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The RPM Primer

An Introductory Guide to the Role and Responsibilities of the Superfund Remedial Project Manager (RPM)

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NOTICE

This document has been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Preface

The purpose of this document is to familiarize new **Remedial Project Mangers (RPMs)** with their roles and responsibilities in the Superfund remedial program. It also can serve as an orientation to the Superfund remedial program for EPA program staff, and the public. It is not intended to be a training document. EPA has developed other materials and conducts courses specifically for training purposes. (See Attachment A for a selected course listing.)

The Acme Waste Disposal Co. site, the people, and the events described in this document are hypothetical and were created to depict the cleanup of an abandoned hazardous waste site. This example illustrates typical Superfund remedial response activities and was written to demonstrate specifically the important role of the RP in managing site cleanup and in coordinating the various participants. Key terminology and concepts appear in bold face.

For simplicity, the example depicted in the Primer is a Fund-financed, Federal-lead project from start to finish. In reality, a project may switch from Fund- to Enforcement-lead, and from Federal- to State-lead during the remedial process, thereby altering roles of the participants. In addition, the example portrays the RPMs involvement with only one site, when an RPM actually may be involved with several concurrent projects.

References for detailed information on the various aspects of the Superfund program are provided in an annotated bibliography (Attachment B). It is important to note that these documents are frequently updated.

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ACRONYMS

A/OSWER
Assistant Administrator for the Office of Solid Waste and Emergency Response

A/E
Architectural/Engineering

ARARs
Applicable or Relevant and Appropriate Requirements

ATSDR
Agency for Toxic Substances and Disease Registry

CERCLA
Comprehensive Environmental Response, Compensation, and Liability Act of 1980

CLP
Contract Laboratory Program

CRP
Community Relations Plan

DQOs
Data Quality Objectives

EE/CA
Engineering Evaluation/Cost Analysis

EPA
U.S. Environmental Protection Agency

ERA
Expedited Response Action

ERCS
Emergency Response Cleanup Services

ESD
Environmental Services Division

FEMA
Federal Emergency Management Agency

FIT
Field Investigation Team

HRS
Hazard Ranking System

HSWA
Hazardous and Solid Waste Amendments

IAG
Interagency Agreement

IFB
Invitation for Bid

NCP
National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300)

NEPA
National Environmental Policy Act

NPDES
National Pollution Discharge Elimination System

NPL
National Priorities List

O&M
Operation and Maintenance

ORC
Office of Regional Counsel

OSC
On-Scene Coordinator

PA/SI
Preliminary Assessment / Site Inspection

PR
Procurement Request

PRPs
Potentially Responsible Parties

QAO
Quality Assurance Officer

RA
Remedial Action

RCRA
Resource Conservation and Recovery Act

RD
Remedial Design

RI/FS
Remedial Investigation / Feasibility Study

ROD
Record of Decision

RPM
Remedial Project Manager

RPO
Regional Project Officer

RSCRC
Regional Superfund Community Relations Coordinator

SARA
Superfund Amendments and Reauthorization Act of 1986

SCAP
Superfund Comprehensive Accomplishments Plan

SSC
Superfund State Contract

TAC
Technical Advisory Committee

TAT
Technical Assistance Team

USGS
U.S. Geological Survey

VOCs
Volatile Organic Compounds

Site Background

The Acme Waste Disposal Co. site received both municipal and industrial wastes for 15 years until the owners declared bankruptcy 5 years ago and abandoned the facility. Two years ago, a fishkill in nearby Lazy Creek prompted State and local health officials to investigate. They found partially covered, corroded, and leaking drums at the site, along with eroded berms and trails of discolored soil in areas around two unlined waste ponds on the 55-acre property. Testing of 12 nearby private water wells revealed low levels of several suspected carcinogens.

The U.S. Environmental Protection Agency (EPA) sent an EPA On-Scene Coordinator (OSC), assisted by the Technical Assistance Team (TAT) contractor, to inspect the site. Based on the results, EPA mobilized the Emergency Response Cleanup Services (ERCS) contractor to conduct a **removal action** that included removing leaking drums at the surface, stabilizing berms around two waste ponds, erecting a security fence around the property, and supplying the 12 affected residences with bottled drinking water.

Following the removal action, EPA assigned the Field Investigation Team (FIT) contractor to perform a preliminary assessment and site inspection (PA/SI) to evaluate the need for further long-term response. The PA/SI results were used to assign the site a numerical ranking based on potential hazard, using the Hazard Ranking System (HRS). EPA then placed the site on the National Priorities List (NPL), making it eligible for Fund-financed remedial response actions. Acting in accord with community concerns and Regional priorities, EPA budgeted funds for initiating a **remedial response project** in October, the beginning of the fiscal year.

Your Assignment

It's now August. You have just begun work with the Waste Management Division in your Region. You have been on the job 1 week when things get really busy. You are called into your Section Chief's office, where she tells you, "I'm assigning you to the Acme site. You will be the RPM and it's your responsibility to manage the site cleanup. Funds are budgeted on the coming year's SCAP for an RI/FS. Pull the site file. Find out what you can from the OSC. Also, we will need a CRP ASAP."

It's a great opportunity for you...and a big responsibility. There's much to become familiar with—tasks, tools, terminology. Fortunately, you have some valuable resources available to help you in completing this important assignment.

Background of the Superfund Program

There are many inactive, abandoned sites throughout the nation, like the Acme site, where hazardous wastes have been inadequately or carelessly disposed of in the past. These sites are releasing, or threaten to release, hazardous substances that endanger human health and the environment. The Superfund program was created to address the potentially hazardous conditions at these sites.

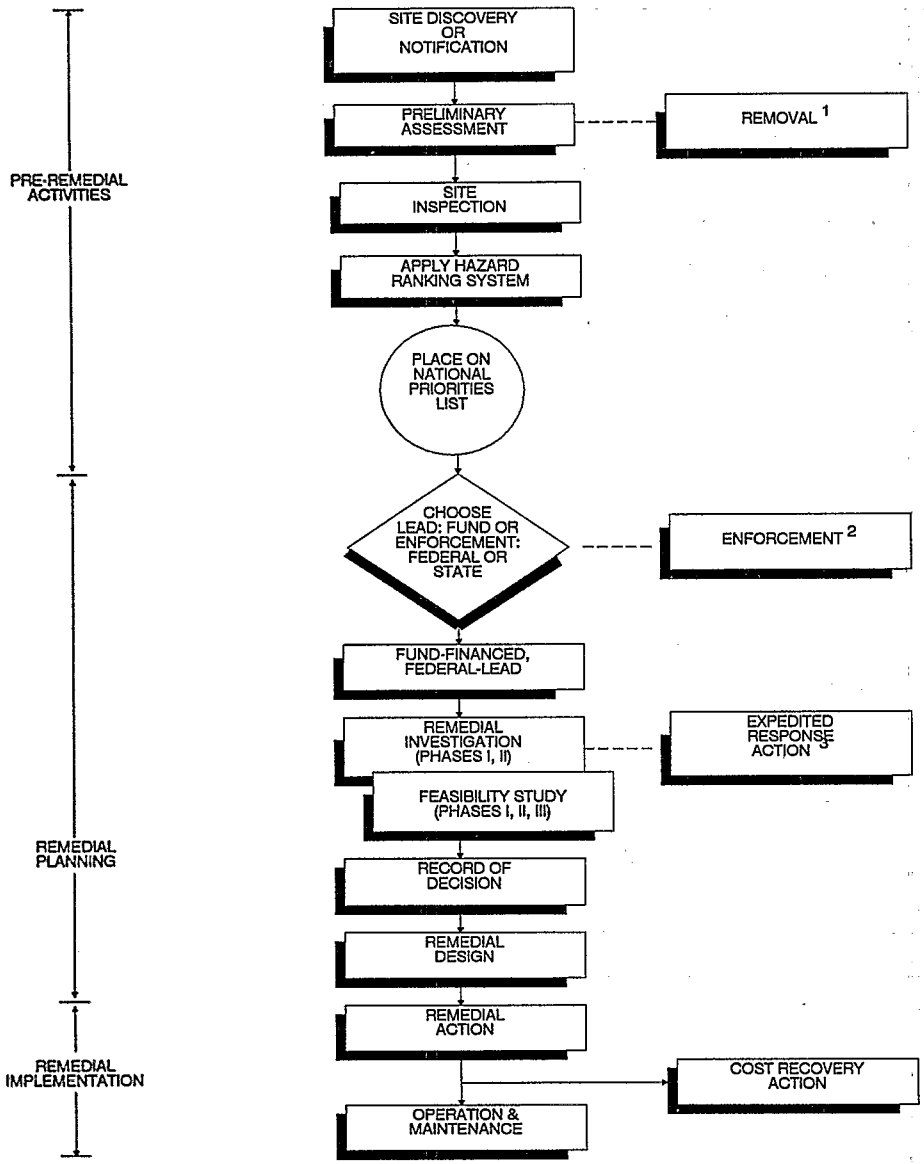
The original **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, Public Law 96-510, was enacted in December 1980. Under this law, the Federal Government was given the authority to clean up hazardous waste sites and to respond to spills of hazardous substances with money from the Hazardous Substances Response Trust Fund (commonly called the "Fund"). In addition, the Federal government was given the authority to compel those responsible for the hazardous waste problem, through judicial action, if necessary, to conduct or finance the cleanup. The **Superfund Amendments and Reauthorization Act (SARA)**, enacted in October 1986, strengthened the authorities under CERCLA for responding to hazardous waste sites and significantly increased the size of the Fund. EPA is responsible for managing the Superfund program.

The guidelines and procedures for implementing CERCLA (as amended by SARA) are delineated in a regulation called the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**, 40 CFR Part 300. The NCP provides factors to consider in determining the extent of cleanup that is appropriate for a particular site. The NCP also describes the process for conducting a remedial response (Exhibit 1).

The Remedial Response Process

Once a site is proposed for or placed on the NPL it is eligible for a Fund-financed remedial response. Remedial response activities are aimed at implementing long-term permanent remedies at NPL sites. Initial site planning defines the roles and

Exhibit 1
FUND-FINANCED, FEDERAL-LEAD REMEDIAL RESPONSE PROCESS



[1]Removals may occur at any point in the remedial process. If the lead agency determines that there is a threat to human health or the environment, the lead agency may take a removal action to abate, minimize, stabilize, mitigate, or eliminate the release or threat of release.

[2]Where the responsible parties are known, efforts are made, to the extent practicable, to have them perform the response actions. Enforcement negotiations commonly occur just prior to the RI/FS and again just prior to the RD/RA.

[3]Expedited Response Action (ERAs) are taken at NPL sites by the remedial program using removal program authorities. ERAs must comply with the policies, procedures, and regulations of the removal program. Like removals, ERAs may occur at any point during the remedial process.

responsibilities of the response program participants and outlines a course of action. EPA, the State, contractors, other Federal agencies, and the public, including parties responsible for creating or contributing to the problem, all play a role in carrying out remedial response activities. EPA, the State, or the responsible parties may be designated as the lead organization for planning and conducting remedial response activities.

Following initial planning, the lead organization conducts a **remedial investigation / feasibility study (RI/FS)**. For the Acme site, EPA is the lead organization. The RI focuses on collecting data and characterizing the site in order to assess threats or potential threats to human health and the environment posed by the site. The FS provides a detailed evaluation of remedial alternatives using environmental, engineering, and economic factors in accordance with the NCP and CERCLA. The RI and FS are conducted as interdependent phases so that the data gathered during the RI support the evaluation needs of the FS. The phased RI/FS results in a recommendation and selection of remedial action, which EPA documents in a **Record of Decision (ROD)**. Together, the RI/FS and ROD process typically takes 22 months to complete.

A **remedial design (RD)** is the next step. During RD, detailed engineering plans, drawings, and specifications are prepared. These are used to solicit competitive bids to implement the **remedial action (RA)**. Site cleanup is conducted during the RA, as specified in the engineering design. This may involve treatment, disposal, and/or containment of the hazardous waste and cleanup, restoration, or replacement of the affected resources. The final step in the remedial process is operation and maintenance (O&M), designed to ensure continued functioning and effectiveness of the remedial response action. The total remedial response process may take 4 to 6 years, or more, to complete and may cost millions of dollars.

Removals

Removals are another type of response action that may be conducted under Superfund. Removals are conducted to reduce or stop hazardous substance releases or potential releases to the environment. In general, removal actions require less detail in planning than remedial actions because the emphasis is on finding a relatively rapid and short-term solution, consistent with long-term remedial action, to a problem having some degree of urgency. Removals may be time critical (response needs to be initiated within 6 months of discovery) or non-time critical, depending on the urgency of the situation.

CERCLA sets cost and duration limits on removal actions; they may not exceed $2 million or last more than 1 year. EPA can waive these limitations, however, under certain situations and with appropriate approval.

