDY	07/31/92	WHC-EP-0459
SOS-074	WESTINGHOUSE HANFORD COMPANY REGULATORY STRATEGY FOR MACROENGINEERING IMPLEMENTATION	06/04/92	WHC-SD-EN-EE-00
SOS-075	MACROENGINEERING EXPERT PANEL SUMMARY REPORT (PANEL MEETING FEBRUARY 7 AND 8, 1992)	07/15/92	WHC-SD-EN-TI-02
SOS-076	HANFORD ENVIRONMENTAL RESTORATION BASELINE OVERVIEW BRIEFING: "SITE HISTORY, CHRONOLOGY AND CURRENT ACTIVITIES"	09/18/92	N/A
SOS-077	WEALTH IN THE WASTELAND - CLEANING UP HANFORD BOON OR BOONDOGGLE? JUST 4 YEARS AFTER THE NUCLEAR BUSINESS WENT BUST, THE CLEANUP BUSINESS HAS RETURNED	09/07/92	N/A
SOS-078	CLEANUP HANFORD BOON OR BOONDOGGLE? THE IMPOSSIBLE TASK: ALTHOUGH NO ATOMIC BOMB EXPLODED THERE, THE RADIOACTIVE RESERVATION WILL NEVER BE CLEAN AGAIN	09/06/92	N/A
SOS-079	TRANSMITTAL OF INEL CERCLA/NEPA INTEGRATION STRATEGY	10/17/91	ERD1-145-91

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-080	100-BC-5 WORK PLAN SCHEDULE/100 AREA REMEDIAL INVESTIGATION GROUP	07/09/92	N/A
SOS-081	NEPA/CERCLA INTEGRATION - PRESENTATION OF LUCINDA LOW SWARTZ, DEPUTY GENERAL COUNSEL, COUNCIL ON ENVIRONMENTAL QUALITY, NOVEMBER 21, 1991	11/21/91	N/A
SOS-082	GUIDANCE ON PROCESSING RL NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTS	06/04/92	N/A
SOS-083	PROPOSED GUIDANCE ON IMPEMENTATION OF THE DOE NEPA/CERCLA INTEGRATION POLICY - OPPORTUNITY TO COMMENT	10/26/90	N/A
SOS-084	INTRODUCTION/OVERVIEW DOE/ NEPA COMPLIANCE PROGRAM	09/21/92	N/A
SOS-085	RECOMMENDATIONS ON ALTERNATIVE ACTIONS FOR ANALYSIS IN SITE-WIDE NEPA REVIEWS	05/26/92	N/A
SOS-086	100-KR-1 WORK PLAN SCHEDULE/100 AREA REMEDIAL INVESTIGATION GROUP	07/09/92	N/A
SOS-087	100 AREA FEASIBILITY STUDY PHASES I AND II/DRAFT A	03/02/92	DOE/RL-92-11
SOS-088	REGULATORY AND INSTITUTIONAL ISSUES IMPEDING CLEANUP AT U.S. DEPARTMENT OF ENERGY SITES: PERSPECTIVES GAINED FROM THE OFFICE OF ENVIRON- MENTAL RESTORATION	05/31/91	PNL-7692 UC-902
SOS-089	DISPUTE RESOLUTION COMMITTEE DECISION STATEMENT	08/29/92	N/A

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-090	MEMOS - THE ENCLOSED TWO MEMOS DEALING WITH CLASSIFICATION OF EM OPERATIONS AS "NUCLEAR FACILITIES" AND THE PREPARATION OF SAFETY ANALYSIS REPORTS ...	09/18/92	N/A
SOS-091	HANFORD GROUNDWATER CLEANUP AND RESTORATION CONCEPTUAL STUDY	07/31/92	WHC-EP-0458
SOS-092	DELEGATION OF SECTION D NEPA DETERMINATION AUTHORITY TO THE DOE FIELD OFFICE, RICHLAND	11/18/92	N/A
SOS-093	LAB FLAWS SOIL HANFORD CLEANUP	09/23/92	N/A
SOS-094	ENVIRONMENTAL PROJECT SAFETY DOCUMENTATION	09/30/92	N/A
SOS-095	WHC ORGANIZATION CHARTS	04/28/92	WHC-CM-1-2
SOS-096	PRELIMINARY OPERABLE UNITS DESIGNATION PROJECT	02/28/89	WHC-EP-0216
SOS-097	CODES AND REQUIREMENTS	09/23/92	N/A
SOS-098	GENERIC SCOPE OF DOE ORDERS	09/23/92	N/A
SOS-099	AWARD FEE PERFORMANCE EVALUATION PLAN/DRAFT	08/28/92	N/A
SOS-100	RI/FS BUYERS OPERATING AGREEMENT (BOA) STATEMENT OF WORK: ERMIC	09/21/92	N/A
SOS-101	EMO ARID SITE INTEGRATED DEMONSTRATION TECHNOLOGY TRANSFER WORKSHOP	07/09/91	N/A

