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Superfund

Guidance for Scoping the Remedial Design

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GUIDANCE FOR SCOPING THE REMEDIAL DESIGN

Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
Washington, DC 20460

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PREFACE

This *Guidance for Scoping the Remedial Design* provides, for EPA's Remedial Project Managers (RPMs), information about preparing the Statement of Work (SOW) to facilitate remedial design for Superfund cleanup projects (both Fund-lead and Enforcement-lead). It includes instruction for preparing a Project Management Plan, remediation schedules, cost estimates, and model SOWs for oversight of Fund-lead projects and for RD oversight. The *Guidance* applies to Superfund Accelerated Cleanup Model (SACM) projects as well. The Appendixes provide schedules and forms that will be useful in assisting RPMs to develop complete, detailed guidance for contractors tasked with implementing remedial design and remedial action activities.

Questions, comments, and/or recommendations concerning this manual are welcomed and should be forwarded to:

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EXECUTIVE SUMMARY

This *Guidance for Scoping the Remedial Design* describes the activities to be performed in the predesign planning phase of the Superfund remedial process. The planning process involves the synthesis of information from the Record of Decision (ROD) and other supporting documents to determine and define (scope) EPA's technical and managerial requirements for the development of the remedial design (RD) and the implementation of remedial action (RA).

The *Guidance* presents information to help in performing the basic predesign activities as follows:

- Preparing the RD/RA management plan
- Collecting predesign technical information
- Developing approximate RD schedules
- Preparing Independent Government Cost Estimates (IGCEs) for RD work assignments to be performed by contractors
- Developing the Statement of Work (SOW) for the RD
- Developing an SOW for the oversight of RDs conducted by Potentially Responsible Parties.

This guidance manual is organized to lead the Remedial Project Manager through the logical progression of tasks to be performed as preparation to develop an SOW for the RD.

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CHAPTER 1

INTRODUCTION

PURPOSE OF THIS GUIDANCE

This *Guidance for Scoping the Remedial Design* describes the activities to be performed in the predesign planning phase of the Superfund remedial process. This Guidance will also apply to Superfund Accelerated Cleanup Model (SACM) projects such as non-time-critical removals and non-emergency early actions. Predesign planning takes place after the Record of Decision (ROD) has been signed. However, many of the appropriate activities can be performed before signing the ROD to expedite the project. The planning process involves the synthesis of information from the ROD and other supporting documents to scope EPA's technical and managerial requirements for the development of the remedial design (RD) and the implementation of remedial action (RA).

This Guidance is addressed to EPA's Remedial Project Managers (RPMs). It also should be of interest to the other possible participants (States, other Government agencies, or Potentially Responsible Parties (PRPs)) in the RD process in that the Guidance describes some of their roles and responsibilities. The RPM's role in the RD scoping process will vary depending on the RD contracting party (i.e., the party that orders the services) that is designated as the choice to be the lead party. Exhibit 1-1 depicts how the choice of the lead or a contracting party affects the RD process.

The Guidance presents information for performing the basic predesign activities, including the following:

- Performance of RD/RA management planning
- Collection of predesign technical information
- Development of approximate RD schedules
- Preparation of Independent Government Cost Estimates (IGCEs) for RD work assignments to be performed by contractors
- Development of the Statement of Work (SOW) for the RD
- Development of an SOW for the oversight of PRP-conducted RDs

RPM RESPONSIBILITIES

Depending on the RD contracting party, you, as RPM, will be faced with slightly varying responsibilities, which include developing cost estimates and negotiation. In general, responsibilities can be described under three different lead RD groupings, because in all three cases you will be responsible for

- Developing the Project Management Plan (Chapter 2)
- Collecting predesign technical information (Chapter 3)
- Refining the RD schedule (Chapter 4)
- Drafting the SOW (Chapter 6)

EPA as the Contracting Party

For EPA-lead sites (i.e., where EPA is the contracting party), you are responsible for preparing the SOW, a design schedule, and an IGCE. Guidance for preparing an IGCE appears in Chapter 5. These documents will be used in developing a work assignment to be issued to the designer. Under no circumstances shall the IGCE be made available to the designer. The designer will then prepare and submit to the EPA contracting officer a Work Plan addressing the items in the SOW, including discussion of any need to vary from the SOW. The designer's Work Plan will also include a proposed schedule and cost estimate. You will review the Work Plan for consistency with the SOW and will compare the designer's schedule and cost estimate with the independently prepared Government documents.