EPA On-Scene Coordinators (OSCs) direct and coordinate Fund-financed, Federal-lead removal activities. In some cases, a U.S. Coast Guard representative may serve as the OSC. OSCs receive support from governmental entities—for example, EPA's Environmental Response Team—and from EPA contractors, such as the Emergency Response Cleanup Services (ERCS) and the Technical Assistance Team (TAT). At sites, where both removal and remedial activities are undertaken, the OSC and RPM must coordinate closely. The *Superfund Removal Procedures* (OSWER Directive 9360.0-3A) provides guidance on conducting removal activities.

Enforcement and Legal Counsel

For all Superfund sites, EPA and the States make significant efforts to identify **potentially responsible parties (PRPs)** and to compel them, through legal action, if necessary, to undertake the required cleanup activities. If EPA cannot compel PRPs to undertake the necessary response actions, EPA will proceed with the cleanup and will attempt to recover the costs later. Thus, maintaining complete and detailed records of site activities is essential for the purposes of enforcement activities.

During a Superfund remedial response, legal questions often arise. EPA's Office of General Counsel and Office of Regional Counsel provide legal interpretation and direction to program participants. The RPM is encouraged to coordinate closely with the Office of Regional Counsel, particularly in the identification of **applicable or relevant and appropriate requirements (ARARs)** and in determining applicability of State cleanup standards.

Community Relations

Community relations activities also are an important part of the Superfund program. Conducted from the beginning of all Superfund responses, effective community relations encourages two-way communication between the government agencies involved and the local residents on site-related issues. The overall objectives of Superfund community relations activities are to:

- Gather information about the local community to identify how citizens would like to be involved in the Superfund process
- Give citizens the opportunity to comment on and to provide input to technical response decisions
- Inform the public of planned or ongoing actions
- Focus and resolve conflict

These objectives guide the planning and implementation of community relations efforts in each Superfund response project.

Each Regional office has a trained Regional Superfund Community Relations Coordinator (RSCRC) to work with the RPM to meet these objectives at each site. *Community Relations in Superfund: A Handbook* (OSWER Directive 9230.0-3A) provides additional guidance on the community relations program.

Other Program Participants

Many organizations assist EPA in responding to the nation's hazardous waste problems. For example, States are encouraged to take responsibility for planning and managing site cleanups under agreement with the Federal Government (State-lead projects). In remedial actions for which the Federal Government has lead responsibility, the U.S. Army Corps of Engineers often manages the remedial design and implementation for EPA. The Federal Emergency Management Agency (FEMA) assists EPA if a Superfund response involves the relocation of residents. Under CERCLA, the Agency for Toxic Substances and Disease Registry (ATSDR) conducts health assessments at Superfund sites to supplement EPA's public health evaluations. The Coast Guard assists with hazardous waste spills that occur in coastal areas. EPA also can call on other Federal agencies (e.g., Department of Interior, National Oceanic and Atmospheric Administration) to provide support, as appropriate.

Project Management Concepts

The RPM, acting on EPA's behalf, manages remedial activities. This individual is accountable for the technical quality, schedule, and cost of the work. As in most real management situations, however, the RPM does not have the authority or control over external factors to "require" that the project proceed according to plan. Instead, the RPM must develop a good management approach and draw on interpersonal skills to facilitate needed coordination and communication among the organizations and individuals on the project. Forming and leading a project team are critical to the success of Superfund projects.

The RPM must bring together individuals, organizations, and resources with a well formulated plan to accomplish effectively and efficiently a set of objectives. The RPM ensures success by:
(1) **planning, monitoring**, and **controlling** the project
(2) **directing, coordinating**, and **communicating** with project participants.

Soon after being assigned to a site, the RPM must **plan** the project by:

- Establishing scope—determining project objectives and identifying discrete tasks needed to achieve them.
- Scheduling—identifying time frames for each task and the total project. The RPM may use project scheduling systems such as, milestone charts, bar charts, and critical path method (CPM) diagrams to aid in scheduling.
- Budgeting—assigning costs to individual tasks and the total project as outlined in the scope and schedule.
  Organizing—arranging personnel and other resources to achieve the project objectives.

Monitoring and **controlling** involves observing technical performance and taking corrective actions, as needed. The RPM's primary method for monitoring activities is by comparing actual and planned performance. The RPM should use progress review meetings in conjunction with regular reports on project status. In addition, the RPM should conduct on-site field inspections during key field activities. Variances from the

planned project can be avoided or controlled by taking one or more of the following actions:

- Anticipatory Actions—modify external factors so that project variances do not occur.
- Work-Around Strategies—respond to an existing negative variance to accommodate changes, but with no impact to overall project plan.
- Plan Modifications—accommodate variances by altering project, schedule, or scope.

To control and manage a project effectively, the RPM must develop strong **leadership, communication, and coordination** skills. The RPM must **direct** EPA contractors in the technical and administrative aspects of the remedial response. For example, the RPM must ensure that environmental regulations and policies affecting a particular site are understood by the contractor as well as by other program participants.

To avoid project delays, the RPM must **coordinate** project activities with programs, organizations, and individuals both internal and external to EPA, including for example:

- State and local officials.
- The affected community.
- Programs providing services to the project (e.g., analytical data reviews).
- Offices responsible for other environmental laws (e.g., the Resource Conservation and Recovery Act).
- Organizations external to EPA (e.g., ATSDR).

Finally, regular **communication** with fellow RPMs and supervisors is an important activity. These individuals can often suggest innovative solutions to complex problems previously encountered at other sites.

For additional information on program management concepts, the reader should consult the *Superfund Federal-lead Remedial Project Management Handbook* (OSWER Directive 9355.1-1), commonly referred to as the RPM Handbook. The RPM Handbook also provides a list of project management references.

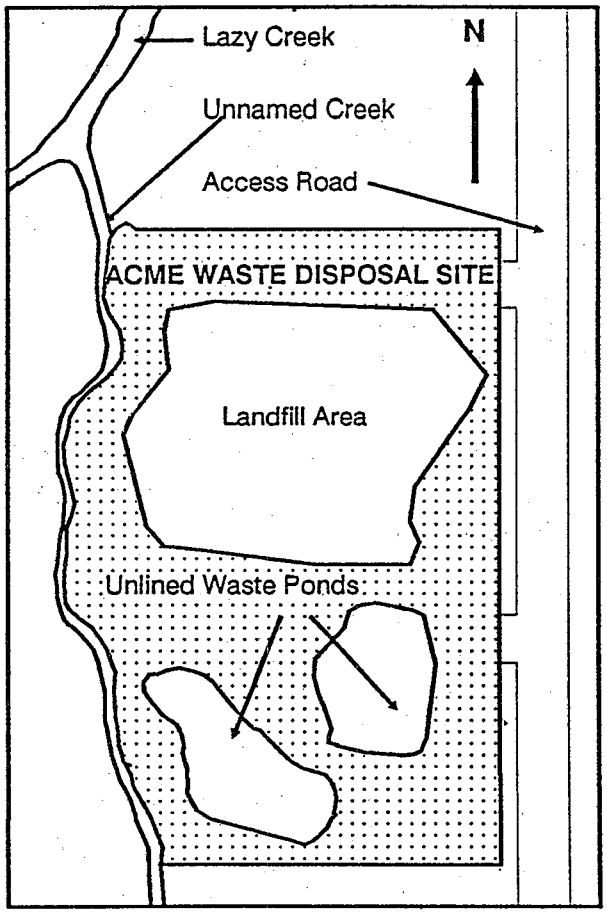
Project Kickoff

After a month with the program you are feeling a bit more knowledgeable. You have obtained valuable information about the Superfund program (see Attachment B for an annotated bibliography) and have established a file on the Acme site. Several basic observations about the site are apparent:

- Two unlined waste ponds on the site contain unspecified waste materials.
- The site contains a 30-acre landfill.
- Volatile organic compounds (VOCs), probably from the site, have been detected in local drinking water wells.

Exhibit 2 is a map of the Acme site.

Exhibit 2
MAP OF ACME WASTE DISPOSAL CO. SITE



J.C. Michaels, a veteran RPM whom you have identified as a potential "mentor", suggests that you assign a remedial response contractor to the project as soon as possible. He explains that the contractor will provide valuable assistance in conducting

initial planning for the remedial response project. J.C. also suggests that you schedule a project kickoff meeting.

With a somewhat clearer picture of what needs to be done, you contact the Regional Project Officer (RPO) responsible for the remedial contract serving your Region. The RPO explains how to obtain assistance from the remedial contractor. He also supplies you with a copy of *Work Assignment Procedures for Remedial Contracts* (OSWER Directive 9242.3-3A).

EPA selects remedial response contractors for their expertise in conducting hazardous waste site engineering studies and design. The contractor is responsible for planning and conducting the RI/FS and is accountable to EPA for its contracted role.

As the RPM, you have other responsibilities. You must oversee the remedial response, act on EPA's behalf in the project, and direct the contractor to keep the project on course and within schedule and budget. You monitor the contractor's progress in achieving project milestones and coordinate with the contractor to develop preventive or corrective actions in order to keep work on target as problems arise.

Your first step in getting the contractor underway is to develop a Work Assignment Package, which consists of:

- A Work Assignment Form
- An interim Statement of Work
- A complete Statement of Work for the total work assignment, and
- A Procurement Request (PR) (EPA Form 1900-8)

You develop the Work Assignment Package by following an example package supplied by the RPO. You coordinate with the RPO to ensure that the package is complete and accurate. You also verify that sufficient funding is available on the **Superfund Comprehensive Accomplishments Plan (SCAP).***

* The SCAP is the official document from the Assistant Administrator for the Office of Solid Waste and Emergency Response (AA/OSWER) identifies funding needs for proposed Superfund activities. Activities must be on the approved SCAP to receive funding. In this example, the Acme Site was on the SCAP prior to the RPMs involvement.

After completing the Work Assignment Package, you forward it to the RPO for approval. The RPO transmits the completed package to the Contracting Officer, with a copy for the Project Officer. The Contracting Officer then issues a work assignment to the contractor, who must prepare a Work Plan Memorandum for your approval within 10 days. This is a 5-10 page plan for the interim tasks to be completed, the technical level-of-effort and schedule, and the name of the proposed Site Manager. In this case, interim tasks would include a project kickoff meeting, an initial site visit, RI scoping, development of general response objectives, site survey / topographic mapping, subcontracting, and preparation of a Site Management Plan and a final Work Plan. The expenditure limit indicated on the Work Assignment Form is based on the tasks in the interim Statement of Work.

With these administrative tasks completed, you arrange a project kickoff meeting. This meeting will provide an opportunity to introduce the key participants for the project and define their various roles and responsibilities. You invite the following participants:

- Contractor's Site Manager
- State Project Officer
- EPA's OSC for the completed removal effort
- EPA's Regional enforcement program representative
- EPA's Office of Regional Counsel (ORC) representative
- EPA's Regional Superfund Community Relations Coordinator (RSCRC)

You prepare and distribute informational packages and an agenda prior to the meeting to ensure that all participants are prepared. You also speak with all invited participants to confirm their receipt of the information and agenda, and to identify specific subjects that they should be prepared to discuss.

The meeting runs smoothly. You begin by introducing everyone and presenting a schedule for initiating the project. The schedule includes an initial site visit (for which the contractor is already developing an interim Health and Safety Plan), development of an overall Site Management Plan, and development of the contractor Work Plan. The Site Management Plan will serve as an in-house planning tool that lays out a schedule of site activities from start to finish—from field investigation and alternatives analysis through implementation of

the remedy and eventual O&M. The plan incorporates activities, schedules, and resources and is used in managing site activities.

Next, you announce that you will establish a **Technical Advisory Committee (TAC)** for the Acme site. The TAC will be composed of the individuals present at the meeting, plus technical specialists and other interested parties who will meet at key points in the remedial process to review and discuss site issues and progress. You welcome suggestions for other TAC members from the group.