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-102	DRILLING PLANNING: 200-BP-1 REMEDIAL INVESTIGATION/ FEASIBILITY STUDY: TASK 4 STUDY	03/16/90	N/A
SOS-103	WESTINGHOUSE HANFORD COMPANY ORGANIZATION CHARTS AND CHARTERS	04/28/92	WHC-CM-1-2
SOS-104	OSM INTERFACES	09/23/92	N/A
SOS-105	PROCUREMENT DIVISION FY 1992 GOALS AND MEASUREMENT STANDARDS	11/27/91	N/A
SOS-106	ORGANIZATIONS OF DOE & CONTRACTOR TO DELIVER WORK	07/06/92	N/A
SOS-107	SLOW CLEANUP FRUSTRATES HANFORD WORKERS	09/24/92	N/A
SOS-108	INTRODUCTION - THE HANFORD SITE SERVICES HANDBOOK (HSH), ISSUED AS PART OF RL 1400.1A, IDENTIFIES THE CONTRACTOR ORGANIZATION DESIGNATED AS THE .....	08/31/92	N/A
SOS-109	CONTAINED-IN POLICY - THE EPA ESTABLISHED THE "CONTAINED-IN" POLICY FOR LISTED WASTE CONSTITUENTS IN ENVIRONMENTAL MEDIA. THIS POLICY STATES THE.....	03/04/92	N/A
SOS-110	2.1 MANAGEMENT STRUCTURE AND PROCESSES	09/23/92	N/A
SOS-111	PARTICIPANTS FOR THE HANFORD SCHEDULE OPTIMIZATION STUDY	09/23/92	N/A

SCHEDULE OPTIMIZATION STUDY

DOCUMENT NUMBER	TITLE	DOCUMENT DATE	PNL NUMBER
SOS-112	EMO SCHEDULE OPTIMIZATION STUDY - HANFORD RI/FS PROGRAM VOLUME 1 OF 2	08/31/92	AD-902A
SOS-113	NUCLEAR SAFETY ANALYSIS REPORTS	04/30/92	DOE 5480.23
SOS-114	DOE-HQ EM INTERIM GUIDANCE ON SAFETY ANALYSIS REPORT (SAR)	06/19/92	9204192B
SOS-115	DOE SAFETY ANALYSIS REPORT HAZARD CATEGORIZATION GUIDANCE DOCUMENT	07/30/92	DOE-STD-1013-92
SOS-116	A PROPOSED DATA QUALITY STRATEGY FOR HANFORD SITE CHARACTERIZATION	01/23/90	WHC-EN-AP-023

## **Appendix B**

### **Description of SOS Team Participants**

## SOS Team Biosketches

### ANDERSON, GARY M.

**Position:** Manager of Feasability and Treatability Studies, EG&G Rocky Flats.

**Specialties and Interests:** Has 20 years of experience in engineering consulting in the private sector before joining EG&G Rocky Flats 2 1/2 years ago. Accomplishments before joining EG&G, Rocky Flats include: conceptual and final design of treatment facilities for industrial, commercial and municipal water and wastes; FS and remedial design at NPL sites. Currently the manager at EG&G Rocky Flats, of a technical resource group supporting 12 OU managers that provides services in field operations, geologic interpretations, and risk management (including, HHRAs, ARARs) FSs and interim remedial actions (similar to expedited response actions).

**Education:** M.S. Civil Engineering; B.S. Mechanical Engineering

**Awards/Certifications:** P.E.: North Carolina, Colorado, Wyoming

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### BECKER, LARRY D.

**Position:** Chemist, U. S. Army Corps of Engineers.

**Specialties and Interests:** Organic analytical chemistry and quality assurance methods expert for USACE's hazardous, toxic, and radioactive waste Mandatory Center of Expertise. Responsible for conducting public and private sector laboratory audits for seven division laboratories and over 250 commercial facilities. Uses broad knowledge of military/civilian programs to serve as liaison between USACE HTRW MCS and US Army, U.S. Air Force, U.S. EPA and U.S. Geological Survey.

**Career Highlights:** Assignment of ever-increasing responsibility in USACE National Laboratories; USACE Regional Laboratories and USACE HTRW District and Division programs.

**Education:** M.S.B.A.; B.S.

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## BOTTOMLEY, LUCY

**Position:** Supervisor, U. S. Naval Air Warfare Center.

**Specialties and Interest:** Environmental engineering; program management; hazardous materials; underground fuel oil spills; contaminated ground water.