You will assist the Contracting Officer in negotiating with the designer to resolve any significant differences in the proposed design

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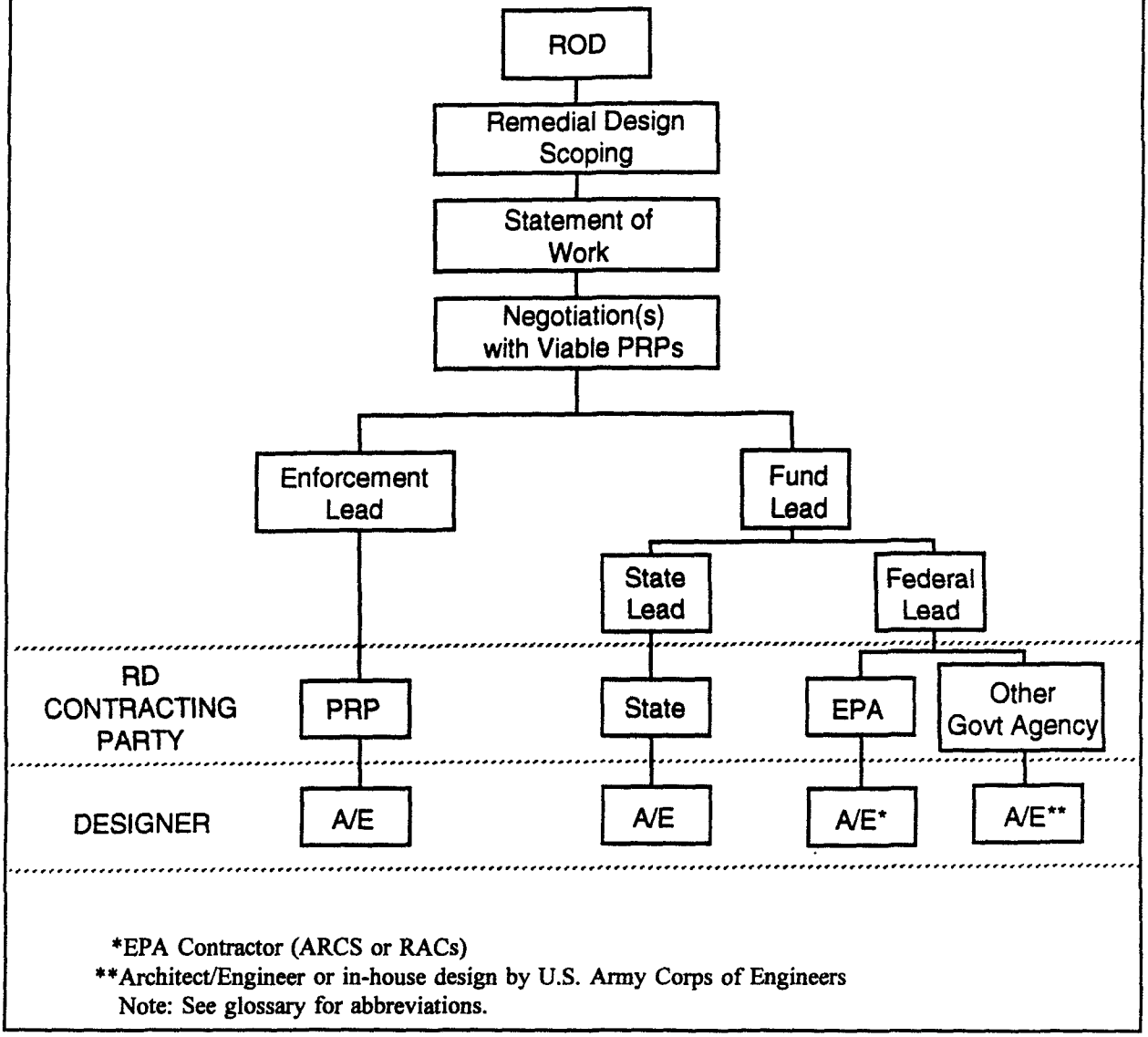
Exhibit 1-1
The RD Process With Different Leads



*EPA Contractor (ARCS or RACs)
**Architect/Engineer or in-house design by U.S. Army Corps of Engineers
Note: See glossary for abbreviations.

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schedule or estimated cost. When agreement is reached, you will prepare the Work Plan approval package. This package should include documentation of any required deviation from the SOW or changes to the IGCE. Once the package is completed, you will forward it through the Project Officer to the Contracting Officer for approval.

State or Other Government Agency as the Contracting Party

As was the case for EPA as the contracting party, you will be responsible for preparing a comprehensive SOW, a design schedule, and an IGCE. The SOW, schedule, and IGCE will be used to develop either a cooperative agreement (with a State, Indian tribe, or locality) or an interagency agreement. The State or agency will reach a separate agreement with the designer to carry out the work.

PRP as the Contracting Party

For Enforcement-lead projects (i.e., where the PRP is the contracting party), you will be responsible for preparing an SOW (using the information contained in the ROD) and an RD schedule. The SOW, including the schedule of deliverables, will become an appendix to the Consent Decree. A cost estimate and SOW will also be needed for the performance of EPA RD oversight activities, usually by a Response Action Contracts (RACs) contractor.

Preparation of the SOW for Remedial Design

This guidance manual has been organized to lead you through the logical progression of tasks that are performed as preliminary preparation for the development of an SOW for the RD. Thus, even though the specific guidance for developing the SOW is described in Chapter 6, all the earlier chapters will be preparation for completion of the SOW. In effect, by the time you have completed the preliminary tasks, much of the work required for the actual preparation of the SOW will have been accomplished.

Preparation of the SOW for Remedial Design Oversight

A model SOW for the performance of RD oversight activities for Enforcement-lead projects has been provided for your use (Appendix E) in preparing a site-specific, comprehensive RD oversight SOW. Oversight activities and the preparation of the oversight SOW are described in Chapter 7.