As the meeting proceeds, each participant offers his or her thoughts on the project:

- The OSC describes removal actions conducted at the Acme site and supplies you with copies of important documents from the site file, including the final Removal Summary Report prepared by the TAT contractor.
- The RSCRC provides a brief history of community relations activities conducted during the removal action and identifies any significant community concerns associated with the site. A site-specific **Community Relations Plan (CRP)** was developed, as the removal lasted more than 120 days. Also, during the removal action an information repository was established at the local library and will continue to serve as a repository for the **Administrative Record** for the Acme site*. The RSCRC suggests that it would be wise to have a meeting with community leaders and the local press before the initial site visit is conducted. At this meeting, the RPM can be introduced to community leaders and can discuss the initiation of remedial activities at the site. The RSCRC notes that communities are sometimes confused when the remedial process begins, believing that EPA's prior removal action was intended to eliminate all problems associated with the site. Also, communities frequently do not recognize the extensive study that is required before actual cleanup work begins.
- The Regional enforcement program and ORC representatives discuss the enforcement status of the site. Acme Waste Disposal Co. declared bankruptcy 5 years ago; however, EPA is pursuing enforcement actions against other potentially responsible parties (PRPs) who allegedly wastes to Acme for disposal. These parties have declined to perform the RI/FS. The current enforcement strategy, therefore, is to negotiate an agreement with PRPs to conduct the RD/RA. If such an agreement cannot be achieved within the mandated period of time**, EPA will proceed with the cleanup and attempt to recover costs after completion.
- The State Project Officer expresses the State's willingness to cooperate in the cleanup effort and desire to participate in technical meetings, technical document reviews, and remedy selection. Because they have been involved with the site since it was identified 2 years ago, the State adds a historical perspective to the project. The State Project Officer notes that the **Intergovernmental Review** has taken place and that the State is satisfied with EPA's responses to their concerns. The State also is in the process of identifying any contaminant- or location-specific State ARARs which may apply to the Acme site. In addition, the State Project Officer indicates that the State will be submitting an application to amend its current **Multi-Site Cooperative Agreement** with EPA in order to receive funds for its management assistance activities (e.g., meeting attendance, document reviews) for the Acme site.

Your planning paid off. Not only was the meeting informative to participants and well organized, but you have time at the end of the day to meet with J.C. Michaels and Art Becket, the contractor's Site Manager. The three of you discuss the more technical aspects of the site and the scope of the initial tasks of the phased RI/FS.

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* The Administrative Record contains all information upon which EPA bases the selection of a remedial response (OSWER Directive 9833.3 Administrative Records for Decisions on Selection of CERCLA Response Actions). The record must be availiable to the public at or near the facility, so that the community can participate in its development and have access to important information. Additionally, a duplicate administratiive record must be maintained at EPA's Regional office.

** PRPs have 60 days to respond to EPA's enforcement notice. If EPA receives a "good faith" proposal from the PRPs, the negotiations window may be extended up to 120 days from the date they receive the notice receipt.

Phased RI/FS

A phased RI/FS approach uses the close interdependecy of the RI and FS activities to make the remedial process more efficient. In this approach, RPMs and contractors identify potential remedial approaches and technologies prior to developing sampling strategies so that the RI can focus specifically on the data needs of the FS.

J.C. explains that previous RIs and FSs were planned as two distinct steps with only one major sampling period. During the RI, EPA contractors would analyze numerous soil, air, and water samples. However, the data did not always allow for thorough evaluation and development of remedial alternatives during the FS. In such cases, additional, unscheduled sampling was necessary, requiring added time and expense.

By conducting the RI/FS in phases, EPA now incorporates schedule- and activity-related decision points into the RI/FS process. This allows future efforts to be redirected, rescheduled and/or rescoped, as necessary, in response to important new information. During the phased RI/FS, **data quality objectives (DQOs)** are established prior to sampling and analysis, sampling episodes are relatively small in scope, and field screening techniques are used to limit the number of analyses. Mobile laboratories are commonly used for quick analyses. In addition, treatability data are often collected expressly for assessing the feasibility of an alternative. Each phase may take only 2 or 3 months. The types of decisions that must be made at the end of each phase include:

- Is the RI meeting the data requirements of the FS? If not, how will the RI be redirected to provide the data?
- Can the scope and/or schedule of the RI be reduced and still achieve the technical objectives of the RI/FS?
- Have sufficient types and amounts of validated data been generated to terminate the RI and still complete the FS?
- Have the nature and extent of contamination been adequately defined?

The phased approach allows the RPM to exert more control over the project. In a phased RI/FS, funds are approved incrementally (i.e., through the expenditure limit on the Work Assignment Form) to correspond with resource needs for each phase of the project. Because the decision points are integrated into the planning for the phased approach, the budget and schedule for the total RI/FS are likely to change. The phased RI/FS approach should lead to savings in both time and money.

Initial Site Visit and Site Planning

The initial site visit will provide a good opportunity to observe the integrity of the waste pond berms that were stabilized during the removal action. The contractor's Health and Safety Officer informs you that protective boots are the only precautionary measure necessary for this initial site visit assuming you remain at least 15 feet from the waste ponds. If you want to inspect the ponds more closely, a self-contained breathing apparatus is required.

The local residents should not be surprised to see you at the site. You and Art met with community leaders last week, and the local newspaper ran an article describing EPA's field investigation plans.

The first stop on your site tour is the waste ponds. The berms seem to be holding up well. There are no signs of breaches or erosion. The pond levels, however, are quite elevated from the recent rains.

At the next stop, where the unnamed creek borders the site on the west, you make a new and important observation. There are stained strata and stressed vegetation in an area along the embankment providing evidence of intermittent seepage of contaminated leachate. Art proposes taking several grab samples along the bank and analyzing them for priority pollutants. Quick turnaround analyses will be needed to allow project scoping activities to proceed on schedule. Depending on the results, another removal action may be warranted to provide short-term control of surface-water contamination.

You move on to the designated landfill area. Using site maps, you identify where the ERCS contractor removed the drums and the visibly contaminated soils. Information from site files indicates that other portions of the landfill received only municipal wastes.

This initial site visit was useful. You and Art are now more familiar with the site layout and with potential problem areas. You can now prepare a

more realistic Site Management Plan. The first step in developing this plan is defining project objectives. The long-term objective, of course, is cleaning up the site. The shorter-term objectives are to:

- Control on-going contamination of the creek
- Define the extent of ground-water contamination
- Define the source of the ground-water contamination
- Assess risk to human health and the environment
- Evaluate alternatives to remedy site problems

To assist in planning response actions, you and Art divide the site cleanup into conceptual "operable units." Operable units help you think of the overall cleanup as discrete efforts that will be undertaken to decrease a release, threat of release, or pathway of exposure. You envision two initial operable units:

- Operable Unit 1—Evaluate source control measures by characterizing the pond wastes and assessing various options for removing the probable source of ground-water and surface-water contamination.
- Operable Unit 2—Characterize ground-water contamination and evaluate remedial alternatives.

Work can proceed on both operable units concurrently.

Based on progress in conceptualizing your approach to needs at the site, you develop an overall Site Management Plan (Exhibit 3), keeping it general, in order to have the larger picture in mind. As work progresses and more information becomes available, you can update and further develop the plan. For example, results from initial field investigations may indicate the need for a removal action to supply affected residents with a permanent uncontaminated drinking water source. Also, short-term relief may need to be provided for the apparent periodic contamination of the unnamed creek from seepage observed in the initial site visit.

Technical Advisory Committee

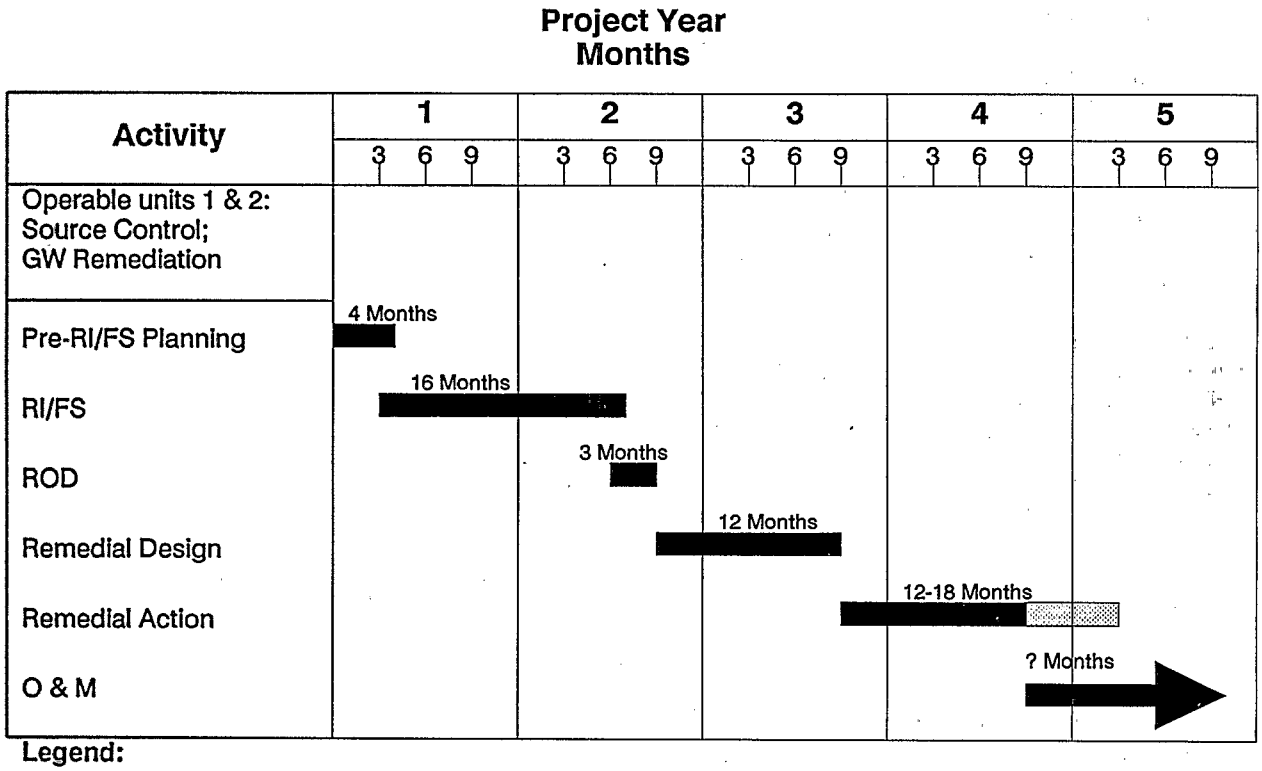
You're now a month into the project, and it's time for the first meeting of the TAC. You never realized how difficult it could be to coordinate everyone's schedule in addition to your own. You did not anticipate being out of the office for 3 days to attend contract administration training, but a slot opened up and your Section Chief selected you to attend. The training was well-timed for your new responsibilities. It gave you a good understanding of the contracting process and your critical role in contract administration, particularly your authority in obligating government resources. However, it also made preparation for the first TAC meeting a little hectic.

The TAC for the Acme site consists of a core group of individuals that includes your Section Chief, the contractor's Site Manager, the enforcement program representative, the RSCRC, the State Project Officer and yourself. The TAC may be supplemented by various specialists and other interested parties whose time and extent of participation will depend on the particular stage of the project and the specific technical expertise required. Present at this first meeting are the core group plus the Regional Quality Assurance Officer (QAO) from the Environmental Services Division (ESD), a U.S. Geological Survey (USGS) representative, and a ground-water specialist from the Region's Water Division. Also on the TAC is a private consultant, hired by the community under an EPA Technical Assistance Grant, who will act as a spokesman for the community and report back on project issues. Invited, but not able to attend the first TAC meeting, were representatives from ATSDR and the Corps. ATSDR did indicate in a letter, however, that the data from the site inspection would be sufficient to develop a preliminary health assessment. ATSDR anticipates no special data requirements beyond those normally generated during an RI. In order to do the final assessment, however, ATSDR will need the RI reports as they become available.

Your Section Chief begins the meeting by reiterating EPA's commitment to achieving site cleanup. She is encouraged to see the appropriate involvement of other programs both inside and outside EPA.

You describe your site visit and your plan to divide the site into two operable units: source control measures aimed at the on-site waste ponds

Exhibit 3
SITE MANAGEMENT PLAN FOR ACME WASTE DISPOSAL CO. SITE



Legend:

GW	–	Ground Water
RI/FS	–	Remedial Investigation / Feasibility Study
ROD	–	Record Of Decision
O&M	–	Operation and Maintenance

and ground-water activities aimed at evaluating and, if necessary, cleaning up the contaminated aquifer.

You also recommend an **Expedited Response Action (ERA)** to stop the threat of surface-water contamination from the seepage area observed at the initial site visit. The grab samples taken at the unnamed creek embankment show elevated levels of heavy metals, including chromium, and other priority pollutants, such as vinyl chloride. You explain that the ERA should focus on preventing seepage from flowing into the unnamed creek and suggest that the 12 affected residents be supplied with a permanent source of drinking water.

To prevent further contamination of the creek, the contractor's Site Manager suggests that the flow be intercepted and diverted away from the creek into a holding area. The collected leachate could then be treated on-site and discharged to the creek. The batch treatment facility also can be used for future ground-water treatability studies. Your Section Chief notes that permits are not required for Superfund response activities involving on-site actions, however, the substantive requirements of a National Pollution Discharge Elimination System (NPDES) permit should be met.

The ERA also will address the drinking water problem of the 12 affected residents. These residences, currently using bottled water, will be permanently connected to the town's water distribution system which is uncontaminated. You will

need to meet with the RSCRC and the contractor to discuss the technical, budget, and scheduling issues associated with this operation, including community relations activities.