**Career Highlights:** Twelve years as supervisor of the environmental engineering branch. Instrumental in the Navy's first pump and treat under CERCLA. The past few years have been spent on the Navy's IR program.

**Education:** B.S. Mechanical Engineering; Professional Engineer.

**Awards/Certifications:** Secretary of the Navy Environmental Protection award 1980.  
Naval air engineering center's first Superior Achievement Award.  
Women of the Year Award 1985.  
Secretary of the Navy Environmental Protection Award 1982.  
Navy Environmental Engineer of the Year 1991.

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## CAPSHAW, HAROLD

**Position:** Chief, Air Training Command (Air Force) Section, U. S. Army Corps of Engineers.

**Specialties and Interests:** Management of IRP Activities, Unit Operations related to IRP cleanup.

**Career Highlights:** Broad experience in technical management. Three years in management of HTW projects.

**Education:** Professional Degree-Petroleum Refining Engineering.

**Awards/Certifications:** Meritorious Civilian Service Award.  
Commander's Award for Civilian Service (2).

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## GRAVEN, LTC HANS

**Position:** Army Liaison Office to HQ, EPA, U. S. Department of Army.

**Specialties and Interests:** Environmental engineering and program management, public health and preventive medicine to include: environmental restoration; hazardous and solid waste management; environmental policy development and implementation; preventive medicine and water quality management and distribution during natural disasters and contingency operations.

**Career Highlights:** Twenty-two years of environmental engineering, preventive medicine and program management experience with the Department of the Army. Currently serving as Army liaison officer to HQ, EPA and coordinator for EPA/DoD/DOE initiative to identify and resolve bottlenecks to the implementation of environmental programs. Previously served as Deputy Chief, U.S. Army Environmental Office.

**Education:** M.S. Environmental Engineering; B.S. Civil Engineering.

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**GRENKO, MICHAEL**

**Position:** Chief Environmental Management, McCord AFB, U. S. Air Force, Environmental Management (Civil Service).

**Specialties and Interests:** Biological sciences; environmental quality engineering; waste minimization; economical waste management and disposal; risk management.

**Career Highlights:** Fourteen years in environmental management (1978-now). Assignments: Environmental Coordinator, Elmendorf AFB, Alaska; (1978-1986); Chief Environmental Management, McCord AFB, WA (1986-now).

**Education:** M.S. Environmental Quality Engineering; M.F. Forest Management; B.S. Forest Management.

---

**HARMON, MARY**

**Position:** Branch Chief for Remedial Actions, EM442, DOE Headquarters.

**Specialties and Interests:** RCRA and CERCLA processes.

**Career Highlights:** Responsible for semiconductor manufacturing plant and groundwater cleanup.

**Education:** M.S. Engineering Administration; B.S. Chemical Engineering.

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**HIRSH, STEVEN R.**

**Position:** EPA Remedial Project Director, U.S. EPA.

**Specialties and Interests:** Accelerating the CERCLA process at federal facilities; application of total quality (management) to clean-up activities; CERCLA, RI/FS, RD/RA and removal activities at large DoD facilities.

**Career Highlights:** Responsibilities include NPDES permit program enforcement, CERCLA emergency response, federal facilities coordination. CERCLA Federal Facilities Remedial Project Manager. Developed strategies for and conducted oversight of environmental remediation at large DoD facilities.

**Education:** B.S. Environmental Technology.

**Awards/Certifications:** EPA Bronze Medal (Commendable Service) 1990.  
EPA Gold Medal (Exceptional Service) 1991.

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## MORGAN, NICHOLAS

**Position:** Strategic Planning Coordinator, Office of Federal Facilities Enforcement, U.S. EPA.

**Specialties and Interest:** Superfund remediation; federal facilities cleanups; U.S. EPA regulations and policies; multi-media compliance; program management; strategic planning.

**Career Highlights:** Ten years of environmental management experience within the Federal government. Assignments have included management of a hazardous materials collection and disposal facility; restoration of abandoned Superfund sites; negotiation of federal facility cleanup agreements; and development of EPA regulations. Currently, developing a new paradigm for federal environmental restoration activities through an EPA federal advisory committee.

**Education:** B.S. Civil and Environmental Engineering.

**Awards:** EPA Bronze Medal; U.S. German Marshall Fund Fellowship.

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## ROGERS, STEVEN

**Position:** Assistant Chief of Environmental Defense, U.S. Dept. of Justice.

**Specialties and Interest:** Environmental law.

**Career Highlights:** Private Litigation and Corporate Legal Practice 1978-1986; U.S. DOJ 1986-Present. Current position: Assistant Chief, Environmental Defense Section, Environment Division.

**Education:** J.D. Law; M.P.A.

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## RUSH, SUE

**Position:** Manager, Idaho Area Office, Chem-Nuclear Geotech.

**Specialties and Interests:** Geology; hydrogeology; environmental program management; CERCLA, RCRA, NEPA, regulator interface etc.; DOE Orders, ER strategic planning; ER program management.