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CHAPTER 2

DEVELOPING A PROJECT MANAGEMENT PLAN

CHAPTER OVERVIEW

The purpose of this chapter is to provide you, the Remedial Project Manager (RPM), with an overview of the management options available for remedial design (RD) and remedial action (RA) to achieve the goals of the Record of Decision (ROD) in a timely manner. You should consider these options and develop a Project Management Plan prior to the initiation of the RD. The decisions made throughout the development of the Project Management Plan will be incorporated into the Statement of Work (SOW) and, ultimately, into the designer's Work Plan. The Project Management Plan is an evolving document and should be updated on a regular basis as the project becomes more defined. The U.S. Army Corps of Engineers (USACE) conducts similar planning exercises and, although the content is slightly varied, these plans are made available to you for review before you initiate the RD/RA.

PLANNING ACTIVITIES

The key to effective project management is planning. You must devote adequate attention to the initial planning activities (before the RD begins) to ensure that the RD can proceed on time and within budget. During this transition period between the ROD and the development of the RD SOW, you should be concerned with undertaking the following activities (described in more detail below):

- Establish the technical review team.
- Develop the Project Management Plan.
- Update budget and schedule in CERCLIS (Comprehensive Environmental, Response, Compensation, and Liability Information System).

Establishing the Technical Review Team

The complexity of a typical RD/RA project requires in-depth knowledge of a variety of engineering and geological fields including chemical, structural, mechanical, and electrical engineering, as well as a knowledge of hydrogeology. Because it is unlikely that any single RPM will possess such a broad knowledge base, it is imperative that you assemble and coordinate a project team that incorporates technical knowledge in the applicable fields. The project "team" approach, which is used by other Federal agencies engaged in design and construction management (e.g., USACE), results in higher technical quality and improved project efficiency.

Before beginning a remedial design, review the nature of the project and select the appropriate technical assistance. Your technical review team may include Regional support staff (including ground-water, quality assurance/quality control (QA/QC), risk assessment, and engineering experts), other experienced RPMs, representatives from USACE, the State (who focus on Applicable or Relevant and Appropriate Requirements (ARARs) and permit requirements), EPA's Office of Research and Development (ORD), or other EPA offices such as Air, Water, and Solid Waste. It is important to obtain early involvement from the pertinent State or other agency that may have the expertise to assist in the interpretation of a regulation to ensure compliance with the substantive requirements.

When USACE has been tasked to manage the RD/RA contract, they will use the team approach by using their own in-house resources. You must identify additional resources, both internal and external, to ensure success. When issuing work assignments under EPA contracts (e.g., Alternative Remedial Contracts Strategies (ARCS), Response Action Contracts (RACs), Emergency Response Cleanup Services (ERCS), or Emergency and Rapid Response Services (ERRS)), the RPM should consider use of USACE to serve in a "technical assistance" capacity. Such external agencies have excellent technical resources and can be called upon to provide a wide variety of engineering and project management services that are not available from EPA. You may obtain services from USACE by preparing an interagency agreement (IAG) that will explain and authorize the services needed.

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Developing the Project Management Plan

A successful project begins with the "owner" (i.e., EPA). The RPM, acting on EPA's behalf, is responsible for the quality of the project by virtue of establishing the project requirements and by communicating these requirements to the other team members (including the designer and the constructor). To summarize the requirements of the project fully, carefully consider all aspects of the project, make key decisions, and relay this information to those parties who are performing the work. To prepare for meeting this basic owner obligation, first develop a Project Management Plan, which is an analysis of the project's managerial goals and which includes the constraints of the remedy. The purpose of preparing the Plan is to devise a strategy for successfully delivering the project on time and within budget.

Exhibit 2-1 is an outline of the major managerial decisions to be addressed in the development of the Plan, The content, of course, will be modified depending on the complexity of the remedial design and remedial action. For simple projects, many of the requirements need not be addressed--the content and level of detail are left for you and the technical review team to determine. Some questions probably cannot be addressed until the design is under way. Therefore, it is important to continue to revisit the Project Management Plan and to revise it as necessary. It is advised that you seek technical assistance from experienced Regional staff or USACE when developing the Project Management Plan.

1. Specifying Organization and Communications

1.1 Determining Roles and Responsibilities

Establishing the Lead

Negotiations with viable PRPs always occur first after issuance of the ROD. If negotiations fail, the project then becomes Fund-lead and you will select the appropriate means of performing RD/RA. Regional policy may dictate when the State, USACE, or an EPA contractor will conduct RD/RA, For Fund-lead projects, the Office of Solid Waste and Emergency Response (OSWER) Directive 9242.3-08, dated December 10, 1991, mandated a maximum RA threshold of up to $15 million for issuing RA assignments to an EPA contractor; RAs estimated to exceed $15 million were to be assigned to USACE for construction management. RD assignments, however, could be made to either USACE or an EPA contractor at the Regions' discretion, regardless of estimated cost. The RPM should check the current policy. If an EPA contractor is selected, then you, with assistance from the Project Officer, will evaluate the success that a particular contractor has had on other projects. Although it may seem, on the surface, to be desirable to maintain continuity from the Remedial Investigation/Feasibility Study (RI/FS) through the RA by using the same EPA contractor, you are expected to carefully consider the available options. Base your final selection on the requirements of the project.