The on-site waste ponds also were assessed for inclusion in the ERA. However, lack of an immediate threat and statutory limits of $2 million and 1 year timeframe precluded pond cleanup as an ERA. Early estimates for the pond cleanup far exceeded the $2 million statutory limit. Thus, the ponds will be addressed as an operable unit for source control.

You explain that in order **to initiate an ERA, a threat or potential threat to the public or the environment must exist**. In fact, an ERA is officially a removal action and therefore must comply with the regulations, procedures, and policies of the removal program. One major distinction from a removal action though, is that EPA's remedial program and remedial contractors carry out the ERA. You and Art believe that the contaminant levels in the seepage, and the potential for contaminants to migrate as a result of rainfall, constitute the degree of threat required for an ERA. The degree of threat is not so significant, however, to warrant a time-critical removal, which would be conducted by a removal contractor.

The ERA plan will begin with an **Engineering Evaluation / Cost Analysis** (EE/CA), which is similar to a feasibility study although smaller in scope. The EE/CA must consider all Federal and State ARARs and should stress the use of **permanent solutions and alternative treatment technologies to the maximum extent practicable**. In addition, the EE/CA must meet National Environmental Policy Act (NEPA) equivalency and, therefore, must undergo a public comment period and include a responsiveness summary. Like a removal, the EPA Regional Administrator must officially approve an Action Memorandum for the ERA.

After formal presentations at the TAC meeting, you open the floor to discussion. Everyone agrees that your plans seem reasonable. The USGS representative indicates that the area had been surveyed recently and that he would gather and pass along this data. The hydrogeologist from the Water Division notes that the site overlays an aquifer currently used for drinking water, and thus requires protection under the Safe Drinking Water Act. The State Project Officer also notes that State drinking water standards are more stringent than Federal standards for certain contaminants. Both the Federal and State requirements will need to be appropriately considered in planning and conducting the remedial response.

Data quality is a major concern in conducting remedial activities, and in discussion of this important subject the Regional QAO provides some valuable guidance on developing DQOs for the remedial response project. He explains that to ensure that data generated during the remedial response at the Acme site are adequate to support EPA's decisions, the project planning process must clearly define the objective and the method by which decisions will be made. This is accomplished through the development of site-specific DQOs, which are qualitative and quantitative statements made to ensure that data of known quality are obtained.

The QAO goes on to explain the three-stage process of developing DQOs:

- Identify decision types
- Identify data users and needs
- Design a data collection program

This is a lot to absorb at one meeting. Fortunately, *Data Quality Objectives for Remedial Response Activities, Volumes I and II* (OSWER Directive 9355.0-7B) are available for you to study, and the QAO will provide further consultation as needed.

Generally, the first TAC meeting was very informative. The next time the TAC gets together it will discuss the contractor's draft Work Plan, which should be available for review in about 6 weeks. In addition to drafting the Work Plan, the contractor will also be working on the EE/CA for the ERA and a CRP update. You amend the interim scope of work activities to include preparation of the EE/CA. This is done via approval of an interim amendment on the Work Assignment Form.

Site Management Plan

You've just reviewed the contractor's detailed Site Management Plan outlining the many tasks involved in cleaning up a hazardous waste site; it looks pretty good. Of course, most of the detail is devoted to the immediate tasks, the interim RI/FS tasks and the ERA involving leachate collection / treatment and permanent water supply connection. Since you are new to the program, you decide to

confer with senior RPM J.C. Michaels again. He suggests that you look at some of his old files to compare schedules and unit costs for various tasks. You also want to meet with Art Beckett to discuss the Site Management Plan before the contractor drafts the final Work Plan.

In the Site Management Plan, there is a potential problem with the schedule. It calls for the ERA to be implemented toward the end of winter. This may be a problem if it includes construction activities that cannot be performed under conditions of cold temperatures and possible snow. You and Art must consider weather impacts on the schedule and develop appropriate anticipatory actions and contingency plans.

The Superfund program will be conducting studies at many other sites this spring. For Federal-lead sites, samples are usually sent to the **Contract Laboratory Program (CLP)** for analyses. This may strain the CLP's capacity in the spring. In order to expect reasonable turnaround time on analyses, you should plan to avoid the seasonal log jam. The Regional Sample Control Center Coordinator for the CLP offers some advice:

- Schedule early if you plan to use the CLP during the busy season
- Limit analyses to those truly needed to meet RI objectives
- Use field screening to limit sample numbers
- Use unvalidated data, with caution, to continue project work and adjust, as necessary, when validation is complete

These are all good ideas assuming that they fit in with your project objectives and DQOs.

After discussing the Site Management Plan, Art describes the automated system recently brought on-line in the Region to monitor and control site progress. With the software available (both the Region and the contractor have copies), you can enter site data (task, schedule, budget, and responsibility) and generate critical path analyses, progress reports, resource requirements analyses, and other project management functions. This computer program helps monitor site progress and anticipate future events such as schedule slippages and cost overruns. The data to be entered into the program can be taken from the contractor's monthly progress reports and other communications. (Exhibit 4 shows an example of the software's output.) You recognize, of course, that you cannot just sit behind a computer terminal and make things happen. This automated system, however, can prove to be an excellent tool, if used effectively.

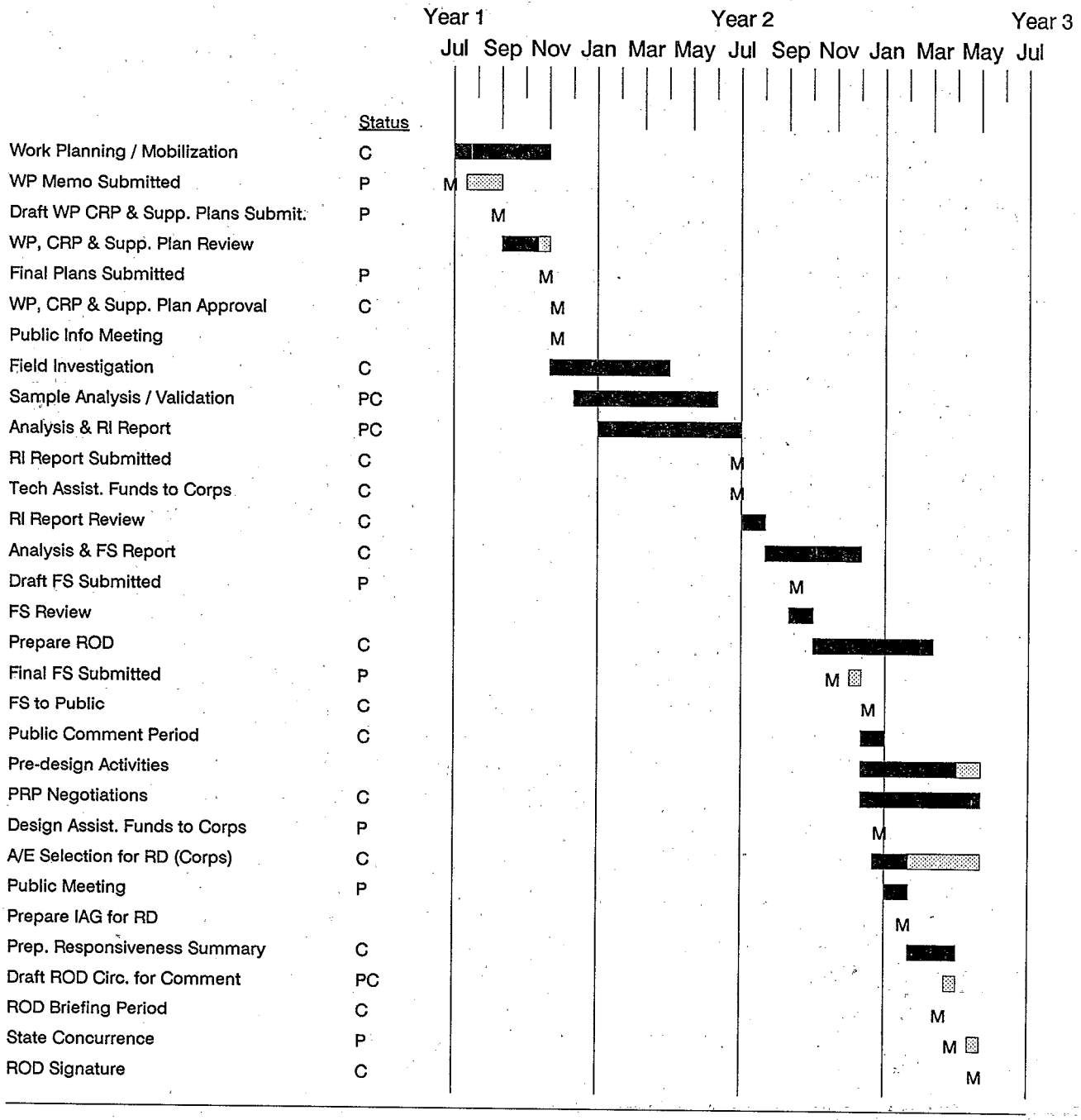
Work Plan Review

The contractor has just submitted the draft Work Plan, the Sampling and Analysis Plan, and an updated CRP for the initial phases of the RI/FS. You had seen portions of these plans earlier. Now your job is to review the plans for approval. You may use specialists to help with the reviews, but you must coordinate their involvement to prevent schedule slippages. These specialists may include the Regional QAO and other RPMs with particular expertise in chemistry, biology, toxicology, or hydrogeology. The TAC members also will be reviewing these plans. In addition, you may want to consider asking J.C. Michaels to briefly look at the plans. You've allowed 3 weeks for review, followed by a meeting to discuss any comments. J.C. suggests that you involve the Corps now, since EPA has selected them to be the lead for design and construction activities. This is handled through a site-specific **Interagency Agreement (IAG)** for technical assistance. You will need to prepare the IAG paperwork and obtain approvals in the Region.

Meanwhile, the contractor is well into the EE/CA portion of the ERA. A problem with the diversion system requires additional grading to stabilize the slope. This will add $50,000, bringing the ERA cost to $450,000. The total cost for the previous removal action plus the ERA is below the $2 million statutory ceiling for removal actions. The response time, however, will likely exceed 1 year, which will require approval of an exemption request by the Regional Administrator.

You confer with another RPM experienced in civil engineering before approving the additional work. You also check the SCAP to ensure that sufficient funds are available. The diversion system is designed to collect and treat an estimated 95 percent of the leachate discharging to the creek. With the EE/CA complete and the public comment period underway, you develop an Action Memorandum for the Regional Administrator to sign. Once this memo is signed, you can issue funds and a work assignment amendment to instruct the contractor to prepare plans and engineering specifica-

Exhibit 4
GENERIC SCHEDULE FOR FEDERAL-LEAD RI/FS



D — Done
C — Critical
R — Resource Conflicts
P — Partial Dependency

Task
Started Task
M — Milestone
Scale: Each character equals 1 week

Slack Time
Resource Delay
— Conflict

TIME LINE Gantt Chart Report
This is a generic schedule for a Federal-lead RI/FS. Specific RI/FSs may have different tasks and schedules.

tions for the ERA. The contractor subsequently will select a construction sub-contractor and manage construction of the ERA.

RI Phase I

The RI/FS Work Plan and the Sampling and Analysis Plan for the first phase of the RI/FS are on target. Only a few minor adjustments are necessary. You also question some of the level-of-effort allocations. The contractor makes the necessary revisions and resubmits the Work Plan 2 weeks later for approval. You then approve the Work Plan and increase the expenditure limit to authorize the RI Phase I.

The first phase of sampling and analysis is a screening effort aimed at defining where further work should be directed. In this case, you want to determine the nature and extent of ground-water contamination and identify the constituents in the two on-site ponds. With this information, you can establish initial cleanup goals, characterize concentration ranges and profiles, and determine waste types, mixtures, and volumes. The data also will be used to analyze contaminant transport and determine danger to human and environmental receptors. During this phase, you will evaluate and refine DQOs to ensure meeting the needs for environmental, treatability, and health effects data.

Identifying the various constituents in the ponds will be a tricky job since apparently several discrete layers of materials are present. The job will require sophisticated sampling. You think it would be a good idea to arrange for J.C. Michaels, a senior RPM, to accompany you to observe the first several days of sampling.

Only limited hydrogeologic sampling is required since RI scoping revealed that a few years earlier the USGS had collected data on ground water flow and subsurface strata in the area. Based on your review of USGS data, ground water appears to flow in a northwesterly direction under the site. The first monitoring phase calls for six wells—four along the site's northwestern boundary and two upgradient from the site. The 12 contaminated local wells, which are no longer used for drinking water, will also be sampled. The need for further wells will be determined from initial sampling results. The contractor also plans to use a volatile organics analyzer to assess the presence of VOCs in the unsaturated zone as an indicator of potential contamination in the ground water below.

Initial field samples will be analyzed in the contractor's mobile laboratory. Subsequent samples will be sent to a CLP laboratory for organic and inorganic analyses. Because of prior scheduling of the CLP analyses with the Regional Sample Control Center Coordinator, you should receive validated data 6 weeks after submitting samples.