**Career Highlights:** Has 12 years of specific ER experience. Responsible for first EPA-led CERCLA construction start in EPA Region VII (program manager). Key contributor to development and negotiation of the INEL FFA/CO action plan.

**Education:** M.S. Geology; B.S. Earth Science (Geology).

**Office Held:** Chairwoman, Grand Junction, CO, City Planning Commission 1983-1987.

**Awards/Certifications:** Professional Geologist - Georgia, South Carolina.

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## SPATARELLA, JAMES J.

**Position:** Director, Environmental Evaluation Division, Atlantic Region, Versar, Inc.

**Specialties and Interest:** Remedial action implementation; engineering modeling; Federal and State environmental requirements; program management.

**Career Highlights:** Fifteen years of environmental program management and technical experience in the areas of remedial action implementation for uncontrolled hazardous waste sites; engineering modeling and analysis of industrial and municipal wastewater discharges; fate and transport modeling of toxic chemicals; environmental policy analysis; cost benefit and cost-effectiveness analysis; and design and construction oversight. Extensive knowledge of federal and state environmental requirements relating to hazardous materials, wastes, and facility operations. Environmental program management experience includes 5 years with the Environmental Protection Agency and 3 years with the Naval Facilities Engineering Command.

**Education:** M.S. Civil (Water Quality) Engineering; B.S. Chemical Engineering.

**Awards/Certifications:** Certified Master Level Hazardous Material Manager, Institute of Hazardous Materials Management.

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## SWENSEN, RAYMOND

**Position:** Air Force Regional Counsel for Western US, U. S. Air Force Regional Counsel.

**Specialties and Interests:** Environmental law; criminal law; labor law; international law; aviation law.

**Career Highlights:** Air Force Regional Counsel for Western U.S. 1989-Present; Chief Environmental Law, Strategic Air Command 1984-1989; Negotiated 15 CERCLA Federal Facility agreements. Chief, Military Justice, 5th Air Force, Tokyo, Japan 1984-1989.

**Education:** LL.M. Environmental Law; J.D. Law; B.A. Mathematics.

**Office Held:** Adjunct Professor, St. Mary's College, Moraga, California; Instructor, U.C. Berkeley Extension, Berkeley, CA; Instructor, Air Force Environmental Law Course, Maxwell, AFB, Alabama.

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**WAGNER, JOHN**

**Position:** Chief, DOE Environmental Support Section, U.S. Army Corps of Engineers, Tulsa District.

**Specialties:** Geotechnical/environmental landfill design and construction, environmental investigations.

**Career Highlights:** Twenty-one years with COE. Seven years as geotechnical design engineer (earth dams); three years as construction engineer (earth dams); one year as geotechnical staff engineer (Middle East Division); 10 years as supervisory civil/environmental engineer.

**Education:** M.S. Civil Engineering; B.S. Civil Engineering.

**Awards/Certifications:** Professional Engineer.

---

**WHITE, LAWRENCE A.**

**Position:** Executive Vice President, Versar, Inc.

**Specialties and Interest:** Environmental consulting; engineering and information management; business and program development; program management.

**Career Highlights:** More than 24 years of experience on major environmental, waste management, environmental restoration, and water resources development projects for Government and industry. Managed multi-disciplinary professional and multiple-task projects as Project Engineer, Project Manager, Department Manager, and as a senior executive in Government and environmental services. Demonstrated competence in the following fields: environmental consulting, engineering, and information management; business and program development; management of large programs in Government and industry; investigation, characterization, and environmental restoration of uncontrolled hazardous waste sites; siting, design, and construction of facilities for the storage, treatment, and disposal of low-level and high-level radioactive wastes; environmental assessments and impact statements; risk management; and water resources management projects.

**Education:** M.E.A. Engineering Administration; M.S.E. Geotechnical Engineering; B.S.C.E. Civil Engineering.

**Certification:** Registered Professional Engineer.

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**WOOD, DAVID**

**Position:** Executive Secretary, U. S. Air Force Radioisotope Committee.

**Specialties and Interests:** Radiation protection, industrial hygiene and environmental protection to include: development of radiation protection policies and programs; contingency plans and emergency response procedures; industrial hygiene programs for aircraft/missile systems; environmental monitoring and process control/work management and treatment.

**Career Highlights:** Twenty-six years as Air Force Bioenvironmental Engineer/Health physicist with the last 16 at headquarters-level assignments addressing Air Force-wide policies in above specialty areas.

**Education:** M.S. Radiation Biology; BCHE; Numerous short courses in industrial hygiene, radiation protection, industrial safety and environmental monitoring. Professional military courses.

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