It is also possible for an EPA contractor to design the remedy, while USACE contracts for and manages the RA. In this case, USACE should be tasked to serve as technical advisors during the design and should be allowed to participate fully from post-ROD planning to SOW development to the development of the plans and specifications.

Assembling the Technical Review Team

Refer to the earlier section beginning on page 2-1 for discussion of the makeup of a technical review team.

1.2 Establishing a Communications Matrix

Effective communication is essential to the success of a project. Prepare and use a communications matrix that identifies the key team members and how information (including submittals, memoranda, documents, and approvals) flows among the members to ensure successful communication. Since this matrix may change upon discussion with the various team members, make sure all parties agree on the procedures before the remedial design commences. You will need to strike a balance so that the team members do not become inundated with too much information, thereby creating an unnecessary expenditure of effort in evaluating the information's significance to the project. It is usually advisable, however, to designate all parties to receive copies of trarismittals, letters, project notes, records of telephone conversations, etc., to keep everyone abreast of project activities.

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Exhibit 2-1
Developing the Project Management Plan: Key Decisions

1. Specify the Organizational and Communications Structure

   - Determine roles and responsibilities
     - Establish the lead
     - Assemble the technical review team
   - Establish a communications matrix

2. Determine Project Constraints

   - Funding constraints
   - Schedule constraints
   - Other constraints
     (e.g., equipment/process availability, long-lead procurement, health and safety, predictable seasonal climate variations)

3. Develop a Contracting Strategy for RD/RA

   - Identify opportunities to accelerate the schedule
     - Phasing
     - Fast tracking
     - Use of preplaced contracts and prequalified contracts
   - Select the design approach*
     - Design specifications
     - Performance-based specifications
   - Identify the RA contract type*
     - Fixed price
     - Cost plus
     - Time and materials
     - Service versus construction contracts
       - effects on labor rates
       - bonding concerns
   - Develop the RA procurement strategy*
     - Competitive procurement
     - Sole-source procurement

   *If project is Fund-lead

2. Determining Project Constraints

You will face a number of constraints that can jeopardize timely project completion. By careful planning, you can minimize disruptions to the schedule. In this section, we offer you a list of the more common issues that can affect the schedule (and costs).

2.1 Funding Constraints

You must identify all known funding constraints in order to adequately scope the project. You are responsible for understanding and ascertaining

- Availability of funds for RD, RA, and operation and maintenance

- State cost share and obligations during future years

A shortage of RA funds for the project may result in the need to phase certain portions. (See section 3.1 of this chapter for an explanation of phasing and fast-tracking.) Additionally, for Fund-lead projects, a State's inability to fund operation and maintenance may affect design decisions. A cost-benefit analysis of capital versus operation and maintenance alternatives is always advisable. It is important to know in advance if low maintenance features should be clearly specified in order to prevent costly redesign efforts.

2.2 Schedule Constraints

Develop a schedule that contains the major milestones through RA completion. If available, use project management scheduling software to create the schedule. At this point in the process, the schedule will be in a preliminary form; it must be continually refined as the project develops. You must be aware of all schedule commitments that have been made so that you can factor them into the contracting decisionmaking process, Decisions made during the development of the Project Management Plan will also affect the schedule. In addition, several of the constraints listed below (section 2.3) could be seen as schedule constraints.

2.3 Other Constraints

The possible constraints to timely project completion are numerous. At this point, you need to identify as many roadblocks as possible that will affect the project schedule or the way the project is managed. Several issues are the most common and therefore worth highlighting for consideration. By carefully considering site-specific conditions, you can plan ahead to avoid later disruptions.

Regulations and Permits

Evaluate the logistical elements involving agencies that have jurisdiction over the site. The involvement of other agencies who are typically outside the Superfund realm can cause schedule delays. It is important to consider all possible players who may affect the RD/RA or threaten its timely completion. Other possible agencies may include

- Federal agencies (e.g., National Oceanic and Atmospheric Administration (NOAA), natural resource trustees, Housing and Urban Development (HUD))
- Local planning commissions
- Zoning authorities
- County or city building and safety departments
- Local water and wastewater authorities
- Local emergency planning and response units
- Public utilities
- Traffic and highway authorities
- State environmental offices

Health and Safety

The management of the health and safety program will affect completion of the project. The use of Level A or B Personal Protective Equipment (PPE) can affect productivity and, subsequently, the schedule. Furthermore, there may be periods during the year when factors such as harmful air emissions or stormwater runoff contamination make construction more difficult.

Equipment

The ROD may specify a process or remedy that requires special equipment or a sole-source procurement. For Fund-lead projects, it is important to evaluate the delivery schedule for the equipment. If you expect the procurement process to take a long time, consider purchasing the equipment under a separate contract to ensure timely delivery.

Access Needs

Identify access requirements as early as possible to evaluate or prevent possible delays in performing RD fieldwork.

*Community Involvement**

It is generally EPA's responsibility to ensure that community involvement activities are carefully planned. Significant delays can result from inadequate consideration of community concerns.