The field investigation seems to be off to a good start. However, just as you are congratulating yourself, Art Beckett, the contractor's Site Manager, informs you that ground-water sampling will be delayed a week or two. Evidently, the subcontractor hired to drill the monitoring wells had limited hazardous waste experience. The individual scheduled to operate the drilling rig would not take seriously the clothing requirements in the Health and Safety Plan and refused to wear proper safety gear. It may take a week to mobilize a qualified drilling team.

You wish you had taken a closer look at the subcontractor's qualifications. However, it is the contractor's job to screen qualifications of subcontractors before assigning tasks to them. You note this oversight in your logbook. It will be included in your Performance Evaluation Report of the contractor during the next trimester **Award Fee Determination,** in accordance with the Regional Award Fee procedures.

Your immediate concern though, is how the delay will affect your scheduled CLP analyses. You inform the Regional Sample Control Center Coordinator of the problem. He no longer can guarantee a 6-week turn-around for analysis and validation. You hope your earlier discussion and well-intentioned efforts to plan and coordinate with the CLP through the Sample Control Center will have a positive influence on turn around time.

If not, you do have a contingency plan. You and Art had previously discussed the option of using data produced by the laboratory but not validated by the ESD. Another option is to have your contractor prepare for the next phase of sampling (if needed) while the data is being validated. Previously you thought the benefits of saving a few weeks would not outweigh the risks of proceeding with unvalidated data. Now, however, you consider the risk worth taking to get back on schedule.

FS Phases I and II

While the RI activities are underway, you begin the process of developing alternatives for cleaning up the site. In this first phase of the FS, you want to identify potential remedial technologies, prescreen them for application at the site, and assemble technology and/or disposal combinations into alternatives.

The contractor has been doing some preliminary work on potential remedies. You ask Art to prepare a preliminary list with general descriptions. You schedule a meeting with the TAC to discuss possible alternatives, and to identify their preferences and concerns.

The TAC meeting is being held at the Regional Office. In attendance are the Regional Coordinator from EPA Headquarters, the RSCRC, a Regional representative from the Resource Conservation and Recovery Act (RCRA) program, the State Project Officer, the Corps' representative, the ATSDR Regional liaison, and the contractor.

You begin by describing the types of alternatives being considered. At a minimum, alternatives should range from remedies that eliminate the need for long-term management (including monitoring) at the site to those that involve treatment and that reduce toxicity, mobility, or volume of waste as their principal element. Although alternatives may involve different technologies (that will most often address toxicity and mobility) for different types of waste, they will vary mainly in the degree to which they rely on long-term management of treatment residuals or low-concentration wastes. In addition to the range of treatment alternatives, containment options involving little or no treatment and a no-action alternative should also be developed.

The Corps' representative notes his concern about using remedies involving alternative technologies such as chemical and/or physical fixation of pond wastes. Preliminary evidence suggests that these are not feasible alternatives for the Acme site. You indicate that treatability testing will be conducted to fully assess these alternatives.

The State Project Officer is also concerned that the selected remedy attains State drinking water standards for lead and chromium. You explain that under CERLCA, EPA must meet State ARARs, or obtain a waiver. You stress the importance of achieving both the drinking water standards and other standards related to health and the environment for additional media such as soil and air. In addition, you indicate that the contractor will be assessing any action-specific ARARs for the remedies under consideration. These include any requirements stemming from the remedial actions being considered (e.g., thermal destruction and removal efficiencies or land ban restrictions under the RCRA Hazardous and Solid Waste Amendments [HSWA]).

The RSCRC reports on the community relations activities to date and the public's attitude toward the site cleanup. Generally, the citizens seem satisfied with site progress. They are, of course, concerned that the contamination of ground water and Lazy Creek be stopped. Several citizens have expressed their appreciation for receiving routine updates on site progress. Typically, these updates include site fact sheets, community interviews, public meetings, and telephone communication with key community representatives.

There has been some negative public response as well. The RSCRC reports that several citizens have called her complaining of project delays, especially in obtaining hook-ups to town water. The RSCRC also learned that the delivery of the bottled water to these twelve families has been late on several occasions. The RSCRC believes that resolution of that problem will reassure citizens of EPA's concern for their health.

You instruct the contractor to inquire about water deliveries. Upon verification of the delays, the RSCRC will telephone the affected residents to acknowledge the problem and explain the corrective actions that will be taken. You note these problems in your logbook for future reference when evaluating contractor performance.

At the conclusion of the TAC meeting, you outline the next steps for completing the RI/FS. Prior to releasing the FS Report for public comment, you plan to reconvene the TAC to receive internal comments on the report and to plan for the selection of remedy process. This process culminates in the development and approval of the ROD which forms the basis for future administrative and legal activities.

With the meeting concluded, you instruct the contractor to continue work on developing and screening alternatives and agree to a tentative schedule for drafting the FS Report.

RI Phase II

You and Art meet to discuss the second phase of the RI. The first phase indicated ground-water contamination from the site and a slow rate of contaminant migration. However, the extent of the plume and specific source(s) of contamination cannot be defined sufficiently from the data. The ponds are a likely source since some of the same hazardous substances were found in both the ground water and the ponds. Based on results from the first phase of sampling, however, it could not be determined if materials buried in the landfill also were contributing to the ground-water contamination. In Phase II, your goal is to develop data that is sufficient to clearly define sources and to make a remedy decision.

Sampling of the ponds from the first phase of the RI revealed four distinct layers:

- A bottom layer consisting of a highly viscous sludge containing heavy metals, including lead and chromium, paint sludges, long-chain hydrocarbons, and an assortment of other organics
- A second layer of organics with high specific gravities
- A third layer of organics soluble in water
- A top layer of low specific gravity organics insoluble in water

During the first RI phase, you identified the materials in the ponds, but gathered little information on the best way to handle them. A couple of remedial alternatives under consideration are in-situ chemical fixation and thermal destruction. Characteristics such as heats of combustion, vapor pressure versus temperature profiles, and viscosities need to be defined in order to evaluate various options for treating and/or disposing of these wastes. The CLP does not routinely conduct such physical analyses, thus you will need to make special arrangements for these analytical services.

You recommend that, during RI Phase II, the contractor initiate bench-scale tests to determine the effectiveness of these alternatives and to provide cost estimates. This information will enable you and the contractor to evaluate in detail the various treatment and/or disposal options. The results also can be used to develop performance standards to be included in the Invitation for Bid (IFB) package for remedial action. This second phase of sampling also should determine the full extent of the contaminant plume and whether the landfill area is a contributing source of ground-water contamination.

You approve the second phase of the RI by issuing a Technical Direction Memorandum that increases the expenditure limit for the work assignment and approves the more detailed scope of activities. You also decide to have the contractor update the Work Plan at this time and develop a fact sheet to inform the local community of progress achieved and future plans.

You revise your Site Management Plan accordingly and schedule a meeting with your Section Chief to brief her on the project and to obtain her input. As a courtesy and to continue good communications, you also prepare a short report to inform key parties (State, the Corps, ATSDR, RSCRC, and Regional Coordinator) of site progress and the planned course of action.

FS Phase III

The second phase of sampling was completed and analytical results validated. It was clear that the ponds were the major source of ground-water contamination in the area. The contaminants apparently are leaching from under and around the unlined waste ponds, entering the aquifer, and migrating under the landfill and beyond to the northwest. With this information in hand, you confer with the contractor and decide to discontinue further sampling.

During the third phase of the FS, the contractor evaluates in further detail the alternatives that passed through the initial screening in FS Phases I and II. The alternatives are analyzed against a range of factors and a comparative analysis is conducted. The major factors considered are effectiveness, implementability, and cost.

Under effectiveness, the alternatives must be evaluated for their protectiveness of human health and the environment (compliance with ARARs). Preference also is given to alternatives that permanently and significantly reduce the toxicity, mobility, or volume of contaminants. When as-

sessing the implementability of alternatives, EPA must consider the technical feasibility, administrative feasibility, and availability of the various remedies. Finally, EPA must evaluate the alternatives in terms of short-term (capital) and long-term (operation and maintenance) costs. These are all key factors in the final selection of remedy.

As RPM, this is also an appropriate time for you to submit a ROD delegation request and briefing package to EPA Headquarters for the Acme site. The briefing package describes the site, and identifies significant issues, waivers, and Regional recommendations. The ROD delegation transfers remedy selection authority from the AA/OSWER to the Regional Administrator.

Generally, these next few months are going to be busy. Among the activities upcoming are:

- Development of the draft FS report and Proposed Plan
- **Public comment period** on the FS, including a public meeting
- Intergovernmental review of the proposed action
- **Enforcement negotiations** with PRPs
- Updating the Administrative Record
- ROD preparation, briefing to the RA, and ROD signature
- IAG with the Corps for remedial design
- Pre-selection of design contractor by the Corps
- Transfer of information between the contractor and the Corps
- RI/FS closeout

It will take all of your planning, communication, and coordination skills to keep things on track. However, if you can overlap these various activities, you can save 3 to 6 months.

EPA's Regional enforcement program will be negotiating with PRPs to reach an agreement to conduct the RD/RA. EPA has set a 60- to 120-day enforcement window, which usually begins no later than with release of the FS Report. If there is no agreement with PRPs by the end of that period, cleanup will proceed as a Fund-lead project, and the enforcement program will pursue cost recovery actions with the PRPs at the end of the cleanup.

TAC Meeting and Remedy Selection

Within a matter of weeks you receive a draft FS Report from the contractor. You had seen a preliminary draft about a month earlier so there are no surprises. You distribute this version to the TAC for review. After a 3-week review period, the TAC meets to discuss the draft FS Report and outline the next steps and responsibilities in the remedial process. In general, the committee has no major problems with the report. The contractor had been responsive to everyone's concerns. You note this in your logbook as a reminder for when it is time to evaluate the contractor's performance.

The report outlines five basic alternatives, some with various options that would alter the degree of cleanup. The options address both operable units, source control, and ground-water cleanup.

1) In-situ fixation of pond wastes, construction of a slurry wall around the ponds, construction of an impermeable clay cap over the site, and off-site monitoring.

2) Thermal destruction of pond wastes and underlying soils, land disposal of treatment residues, and off-site monitoring.

3) Same as No. 1, plus on-site pumping and reatment of ground water.

4) Same as No. 2, plus on-site pumping and reatment of ground water.

5) No action alternative.

The TAC is leaning towards alternative No. 4, believing that in-situ fixation is too risky and would not receive public support. Also, alternative No. 4 includes thermal destruction of portions of the pond wastes, which is consistent with EPA's policy of using alternative treatment technologies and selecting permanent remedies to the maximum extent practicable. Thermal destruction residues and nonburnable wastes will be landfilled at an approved facility as needed. The State Project Officer also prefers alternative No. 4.

Originally, both you and Art thought it was unnecessary to pump and treat ground water after removing the source and minimizing the migration routes. Initial modeling efforts indicated that

natural dilution and other natural chemical and biological processes would reduce contaminants to acceptable levels beyond the site boundaries once the major source of contamination was removed. However, the time-frame in which natural attenuation would occur is not acceptable in terms of the immediate public health concerns. The option of pumping and treating the ground water will reduce contaminants to an acceptable level in a reasonable period and will restore the ground water to its original beneficial use as a drinking water source, and help prevent further contamination of adjacent surface waters. Groundwater monitoring will also be initiated to track the change in contaminant levels in response to pumping and treatment.

With the TAC in agreement, EPA can develop a **proposed plan** for public comment. The proposed plan is a companion to the FS and the administrative record. It describes the alternatives considered in the detailed evaluation. Most importantly it identifies, describes, and explains the rationale for selecting the preferred remedy. EPA also must publish a notice and brief analysis of the proposed plan in a major local newspaper and make the plan available to the public. You plan to enlist the support of the RSCRC and ask the contractor to assist you in preparing these documents.

Public Comment Period

During the public comment period, a number of activities must be accomplished, one of which includes drafting as much of the ROD as possible. At this point, the ROD will include any background information, RI/FS data, and a summary of remedial alternatives considered. At the end of the comment period, the RSCRC will work with you to prepare the **Responsiveness Summary**, which documents the public's substantive comments and EPA's responses. You will have a better feel for what this will entail following the public meeting scheduled in 4 weeks.

To prepare for the public meeting, you meet with the RSCRC to go over the meeting agenda. The RSCRC will lead the meeting and discuss the Superfund remedial response process in general terms. She also will discuss community relations activities that have occurred and how the public contributes to EPA's remedy selection decision.

You will then discuss the technical points of the project including the RI, the ERA, and any significant project delays / changes (why they were necessary and how you corrected them). You will devote most of your presentation to providing an overview of the various alternatives considered, highlighting the advantages and disadvantages of each. Finally, you will discuss the preferred alternative and your reasons for choosing it. A week before the meeting, you and the RSCRC plan to rehearse your presentations to improve them and learn of any problems in delivery.

The meeting will conclude with a question and answer session, which the RSCRC will moderate. To prepare for this and the press interviews that will follow, you and the RSCRC try to anticipate questions that are likely to be asked.

Transition to Design

Since PRP negotiations do not seem to be going well, you can issue a Phase I design work assignment to the Corps to develop a short list of qualified architectural / engineering (A/E) firms. This could have been done earlier, however, since the negotiating window with the PRPs was still open and their intentions were not clear, you chose not to proceed at that time.

All of these activities should go smoothly because all parties were involved early in the process. The Corps should have a good understanding of the site and, therefore, should be able to develop an appropriate short list of A/E firms. The State is expected to concur in writing on the remedy selected since the State helped to develop the alternatives and had the opportunity to voice its concerns earlier.

ROD Approval

The ROD is now prepared and authority has been delegated to the Region for its approval. Now you must brief the Regional Administrator, to obtain approval of the ROD. You're slightly nervous about this. Public speaking was never your strong point; however, you did a very credible job at the public meeting. This is also an excellent opportunity for you to demonstrate your abilities to your supervisors. To prepare, you attend several **ROD briefings** for other sites in the Region.

Since the Regional Administrator will decide if an appropriate remedy has been selected, he normally asks for a brief comparison of alternatives, paying particular attention to community concerns compliance with ARARs, and cost-effectiveness. You also note that the Regional Administrator requires that the ROD specify **performance levels.** Performance levels provide a baseline for demonstrating remedy effectiveness and compliance with other environmental regulations. They also provide criteria for future decisions regarding deletion of sites from the NPL.

Your planning and preparation pay off again. The ROD briefing goes extremely well. The Regional Administrator has a few tough questions, but you handle them well. The past four months were certainly hectic, but you obtain the Regional Administrator's signature on the ROD—a significant achievement in the remedial process.

State Assurances

During all phases of the RD/RA, you must continue to coordinate with the State. Specifically, you must negotiate a **Superfund State Contract (SSC)** for the remedial action during RD and execute it when the RD is completed. The SSC is a legally binding document in which the State agrees to provide:

- An off-site treatment / disposal facility, if necessary
- A share of the costs for the response
- Post-remedial O&M

Since the selected remedy for the Acme site involves disposal of residues from the treated pond wastes, you must ensure that the off-site facility chosen complies with applicable RCRA regulations. You consult EPA's policy and *Procedures for Planning and Implementing Off-Site Response Actions* (OSWER Directive 9330.2-1) and also meet with Regional RCRA program personnel. Although CERCLA requires that the State ensure the availability of an off-site facility as needed, this is normally done by the construction contractor through the bidding process. During bidding the contractor will identify and select such a facility based on marketplace conditions and availability of a facility in compliance with RCRA regulations.

Under CERCLA, the State must provide a percentage of the cleanup costs. In this case, since the site was privately-owned at the time of disposal, the State must contribute at least 10 percent of RA costs. For a State-operated site, the State would be responsible for at least 50 percent of both the planning (i.e., RI/FS, RD) and the RA costs. In either case, the State's cost share is not due until the RA begins.

The State must make assurances to provide **O&M** for the Acme site following the RA. O&M ensures continued functioning and effectiveness of the RA. As the RA begins to wind down, you will have to execute a **Cooperative Agreement** for O&M, the mechanism for transferring Federal funds to a State. For now, however, you need only the State's assurance in the SSC.

The State also is responsible, to the extent of its legal ability, for obtaining access to the site for the RD/RA if necessary. This was not a problem for the RI/FS, since the State condemned the property following Acme's bankruptcy. However, you should consider any additional access rights needed for off-site drilling. None are anticipated, but it would be wise to check on this. Site access problems have delayed many response actions at other sites.

Remedial Design

With the ROD signed, you should execute the site-specific IAG with the Corps for design procurement and contractor oversight to initiate design activities. Although the Corps will be managing the RD/RA for EPA, as EPA's representative you still have oversight responsibility for the project. You, therefore, must monitor project activities and provide timely and meaningful input to the Corps. You also will continue to be involved with community relations efforts, such as developing fact sheets for key milestones of the RD/RA.

As outlined in the *Superfund Remedial Design and Remedial Action Guidance* (OSWER Directive 9355.0-4A), several items require your attention during RD. Once you have started the design, you will be reviewing design plans and specifications at various stages of development. Your primary focus during these reviews is to ensure that the plans and specifications are consistent with EPA regulations, policies, and the approved ROD. You will also review the design value engineering study, if one is prepared for the site, for consistency with the intent of the selected remedy. In value engineering, plans and specifications are reviewed for potential cost savings through the replacement or modification of high-priced design items. For ex-

ample, it may be possible to use on-site rather than off-site materials as fill for the emptied ponds without reducing the effectiveness of the remedy.

When cost estimates for construction are available, you should contact the enforcement representative working on the cost recovery case against the PRPs. EPA will need this information when presenting their case to the Department of Justice.

Remedial Action

Once the RD package has been completed and approved by the Corps, and the EPA and the State have concurred, you should execute the SSC with the State. Also, you will need to prepare and execute a site-specific IAG with the Corps to procure a construction contractor. The Corps then issues the bid package and invites contractors to bid for the construction project. Again, although the Corps has the lead for the RA, you must remain involved to provide EPA oversight and guidance. Your participation may include attending review meetings, inspecting construction, and reviewing progress reports.

As the RPM, you also may get involved with these procurement / contractor issues:

- **Bid protests,** which are written complaints filed by parties with a direct financial interest that is affected by the Corps' procurement action. Complaints typically concern the solicitation or the actual award of contracts. The Corps is responsible for handling bid protests. Your main concern, however, is that any protest be resolved quickly to avoid excessive project delays.
- **Change orders,** which are written orders issued by the Corps authorizing an addition to, deletion from, or revision of a contract for either engineering or construction services. They are usually issued in response to a request from the contractor. Change orders may be necessary during any phase of the remedial response. However, they are most likely to be needed during construction, when there is a greater chance of encountering unforeseen site conditions, changes in estimated quantities, or other potential problems impacting contractor performance. The Corps is responsible for managing change order requests. Each remedial project has a construction contingency of 8 to 10 percent of total project costs. The Corps has the authority to approve any change order that totals up to 20 percent of the project contingency fund. Any change order exceeding 20 percent requires EPA/RPM approval. The Corps may continue to approve such change orders until 75 percent of the total contingencies has been depleted. Thereafter, EPA/RPM also must approve. In addition, the RPM must ensure that any needed revisions to agreements with the State or modifications to EPA management systems (e.g., SCAP) resulting from the change order are made. (State cost share also applies to RA change orders and claims.) Of course, if the change order significantly modifies the scope of work, the RPM must get involved with evaluating impacts on the project.
- **Claims,** which are demands or written assertions by a contractor seeking, as a matter of right, changes to the contract which the Corps has originally rejected through the change order process. As with change orders, the Corps has lead responsibility for managing the claim.

Once the Corps completes the RA, they will conduct a final inspection and prepare a report certifying completion of the RA. The Regional Administrator then shall provide written notice to the Corps of EPA's acceptance of the completed project. You also must coordinate with EPA enforcement staff in order to pass along final cost data for the project and revised O&M estimates for cost recovery purposes.

Operation and Maintenance

The Corps'/EPA's acceptance of the completed RA indicates that the project has been built as designed and is operating and functioning properly. This also is the point at which the State takes over O&M responsibilities.

As the RPM, you must work with the State to develop a Cooperative Agreement for that phase of O&M involving EPA funds. EPA shares (90 or 50 percent) in that phase of response necessary to ensure that the remedy is operational and functional for up to 1 year. After that, the State must assume full responsibility for O&M under a Cooperative Agreement with EPA. This agreement should be in place when EPA and the State accept the remedy as complete. Consult *State Participation in*

the Superfund Program, Volume I (OSWER Directive 9375.1-4) for details on executing a Cooperative Agreement.

You will need to negotiate with the State to work out the details for the transition from RA to O&M, in particular, defining when RA ends and O&M begins. This is important when the RA involves on-site treatment such as the systems for pumping and treating ground water at the Acme site. Under CERCLA, up to 10 years of ground-water or surface-water treatment may be considered part of the RA.

Finally, as the RA nears completion, you must initiate the **NPL deletion** process. Deletion signifies that EPA has completed what is considered to be appropriate and necessary actions at the site and that the site no longer presents a threat to human health and the environment. It is the culmination of the remedial response. Detailed procedures for deleting sites from the NPL are given in *Guidance on Deletion of Sites from the National Priorities List (NPL)* (OSWER Directive 9320.2-3).

* * * * *

A remedial project may take 4 to 6 years, or more, and cost millions of dollars. The process involves many participants representing a variety of interests. In addition, each site has unique characteristics, both technical and administrative.

Taken as a whole, the RPM's job is varied and challenging. It requires a unique blend of technical and managerial skills, many of which can be learned only on the job.

As a new RPM 5 years ago, you had little or no experience with planning, budgeting, and scheduling projects of this magnitude. You were apprehensive about public speaking. Now, you have proven your abilities in all of these areas. New RPMs are now approaching you for advice.

You have learned that a key element to being an effective RPM is establishing clear and open communications with program participants, particularly with the public. By effectively using and coordinating available resources (contractors and technical specialists) you were able to complete the remedial project on time and under budget.

You recognize that the ability to anticipate and respond to obstacles is another key factor in keeping the project moving towards completion. You anticipated and resolved such problems as poor weather conditions, inexperienced well drillers, and irate citizens. In addition, you have successfully worked within a system of changing regulatory and administrative requirements.

As a result of your successes, you have gained valuable knowledge, experience, and confidence that will help advance your career. The article in the local newspaper complimenting EPA's efforts at the Acme site certainly caught your Section Chief's eye. In fact, she has nominated you for a cash award for outstanding achievement.

Attachment A
RPM Training Courses

RPM TRAINING COURSES

The following training courses are available to EPA RPMs:

- CERCLA Orientation
- OSC/RPM Basic Course
- Personnel Protection and Safety
- Remedial Investigation and Feasibility Study
- Contracts Administration
- Risk Assessment in Superfund
- Basic Ground-Water Course
- Hazardous Materials Cleanup Technologies
- Corrective Actions for Containing and Controlling Ground-Water Contamination
- Community Relations in Superfund: Concepts and Skills
- Management of Construction in the Superfund Program

CERCLA ORIENTATION

(3 Days)

This introductory course is designed to introduce new employees to the Superfund Program. Course presents an overview of the CERCLA and RCRA legislation, the National Contingency Plan, program implementation and policy implications, community relations, and the removal, remedial, enforcement and support programs. Includes classroom lectures, group discussion, problem solving, case studies, and student exercises. Participants will be offered insights into the actual "nuts and bolts" of these programs.

OSC/RPM BASIC COURSE

(4 1/2 Days)

This introductory course is designed to introduce new OSCs or RPMs to their roles and responsibilities and to provide interaction among employees from various Regions.

Presents an overview of the tasks new OSCs and RPMs perform, including notification, evaluation and planning, and removal operations for OSCs; and site plan development, RI/FSs, RODs, RD/RAs for RPMs. Consists of classroom lectures, group discussion, case studies, and student exercises.

PERSONNEL PROTECTION AND SAFETY (165.2)

(5 Days)

This course is for relatively inexperienced personnel who respond to accidents involving hazardous substances or investigate uncontrolled hazardous waste sites. Topics include: fundamentals of respiratory protection; types of respiratory protection apparatus; use and limitation of equipment; selection of respiratory protection equipment; protective clothing; air monitoring; and safety procedures for conducting response operations.

Course familiarizes personnel with general concepts, principles, and procedures for protecting themselves from the harmful effects of hazardous materials.

Segments require wearing of respiratory equipment which precludes the use of glasses. Participation may be limited for students who are severely restricted without glasses. Portions of this course and course 165.5, Hazardous Materials Incident Response Operations, are redundant. Persons considering application to both courses should confer with the registrar.

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

(3 Days)

This introductory course is primarily intended for Regional and State program management employees and for technical and enforcement staff members. Provides extensive discussion of remedial investigations, feasibility studies, and program management.

Some topics for the remedial investigation include purpose and objectives and how to plan an investigation. Topics for the feasibility study are purpose, available criteria, alternatives, and conceptual design. Consists primarily of classroom lectures and discussions.

CONTRACT ADMINISTRATION
(3 Days)

This course is designed to provide EPA Project Officers, Work Assignment Managers, and Delivery Order Officers with a better understanding of the contract administration process and their critical roles in the process. Consists of combination of lecture, video presentation, and active student participation. Includes an open-book examination at the end of the course.

The text for the course is *Contract Administration: A Guide for Project Officers*, which serves as a handy, desk-top reference long after completion of the course.