*Throughout this document, "community involvement" is used synonymously for "community relations."

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Weather

When considering weather, it is necessary to evaluate not only the time of the year when the work will occur, but also the geographic location of the work site. Extreme temperatures, excessive rainfall, or high winds may make execution of an RA difficult. In the northern sections of the country, winter construction shutdowns are common.

Change in RPMs

Because some projects take a long time to complete, it is not uncommon to see a change in RPMs during the life of a project. To minimize disruption to the project, records (including the Project Management Plan) should be kept up to date in the event that the RPM is changed on short notice. Please use the modified Golden Rule: Document your actions for your successor as you would want your predecessor to have done for you.

3. Developing a Contracting Strategy for RD and RA

3.1 Opportunities To Accelerate the Schedule

EPA is committed to expediting cleanups at Superfund sites. Therefore, every project must be evaluated for opportunities to accelerate the schedule. In addition, any constraints identified in section 2 may require you to review and adjust the schedule accordingly. There are several methods of developing an optimum schedule to ensure an accelerated RA: phasing, fast-tracking, and the use of preplaced or prequalified contracts.

Phasing

The division of a project into meaningful work elements that can be implemented on different schedules usually results in acceleration of the RD and RA. This strategy, called phasing, allows certain elements of a project to be started ahead of others to lessen the hazards present at the site and to complete simple prerequisite work elements ahead of more complex and hazardous work elements. All elements are worked in unison, but each individual element has its own schedule and moves at its own rate through the process. Phasing is advantageous because the start of initial RA is always accelerated.

Use the following criteria to group RD/RA activities into discrete work elements:

- **Existing Information.** Certain aspects of the design such as road installation, utilities installation, and building demolition and removal can proceed while data on other aspects of the design are gathered.

- **Phasing by Type of Waste.** Segregation of nonhazardous and hazardous work elements may be a simple criterion for project phasing. The engineering required for the nonhazardous components of a project is frequently more conventional and may lend itself readily to accelerated schedules in RD and RA. Examples are access roads, fences, and utilities. In addition, these types of work elements are frequently prerequisites for more complex elements. It makes sense to begin their design and construction as early as possible in the project to ensure that completion does not delay subsequent work.

- **Phasing by Funding Availability.** As stated in section 2.1, funding constraints may create the need to phase an RA by using the concepts presented above. An example would be funding mobilization and construction of an incinerator as phase one, and incinerator operation as phase two.

Fast-Tracking

Phasing breaks down large, complex projects into smaller, more manageable work elements; fast-tracking accelerates the implementation of those individual work elements. Fast-tracking techniques manipulate the internal steps required to complete each phased element, thereby reducing the overall schedule.

You may choose among several techniques by which RD/RA can be fast-tracked:

- **Expediting RD.** Eliminate or shorten steps in the RD process. However, short-cutting involves the assumption of risk. The detail in an RD can be reduced, particularly for simple engineering efforts such as soil excavation or tank dismantling. The use of standard specifications can also expedite the RD.

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- **Optimizing the RD Schedule.** Optimization is the rearrangement of the sequence of RD elements to enhance the overall schedule. For example:

  - The site preparation portion of a design (and other simple construction activities) can be completed and construction initiated while the rest of the design activities are ongoing.

  - All design reviews are scheduled in parallel with ongoing design work so they are not on the critical path.

  - The designer is required to submit design documents *as completed* in a process-logical order instead of retaining significant schematic or ROD interpretation documents until the "preliminary design" or "30-percent" phase is complete.

- **Fast-Track Construction.** Some projects can be divided into separate stages for construction purposes. This is generally accomplished by letting out each stage of work for construction as soon as the design is completed (e.g., site preparation, procurement of long-lead equipment, utilities installation).

Use of Preplaced or Prequalified Contracts

Using preplaced or prequalified contracts will eliminate the solicitation and audit requirements necessary for contract award, allowing construction activities to begin in only 30 to 60 days. Additionally, long delays because of bid protests or bonding difficulties are eliminated. The type of contract is heavily influenced by the amount of uncertainty in the work to be performed and should be selected to coincide with the amount of detail incorporated into the design. The major disadvantage of preplaced or prequalified contracts is the lack of competition.

3.2 Design Approach

Included in the RD documents are specifications that describe the technical requirements to be met by the RA contractor and the criteria for determining whether these requirements have been met. The two types of design specifications typically used within Superfund are Design and Performance-Based Specifications.

Design Specifications

Use design specifications in solicitations when the Government's technical requirements are definite and can be clearly communicated to bidders. Under design specifications, the Contracting Party is responsible for design and any related omissions, errors, and deficiencies in the specifications and drawings. Remedial actions that lend themselves to design specifications include landfill covers and traditional ground-water treatment systems. Detailed designs permit award solely on price and may result in a lower cost. Also, use of a detailed design specification is advantageous in that a firm without design capabilities can bid on the project, thereby expanding competition.