RISK ASSESSMENT IN SUPERFUND
(2 Days)

This beginning course is intended for Federal and State employees responsible for reviewing, supervising or facilitating the work of consultants or technical experts in performing risk assessments. Consists of lectures, discussions, and practical exercises. Topics include an overview of chemical risk assessment, hazard identification and dose-response assessment, exposure assessment and risk characterization, and risk communication. Day 2 provides an overview of the Superfund Public Health Evaluation Process, including an inensive case study exercise.

After completing the course, students will have a better understanding of toxicology for use in recommending or reinforcing site safety procedures, supervising or reviewing site activities, and presenting site related toxicological data to the public as well as direct experience in utilizing the Superfund Public Health Evaluation Process.

BASIC GROUND-WATER COURSE
(3 Days)

This introductory course is intended for all EPA and State employees who require a better understanding of ground-water issues. Offers a general overview of basic hydrogeology and ground-water movement, contaminant transport, ground-water investigations, aquifer restorations and ground-water modeling. Consists of lectures, demonstrations, and classroom discussions. Upon completion of the course, students will have a better understanding of basic hydrogeology, ground-water movement, and related subjects.

HAZARDOUS MATERIALS CLEANUP TECHNOLOGIES
(2 Days)

This introductory course is intended for State and Regional CERCLA program management staff. Offers an in-depth review of the full range of hazardous cleanup technologies applicable to the variety of Superfund sites on the National Priority List. Consists of lectures, discussions and case studies. Topics include hazardous materials cleanup technologies and a methodology for selecting appropriate technologies. Course examines costs for each technology, institutional constraints, and other pros and cons.

After completing the course, students will have a better understanding of the available hazardous material cleanup technologies and the appropriateness of those technologies to a particular site.

CORRECTIVE ACTIONS FOR CONTAINING AND CONTROLLING GROUND-WATER CONTAMINATION
(3 Days)

This is an intensive introductory course developed by the National Water Wells Association to provide training in containing ground water pollution. Emphasis is on practical aspects and applications with a minimum of theoretical discussion. Course is directed toward EPA, State and local employees with RCRA or CERCLA responsibilities, especially those involved in cleanup of leaking underground storage tanks.

Participants will develop an understanding of regulations governing the application of corrective actions, proper application of available technologies, and effectiveness of technologies in specific situations. Topics include hydrogeologic considerations in corrective action planning, investigative techniques for defining contaminant plumes, exhumation and waste removal, caps and cover design and installation, remedial actions in the vadose zone, active physical containment, passive physical containment with low permeability barriers, field applications, treatment technologies, physical recovery of petroleum hydrocarbons, and in-situ aquifer restoration.

COMMUNITY RELATIONS IN SUPERFUND: CONCEPTS AND SKILLS

(2 Days)

This course is intended for Regional and State Program Management and Technical staff. The course involves skill development in dealing with citizens and local officials, building good media relations, and conflict management. Case studies are used in the course for instruction as well as for discussion purposes.

MANAGEMENT OF CONSTRUCTION IN THE SUPERFUND PROGRAM

(3 Days)

This course provides an introduction to management of construction in the Superfund program. It is intended to help provide Regional and State managers with a perspective on what is needed to plan, schedule and control a Superfund construction project. The course addresses the management issues to be considered in the construction activity, and provides a foundation from which attendees will grow in their technical and administrative competence.

Course topics include successful management practices, the bidding process, procurement practices, project design, management of change orders and claims, and construction inspections. Training is provided by means of classroom lecture, case studies, and group discussion.

Upon completion of this course, participants will be able to act more effectively as managers in the Superfund program. Participants will be more familiar with construction management and will have a clearer understanding of authorities and responsibilities of all parties involved in construction.

Attachment B
Information Sources and Selected OSWER Directives

INFORMATION SOURCES

An annotated bibliography of documents specifically related to Superfund site remedial processes follows. These documents are accessible through the EPA library network as part of the Hazardous Waste Collection. The referenced documents are frequently updated.

The Hazardous Waste Collection

The EPA library network has a hazardous waste library collection consisting of EPA Reports, OSWER policy and guidance directives, books, periodicals, and a listing of commercial databases containing hazardous waste information. Hard copies of these documents are available in the Headquarters and Regional libraries, the National Enforcement Investigations Center, and some EPA laboratory libraries.

dBASE III Access

The entire hazardous waste collection is accessible on a database using an IBM PC/AT. EPA reference librarians search the database at no charge to EPA staff. The database provides automated search and retrieval capability by the following access points:

- Keyword/subject heading
- Abstract
- Title
- Author
- Sponsoring organization/office
- Project manager's name
- Contact number.

The data base collection is organized into three areas:

- Periodicals
- Monographs: books; non-EPA reports; EPA reports; OSWER policy and guidance directives
- Commercial databases.

SUBJECT INDEX TO SELECTED OSWER DIRECTIVE

SUBJECT	OSWER DIRECTIVE
1. Remedial Project Management	9355.1-1, 9355.2-1
2. Remedial Investigation / Feasibility Study (RI/FS)	
General	9355.0-5C, 9355.0-6B
Alternatives development and evaluation	9355.0-8, 9355.0-10, 9355.0-13, 9380.0, 9280.0, 9283.1-2, 9380.2-3
Compliance with other environmental laws	9234.0-2, 9234.0-3, 9347.0-1
Contracts (REM)	9242.3
Health and safety	9285.1-18, 9285.2
Public health assessment	9285.4, 9285.5, 9295.1
Site characterization	9240.0-1, 9285.2, 9355.0-7A, 9355.0-14
3. Record of Decision (ROD)	
General	9340.2-1
Functional NEPA equivalency	9318.0
4. Remedial Design / Remedial Action (RD/RA)	
General	9355.0-4A
Off-Site response actions	9330.2
5. Site Closeout	
NPL deletion	9320.2
Operation and maintenance	9355.0-4A
6. Other	
Community relations	9230.0-3, 9320.4
Enforcement	9234.01-1, 9340.1
Federal facilities	9272.0
Interagency agreements	9295.1, 9295.2, 9295.3, 9295.5
Removal / remedial interface	9360.0-3A, 9360.0-6A
State participation	9375.1-4, 9375.1-5

Abstract of Selected Oswer Publications

9230.0-3 *Community Relations in Superfund: A Handbook*

Provides program guidance for conducting community relations activities in the Superfund program. Offers specific guidance for EPA and State staff on how to design and implement an effective community, relations program. Describes community relations activities during both removal and remedial actions. (March 1986)

9234.0-1 *CERCLA Compliance/Enforcement Policy Compendium*

Compiles all currently enforceable guidance relating to CERCLA compliance enforcement activities. (February 1984)

9234.0-2 *CERCLA Compliance With Other Environmental Statutes*

Describes policy on applicability of standards, criteria, advisories, and guidance of other State and Federal environmental and public health statutes to actions taken pursuant to Sections 104 and 106 of CERCLA. Addresses considerations for on-site and off-site actions taken under CERCLA. (J.W. Porter, October 2, 1985) (also included in NCP [50 FR 47912], November 20, 1985) (See also 9234.0-3 and 9330.2-1).

9234.0-3 *Draft Guidance on CERCLA Compliance With Other Environmental Statutes (RCRA Requirements)*

Expands *CERCLA Compliance With Other Environmental Statutes* (9234.0-2). Current draft addresses only the requirements of RCRA that may be applicable or relevant and appropriate for CERCLA response actions. Other Federal public health and environmental statutes will be addressed subsequently. (December 16, 1985)

9240.0-1 *User's Guide to the Contract Laboratory Program*

Describes procedures for using the CLP. Outlines organic, inorganic, and dioxin analytical program requirements, and analytical procedures of CLP protocols. (October, 1984)

9242.3-3A *Work Assignment Procedures for Remedial Contracts*

Outlines various steps and stages of a work assignment from inception through completion. Includes a streamlined Work Plan Memorandum package and provides several scenarios, including phased approval and execution, and a strong emphasis on more Regional management control. (November 1986)

9242.3-5 *REM II Contract Award Fee Performance Evaluation Plan*

Describes REM II award fee procedures, which are essentially the same as the revised REM/FIT procedures. The one exception is the need for each Region to assess the contractor's Regional management activities. Describes specific procedures and review schedules. (July 25, 1984)

9272.0-1 *Implementation of CERCLA Strategy at Federal Facilities*

Describes implementation phase of Federal Facility CERCLA Strategy (Memorandum, April 2, 1984, J. Cooper, AA for External Affairs, to L. Thomas, AA, OSWER).

9272.0-2 *Initial Guidance on Federal Facilities CERCLA Sites*

Outlines status and direction of OSWER efforts to implement hazardous site cleanup at Federal facilities. Divides primary responsibility for national management of Superfund Federal facility programs between OWPE and OERR. (L. Thomas, December 3, 1984)

9272.0-3 *Responsibilities for Federal Facilities*

Clarifies responsibilities of OWPE and OERR on Federal facilities. (Memorandum, August 19, 1985, G. Lucero, Director OWPE, to W. Hedeman, Director OERR)

9272.0-4 *Federal Facilities*

Clarifies responsibilities and direction of efforts within OWPE for Federal facility activities. (Memorandum, August 19, 1985, G. Lucero)

9272.0-5 *Responsibilities for Federal Facilities*

Provides transition for the OERR Facilities Program. Describes manual development responsibilities that OWPE assumed and clarifies responsibilities between OERR and OWPE for Federal facilities. (Memorandum, August 26, 1985, W. Hedeman, Director, OERR, to G. Lucero, Director, OWPE).

9280.0-1 *Flood Plain Requirements*

Adopts policy that CERCLA actions must meet the requirements of the Flood Plains Management Executive Order (E.O. 11988) and EPA implementing regulations (40 CFR 6 Appendix A). (W. Hedeman, November 14, 1983) (Supplemented by 9280.0-2)

9280.0-2 *Policy on Flood Plains and Wetlands Assessments*

Discusses situations that require preparation of a flood plains or wetlands assessment, and the factors which should be considered in preparing an assessment for response actions undertaken pursuant to CERCLA sections 104 and 106. (W. Hedeman, August 6, 1985) (Supplements 9280.0-1)

9283.1-2 *Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites*

Focuses on key decision-making issues in the development, evaluation, and selection of ground-water remedial actions at Superfund sites. Outlines key considerations during the selection of a ground-water remedy, provides a consistent approach to cost-effectiveness decisions, and presents case studies of proper ground water cleanup decision making processes. Does not discuss in detail technical aspects of ground-water investigation, evaluation, and cleanup. (October 1986)

9285.1-1B *Standard Operating Safety Guide Manual*

Revises guidance on health and safety to complement professional judgment and experience, and to supplement existing Regional safety criteria. Reflects additional experience EPA personnel have gained in responding to environmental incidents involving hazardous substances. Not meant to be a comprehensive safety manual for incident response.
(W. Hedeman, November 19, 1984)

9285.2 *Field Standard Operating Procedures (FSOP) Manual*

Provides additional guidance in a cookbook format on health and safety to complement professional judgment and experience and to supplement existing Regional safety criteria. [Not a manual on its own -- made up of the following FSOPs.]

9285.2-1 *FSOP #4 - Site Entry*

Provides site entry procedures that field response personnel can use to minimize risk of exposure to hazardous substances. (January 1985)

9285.2-2 *FSOP #7 - Decontamination of Response Personnel*

Provides decontamination procedures that field response personnel can use to minimize risk of exposure to hazardous substances. (January 1985)

9285.2-3 *FSOP #8 - Air Surveillance*

Provides air monitoring procedures that field response personnel can use to obtain data needed to minimize risk of exposure to hazardous substances. (January 1985)

9285.2-4 *FSOP #6 - Work Zones*

Provides procedures for establishing work zones for control of hazardous materials and to minimize risk of exposure of field response personnel. (April 1985)

9285.2-5 *FSOP #9 - Site Safety Plan*

Establishes requirements for protecting the health and safety of field response personnel during all activities conducted at an incident. Contains safety information, instructions, and procedures. (April 1985)

9285.4-1 *Draft - Superfund Public Health Evaluation Manual*

Establishes a framework for analyzing public health risks at Superfund sites and for developing design goals for remedial alternatives based on applicable or relevant and appropriate requirements of other laws, where available, or risk analysis where those requirements are not available. [Procedures are designed to conform with EPA's proposed risk assessment guidelines (49 FR 46294-46331, November 23, 1984, and 50 FR 1170-1176, January 9, 1985)]. (December 18, 1985)

9285.5-1 *Draft - Superfund Exposure Assessment Manual,*

Outlines framework for a comprehensive, consistent, and appropriate assessment of human exposure associated with uncontrolled hazardous waste sites. Presents an integrated methodology designed to guide the three major component analyses of such assessments: (1) analysis of toxic contaminants released from a site, (2) determination of environmental fate of such contaminants, and (3) evaluation of nature and magnitude of human population exposure to such contaminants. (January 14, 1986)

9295.1-1 *MOU Between the ATSDR and EPA*

Establishes policies and procedures for conducting response and non-response health activities related to releases of hazardous substances. (J. McGraw, April 25, 1985, and D. R. Hoper, May 28, 1985)

9295.2-3 *Interagency Agreement Between the U.S. Army Corps of Engineers and the USEPA in Executing P.L. 96-510, CERCLA*

Defines the assistance the U.S. Army Corps of Engineers will provide to EPA in implementing EPA Fund-lead, State Fund-lead, and EPA enforcement-lead projects. (J. McGraw and R. Dawson, December 3, 1984)

9295.3-1 *MOU Between DOD and EPA for the Implementation of P.L. 96-510, CERCLA*

Clarifies Department of Defense/EPA responsibilities and commitments for conducting and financing response actions authorized by CERCLA and specifically delegated by E.O. 12088. Clarifies respective operational roles, responsibilities and procedures. (L. Korb and L. Thomas, August 12, 1983). (Expired on December 1, 1985, -- has now been extended until December 1, 1986 OR until Reauthorization of Superfund.)

9295.5-1 *MOU Between FEMA and EPA for the Implementation of CERCLA Relocation Activities under P.L. 96-510, CERCLA*

Describes major responsibilities and outlines areas of mutual support and cooperation between EPA and Federal Emergency Management Agency relating to relocation activities associated with response actions pursuant to CERCLA; Executive Order 12316; and the NCP, 40 CFR Part 300. (J. W. McGraw, March 29, 1985, and S. W. Speck, April 5, 1985, effective until April 1989)

9295.5-2 *Implementation of EPA/FEMA MOU on CERCLA Relocations*

Forwards EPA/FEMA MOU on CERCLA Relocations (9295.5-1) to Regional Administrators. Provides guidance in establishing Regional/Headquarters/FEMA relocation contacts and following standards established in the MOU. (J. McGraw, June 14, 1985)

9318.0-1 *Interim Policy for Compliance with the National Environmental Policy Act*

Addresses policy under NEPA for remedial actions, or long-term actions consistent with permanent cleanup of a site. Also requires that design of remedies be the result of weighing alternatives and be cost-effective. (M. Cook, May 18, 1981) (Supplemented by 9318.0-2)

9318.0-2 *Guidance on Superfund NEPA Policy: Areas of Responsibility*

Identifies areas of responsibility of Superfund staff for preparation of Environmental Impact Statements to ensure compliance with NEPA for Superfund remedial action projects. (M. Cook and W. Hedeman, August 17, 1981) (Supplements 9318.0-1)

9318.0-3 *CERCLA Remedial Actions and NEPA/EIS Functional Equivalency*

Urges RA's to develop close working relationship between OSWER, Office of Federal Activities and Regions to ensure that reviews for remedial actions under CERCLA are functionally equivalent to the Environmental Impact Statement requirements of section 102(2)(C). (L. Thomas and J. Cooper, August 22, 1984) (Supplemented by 9318.0-4)

9318.0-4 *Coordination between Regional Superfund Staffs and OFA Regional Counterparts on CERCLA Actions*

Encourages coordination between the Regional Superfund staffs and Office of Federal Activities Regional counterparts in carrying out CERCLA actions. (W. Hedeman and A. Hirsch, October 29, 1984) (Supplements 9318.0-3)

9320.2-1 *Interim Procedures for Deleting Sites from the NPL*

Sets forth criteria and interim procedures for deleting sites from the NPL to indicate sites that have been cleaned up or that have been determined not to present a hazard to health, welfare or environment. (L. Thomas, March 27, 1984)

9320.2-2 *Guidance on Deletion of Sites from the National Priorities List NPL*

Revises procedures and criteria for making deletions to the NPL to indicate sites that have been cleaned up or that have been determined not to present a hazard to health, welfare, or environment. (September 1986)

93204-1 *Interim Information Release Policy*

Provides interim policy for NPL information release. For use by the Regions to prepare a coordinated response to Public Citizen FOIA Requests. (W. Hedeman, April 18, 1985)

9330.2-1 *Procedures for Planning and Implementing Off-Site Response Actions*

Addresses procedures for a response action involving off-site storage, treatment, or disposal of hazardous substances selected under CERCLA and RCRA; also, discusses procedures for selecting any off-site facility for management of hazardous substances under CERCLA. Prohibits use of RCRA facility for off-site management of Superfund hazardous substances if it has significant RCRA violations or other environmental conditions that affect satisfactory operation. Also addresses requirements for analyzing and selecting response actions that involve permanent methods of managing hazardous substances. (J. McGraw, May 6, 1985) (Supplemented by 9330.2-2 and 9330.2-3)

9330.2-3 *Guidance on Procedures for Planning and Supplementing Off-Site Response Actions*

Provides follow-up to off-site disposal policy (see 9330.2-1). Explains actions OSWER has or will take to implement this policy. (November 1986)

9340.1-1 *Participation of Potentially Responsible Parties in Development of Remedial Investigations and Feasibility Studies under CERCLA*

Sets forth policy and procedures governing participation of PRPs in development of RI/FS under CERCLA. Discusses circumstances in which RI/FS may be conducted by PRPs; procedures for notifying PRPs when Agency has identified target sites for development of RI/FS; and principles governing PRP participation in Agency-financed RI/FS. (L. Thomas, March 20, 1984)

9340.2-1 *Preparation of Decision Documents for Approving Fund-Financed and Potentially Responsible Party Remedial Actions Under CERCLA*

Assists Regional Offices in preparation of decision documents required for approval of Fund-financed and PRP remedial actions. A Record of Decision, Enforcement Decision Document or Negotiation Decision Document is required for all remedial actions financed from the Fund. Documents Agency's decision-making process and demonstrates that the requirements of CERCLA and the NCP have been met. Procedure provides basis for any future cost-recovery action. (J. McGraw, February 27, 1985)

9347.0-1 *Interim RCRA/CERCLA Guidance on Non-Contiguous Sites and On-Site Management of Waste Residue*

Addresses several RCRA/CERCLA interface issues at MOTCO, Texas site, which have broad implications for remedial actions at many other Superfund sites. Lays out EPA policy on several issues including combined treatment of CERCLA waste from noncontiguous locations, limitations on construction of hazardous waste incinerators for on-site CERCLA use, and on-site disposal of treatment residue. (March 26, 1986)

9355.0-4A *Superfund Remedial Design and Remedial Action Guidance*

Assists agencies and parties who plan, administer and manage remedial design (RD) and remedial action (RA) at Superfund sites. Pertains to Fund-financed RD/RA (i.e. Federal-lead and State-lead) and responsible party RD/RA, and provides procedural guidance to ensure that RD/RA are performed properly, consistently, and expeditiously. (June 1986)

9355.0-5C *Guidance on Feasibility Studies Under CERCLA*

Provides a more detailed structure for identifying, evaluating, and selecting remedial action alternatives under CERCLA and the NCP (40 CFR 300). (June 1985) (Supplemented by 9355.0-7B and 9380.0-3)

9355.0-6B *Guidance on Remedial Investigations Under CERCLA*

Describes remedial investigations to obtain data to evaluate and select measures to control specific problems caused by uncontrolled hazardous waste sites. For use by other Federal agencies and PRPs when undertaking remedial response pursuant to the NCP and CERCLA Section 104 or section 107. Compliance with this guidance will help meet NCP requirements. (June 1985) (Supplemented by 9355.0-7B and 9380.0-3)

9355.0-7B *Data Quality Objectives for Remedial Response Activities, Volumes I and II*

Volume I guides user through process of developing data quality objectives for generic remedial response activities. Volume II illustrates how the DQO development process would be applied to a remedial investigation/feasibility study at a site with contaminated soils and ground water. (March 1987) (Supplements 9355.0-5C and 9355.0-6B)

9355.0-8 *Modeling Remedial Actions at Uncontrolled Hazardous Waste Sites*

Provides guidance on selection and use of models for evaluating effectiveness of remedial actions at uncontrolled hazardous waste sites. Provides a comprehensive set of guidelines to regulatory officials for incorporation of models into remedial action planning process at Federal and State Superfund sites. (April 1985)

9355.0-10 *Remedial Action Costing Procedures Manual*

Provides guidance to project managers and decision makers in government and industry for preparation of detailed feasibility cost estimates of remedial action alternatives required under revised NCP. (September 1985)

9355.0-14 *Quality Assurance/Field Operations Methods Manual*

Provides Remedial Project Managers and quality assurance officers with a consolidated, ready reference of existing field methods to guide remedial field activities. Primary objectives are to promote quality and consistency in field work and to help streamline project planning process, particularly preparation of sampling and analysis plans and Quality Assurance Project Plans. Once approved, Compendium will be used by the EPA remedial contractors, and also can be made available to States and private parties. The Compendium supplement the RI and FS Guidance documents and the DQO guidance. (April 1986)

9355.1-1 *Superfund Federal-Lead Remedial Project Management Handbook*

Assists EPA Remedial Project Managers in managing Federal-lead remedial response projects. Describes in detail responsibilities of the RPM during planning, design, construction, operation, and close-out of remedial response projects. Provides information on procedures for conducting Federal-lead remedial projects from pre-RI/FS activities through site close-out. (December 1986) (Supplements 9355.2-1)

9355.2-1 *Superfund State-Lead Remedial Project Management Handbook*

Assists EPA Remedial Project Managers (RPMs) in managing State-lead remedial response projects. Describes in detail responsibilities of the RPM during planning, design, construction, operation and close-out of remedial response projects. (December 1986) (Supplements 9355.1-1)

9360.0-3A *Superfund Removal Procedures*

Provides EPA response officials with uniform, Agency-wide, guidance on removal actions. Guidance provided is essentially procedural and focuses on implementation of the hazardous substances removal program for multimedia releases from facilities and vessels within EPA's area of responsibility. (March 1986)

9360.0-6A *Relationship of the Removal and Remedial Program Under the Revised NCP*

Outlines revisions to the NCP that redefine removal and remedial actions to expedite cleanup activities. Addresses management issues that may arise between the two programs in Headquarters and the Regions. (March 1986) (Supercedes 9360.0-6)

9375.1-4 *State Participation in the Superfund Program, Volume I*

Describes State participation in implementing approved remedial response activities at NPL sites in accordance with the NCP and options now available to States for expediting cleanup activities. (February 1984) (Being reissued by OSWER Directive 9375.1-2 and 9375.1-2A on a chapter by chapter and appendix by appendix basis.)

9375.1-5 *State Participation in the Superfund Program, Volume II*

Explains salient points of EPA's general regulations that apply to all State procurement under Superfund Cooperative Agreement; discusses procurement of A/E services, and the type of activities these firms can manage on behalf of the State throughout response (RI/FS, RD, RA and O&M); discusses procurement of construction services, subagreement administration, and claims management. (March 1986)

9380.0-2 *Slurry Trench Construction for Pollution Migration Control*

Provides in-depth guidance on use of slurry walls for control of subsurface pollutants. (February 1984)

9380.0-3 *Guidance Document for Cleanup of Surface Tank and Drum Sites*

Provides guidance on carrying out concurrent remedial planning activities and accelerating project implementation for cleanup of surface tanks and drums containing hazardous waste. Provides systematic approach to remedial action for hazardous wastes stored in tanks and drums. (May 1985) (Supplements 9355.0-5C and 9355.0-6B)

9380.0-4 *Remedial Action at Waste Disposal Sites Handbook (Revised)*

Provides basic reference for understanding remedial technologies; selecting potentially applicable technologies for a given waste site, and planning for remedial action. (October 1985)

9380.0-5 *Leachate Plume Management*

Provides an overview of the fundamental concepts, procedures, and technologies used in leachate plume management. Discusses plume generation dynamics and delineation. Evaluates plume control technologies and defines selection criteria. (November 1986)

9380.0-6 *Guidance Document for Cleanup of Surface Impoundment Sites*

Assists on-scene Federal, State, or local officials and private firms to develop remedial actions at NPL sites with one or more surface impoundments containing hazardous waste. Provides detailed guidance for conducting a limited remedial investigation and a limited feasibility study for the purpose of selecting an appropriate remedy. (June 1986)

9380.2-3 *Superfund Innovative Technology Evaluation (SITE) Strategy and Program Plan*

Presents EPA's strategy for implementing the SITE program. Primary purpose of SITE is to enhance development and demonstration, thereby establishing the commercial availability, of innovative technologies at Superfund sites. (December 1986)

9833.3 *Administrative Records for Decisions on Selection of CERCLA Response Actions*

Outlines requirements for establishing an administrative record and lists significant documents to be included in the record. (May 1987)

Mobile Treatment Technologies for Superfund Wastes, EPA Report No. 540/2-86-003F

Addresses the use of established and developing mobile systems to treat Superfund wastes. Discusses capabilities and limitations of five broad treatment categories: thermal, immobilization, chemical, physical, and biological treatment. (September 1986)

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