Performance-Based Specifications

Performance-based specifications set forth the operational requirements for item(s) being procured. They advise the RA contractor of what the final product must be capable of performing. If the RA contractor has undertaken an impossible task, meets technological problems, or cannot complete performance because of its lack of experience, the contractor bears the risk of loss. Performance-based specifications are typically used where a more complex treatment technology will be employed. The performance specification is generally more easily prepared and can result in a reduction in the time required to prepare the RD. However, additional time is usually required for evaluating the proposals submitted, and the additional risks assumed by the RA contractor usually result in higher construction costs.

3.3 The RA Contract (for Fund-lead projects)

The *Federal Acquisition Regulation* (FAR) defines the system that the United States Government must use to obtain contractual services. There are four general types of contracts available under FAR: fixed price, cost reimbursement, time and materials, and indefinite quantity. The two types of contracts most commonly used are fixed price and cost reimbursement. The use of fixed-price contracts forces the Government to do a thorough investigation and design before solicitation. The benefit of this work is twofold: it results in a contract that minimizes risk to the Government and

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that has the lowest price at the time of award for comparable technical quality. In contrast, the use of cost-reimbursement contracts allows for expedited solicitation while placing greater demands on the Government in terms of contract administration, risk allocation, and potential cost.

Fixed-Price Contracts

Fixed-price contracts (lump sum, unit price, or a combination of the two) establish a firm price for the supplies, services, equipment, or construction being acquired. In fixed-price contracts, the ceiling or target price is adjusted only when an event occurs or a contingency arises that can cause a modification, as stated in the contract. Public agencies use only fixed-price contracts in acquisitions made by selecting from sealed bids.

Lump sum. A lump-sum (firm-fixed-price) contract is an agreement to pay the contractor a specified price in return for certain specified performance. The price paid is not subject to adjustment as a result of the cost history developed during performance of the contract. The contractor's profit or loss is related entirely to its ability to control costs. Since this type of contract places the maximum risk and cost responsibility upon the contractor, it provides the contractor with the maximum incentive for effective performance. The resultant benefit is increased profits. Because the contractor's cost experience is not a factor in determining compensation under the contract, the administrative costs to both the contractor and the public agency are kept to a minimum.

The lump-sum (firm-fixed-price) contract is used when reasonably definite specifications are available and whenever fair and reasonable prices can be established at the outset. This type of contract is especially suited to the acquisition of supplies, services, equipment, and construction where realistic cost estimates can be made. However, if the contractor has to place a significant contingency factor in its contract price to cover fluctuations in labor or material costs, or to protect itself from its inability to estimate the costs, then the use of a lump-sum (firm-fixed-price) contract is not appropriate.

Unit price. In a unit-price contract, the selection of the offeror of the lowest bid is based on estimated quantities, whereas payments to the successful offeror are based on actual quantities. That is, the sum to be paid is the aggregate total determined by the quantity of work actually performed, calculated according to the unit price set out in the offer. If the estimated quantities are faulty, an offer may be mathematically unbalanced by an offeror who recognizes the real situation and who, consequently, may attempt to gain an evaluation advantage by offering high on the underestimated units and low on the overestimated units. The solicitation should state that if there is reasonable doubt that an award would result in the lowest cost to the agency (materially unbalanced), then the offer may be considered nonresponsive. Also, a clause should be included in the contract that would permit the negotiation of any unit price when the following changes occur: (1) changes in quantities exceed 15 percent of the estimated quantity, and (2) the change in price for that item is significant.

The unit-price contract shifts some of the cost risk away from the contractor. Therefore, the burden is on the agency to ensure that the estimated quantities are a reasonably accurate representation of the actual anticipated needs in light of relevant factors and past experience. The estimated quantities should offer a reasonable probability that award to the offeror of the lowest bid will, in fact, result in the lowest ultimate cost to the agency.

Cost-Reimbursement Contracts

The cost-reimbursement contract provides for payment to the contractor of all (or sometimes a portion of) its allowable costs. In addition to costs, these contracts provide for the payment of a fee to the contractor. Cost-reimbursement contracts establish an estimate of total cost for the purpose of obligating funds and establishing a cost ceiling. The contractor must notify the public agency when costs approach the ceiling, for the contractor may not exceed the ceiling (except at its expense) without the prior approval or subsequent ratification by the public agency. When the contractor's costs reach the cost ceiling, it must stop and await further instructions from the agency. A cost-reimbursement contract may allow a project to be fast-tracked from the ROD into RA; however, its use requires enhanced oversight to more closely monitor contract costs. Cost-reimbursement contracts are suitable for use when the costs of performance cannot be estimated with the accuracy necessary for a fixed-price contract. The cost risk falls on the public agency.

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Time and Materials Contracts

Time and materials contracts may be obtained by using either sealed bids or negotiated procurements. The Government selects this type of contract when it is not possible at the time of contract preparation to accurately estimate the scope (extent or duration) of work required. The contract calls for the provision of direct labor hours at an hourly rate and the provision of materials at a designated cost. The proposal documents contain estimated quantities for bid evaluation purposes. Time and materials contracts require the use of time and cost standards applicable to the particular work items and require appropriate surveillance by Government personnel.

Indefinite Quantity Contracts

Indefinite quantity contracts are like time and materials contracts in that they may be obtained using either sealed bids or negotiated procurements. The Government uses this type of contract when it is impossible to determine in advance the precise quantities of supplies or services that will be needed for designated activities during a definite contract performance period. The method of ordering work must be stated, as well as minimum/maximum orders allowable during a specific time period. In order to provide a basis of cost for items to be ordered, regulations require the development of a fixed-unit-price schedule (SOW) before award. The bid proposal contains estimated quantities for bid evaluation purposes.

Separation of Construction and Service Activities

For Fund-lead projects, whether a remedial action is determined to be construction (construction, alteration, or repair, including dredging, excavating, and painting) or service (operating a treatment unit) will affect the labor wage rates and bonding concerns. The plans and specifications should distinguish between the two types of activities so that appropriate labor wage rates (Davis-Bacon rates for construction and Service Wage rates for service) can be applied. For construction work funded in whole or in part under Section 104(g)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the law requires that all laborers and mechanics employed by contractors be paid wages at rates not less than those prevailing on projects of a similar character within the same locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act.

Federal construction projects require RA constructors to post performance and payment bonds. Historically, bonds have been difficult to obtain when the remedial action exceeded $20 million. Separating the remedial action into service and construction activities results in lower overall cost of the construction and increases the chances for the potential RA constructors to obtain bonds.

3.4 RA Procurement Strategies

Competitive Procurement

EPA's *Guidance on Expediting Remedial Design and Remedial Actions* (EPA/540/G-90/006, August 1990) states that

> The strategy for expediting procurement methods is to match the appropriate procurement method to the type of work being procured. For example, the fastest procurement is when sealed bidding is used to procure work for which standard specifications are available. The time required to put together the invitation for bids is short because it simply involves joining standard contract documents to standard specifications along with a description of the work. Standard specifications are available for a broad variety of work including such items as water mains, wells, pumping systems, some treatment processes, and various types of earth work. If these items are part of a project, then the expediting strategy should include the possibility of separating them out and procuring them through sealed bidding.
>
> On the other hand, sealed bidding can be a slow method of procurement if used for complex work for which standard specifications do not exist. The slowness is caused by the need to develop detailed design specifications. Under these circumstances, it may be faster to use the negotiated procurement method with performance specifications, which require less technical detail. The contractor then submits within his proposal a plan for the development of detailed specifications after the award of the contract. Therefore, the award of the contract for complex work will usually occur sooner if the negotiated procurement method is used. Another procurement method discussed below, two-step sealed bidding, is similar to negotiated in this respect; that is, it is suitable for complex work for which no standard specifications exist.

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Considering the above discussion, one time-saving procurement method is to look for significant work elements which can be procured early by way of sealed bidding with standard specifications. This can be done at the same time that requests for proposals are being developed for the more complex portions of the project, In this manner, the appropriate procurement method is matched to specific type of work with the result that each work element is awarded in the shortest possible time. This process assumes that the various elements of work are large enough to warrant separate procurement actions, and that construction schedule issues are taken into consideration.

Descriptions of the essential features of each procurement method can be found on pp. 32–39 of the *Guidance on Expediting Remedial Design and Remedial Actions*. Recommended procurement strategies for the various categories of remediation are provided as Exhibit 2-2.

Sole-Source Procurement

The use of sole-source or noncompetitive procurement is the least favored method of obtaining an item or service. Thus, the use of sole-source procurement is prohibited except in the following four cases:

(1) The item is available from only a single source.
(2) A public exigency or emergency exists, justifying its use.
(3) Competition is inadequate.
(4) The EPA award official authorizes it.

To use sole-source procurement, the RPM must adequately justify the need for it. Brand name and performance specifications sometimes disguise what is really a sole-source procurement. If only one brand of equipment can meet the specification, this results in a disguised sole source.

FAR requirements for sole-source procurement are found in FAR Subpart 6.3. The FAR has specific procedures that must be met, including obtaining the approval of the EPA's "Competition Advocate" (FAR 6.5) before procurement.

Updating Budget and Schedule

First you must establish a preliminary budget and schedule for the project. This information must be incorporated into CERCLIS by the Region to ensure that funding is available when the design process begins and to facilitate other planning and project management activities. These estimated costs and dates are intended to serve merely as benchmarks; however, they should be periodically refined and updated in CERCLIS as they become more detailed and accurate. Failure to update CERCLIS will hinder efforts to properly fund and schedule the project, possibly resulting in work stoppages, scheduling delays, cost overruns, and a general reduction in project quality.

Once the ROD is signed, review the budget and schedule for both remedial design and remedial action for accuracy. Budget considerations for a PRP-lead site might include ensuring sufficient funding for oversight activities and community involvement needs. Consult with the Independent Government Cost Estimate (IGCE) Coordinator, the Information Management Coordinator, or other experienced staff in the Region to ensure consistency with similar ongoing projects and available historical cost data.

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Exhibit 2-2
Recommended Procurement Strategies for Hazardous Waste Remediation

Remediation Schedule	Specification	Procurement	Contact
Ground-Water Treatment—Complex	• Design • Performance	• Two-Step Bid • Request for Proposal	• Fixed Price • Indefinite Quantity • Time and Materials • Cost Reimbursement
Ground-Water Treatment—Simple	• Design	• Invitation for Bid	• Fixed Price
Treatment of Soils and Sludge—Complex	• Design • Performance • Functional	• Two-Step Bid • Request for Proposal	• Fixed Price • Indefinite Quantity • Time and Materials • Cost Reimbursement
Treatment of Soils and Sludge—Simple	• Design	• Invitation for Bid	• Fixed Price
Civil Engineering—Complex	• Design • Performance	• Two-Step Bid • Request for Proposal	• Fixed Price • Indefinite Quantity • Cost Reimbursement
Civil Engineering—Simple	• Design	• Invitation for Bid	• Fixed Price
On-Site Thermal Destruction	• Performance • Functional	• Request for Proposal	• Fixed Price • Indefinite Quantity • Time and Materials • Cost Reimbursement

Adapted from the technical paper titled "Acquisition Selection for Hazardous Waste Remediation" by William R. Zobel, PE.

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CHAPTER 3

INFORMATION COLLECTION

CHAPTER OVERVIEW

As Remedial Project Manager, you should compile existing predesign information to facilitate a smooth transition from the Record of Decision (ROD) to the remedial design (RD) process and to provide the remedial designer with a clear understanding of the technical objectives of the RD. The information will serve as the initial building block for developing the RD Statement of Work (SOW) for both Fund-lead and Enforcement-lead projects.

The listing of collected data will serve as an up-to-date inventory of any information pertinent to the RD. Provide the list to the designer as an appendix to the SOW. This will make it possible for both you and the designer to identify additional predesign information needs and will enable them to plan for the budgeting and scheduling requirements.

It is your responsibility to be as thorough as possible in providing all relevant information. It remains the responsibility of the designer, however, to verify the completeness of the information provided to ensure that the data will yield a design that when implemented will meet all Applicable or Relevant and Appropriate Requirements (ARARs). Exhibit 3-1 lists the nine major categories of information that should be collected.

DATA COMPILATION

Relevant data are needed by the designer in order to understand the objectives of the RD. The data will be collected by means of the following activities:

- Define current site conditions.
- Describe the selected remedy.
- Identify applicable regulatory requirements.
- Summarize available data and identify possible additional data needs (or treatability studies not performed for the Feasibility Study (FS)).
- State all known, unresolved issues.

The primary information sources include the Remedial Investigation/Feasibility Study (RI/FS) and the ROD, along with any other relevant documents available to you. Document the information sources that you use.

For Fund-lead sites, you may obtain much of the information you need through a predesign discussion session. This meeting, which should be held soon after the ROD is signed, will involve you, in-house technical experts, the RI/FS contractor, and other Regional personnel with prior experience in design and construction activities. It may also include representatives from other Government agencies, the State, and the designer. Discussion topics should include design-limiting site conditions, the availability and need for additional data, the need to define treatment schemes or processes, the need for treatability studies, the selected design approach and milestone dates, and the existence of any unresolved issues.

Exhibit 3-1
RD Information Collection Categories

Site Conditions

Performance Standards

Availability of Data

Technology and Design Approach

Materials

ARARs/Permits/State Involvement

Unresolved Issues

Health and Safety Concerns

Miscellaneous Concerns

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In listing sources of technical information, consider the following points:

- Keep the narrative brief.
- Use bulleted points whenever possible.
- Provide references to sources of information (title and description of document, document number, revision number, date).
- Present pertinent data in logically organized tables.
- Provide flow diagrams to describe treatment schemes or processes for the selected remedy.
- Provide supporting information either as attachments or as a list of references.

We discuss the potential data items to be collected in the pages that follow. It is left to your discretion and that of the review team to determine the content and level of detail for the information provided under each topical heading. For simple design projects, many of the items need not be addressed. Whenever this is the case, headings for unused sections should be retained for consistency and followed by the words "NOT USED."

Site Conditions

1. Site Description

Provide a brief description of the site and past and present site activities, including reference to any previous or ongoing removal or remedial activities. There is no need to rewrite this information if it can be referenced in the ROD.

1.1 Site History and Current Status

Provide a summary of background information that would be useful to the designer. Include a brief description of the dimensions, location, and history of the site; the level of contamination found in each medium; and other pertinent facts about the site in general. Also identify the time period for which the description applies. The designer will know whether there has been sufficient delay between the assembling of predesign technical information and the start of the design to require an update the site status. Mention any individuals who have useful knowledge of the site.

1.2 Chemical, Physical, and Geological Characteristics of Site

Provide a brief description of the general topography (rolling, flat, steep slopes), types of soil, vegetation, geologic characteristics (depth to bedrock), depth to ground water, areas of contamination, and any unusual features known about the site. These features need to be described only if they are not satisfactorily described in the RI, FS, or ROD.

1.3 Proximity to Homes and Schools, and Land and Ground-Water Use Surrounding Site

Provide a description of the distances to the nearest residences, schools, or businesses. Possible or preferred access routes should also be described. Also include a brief description of the surrounding land and ground-water usage.

The designer will use this information (1) to estimate the extent to which contingency planning will be necessary during the RD and remedial action (RA) phases, and (2) to evaluate the need for perimeter monitoring, noise reduction controls, siting arrangements, or temporary relocation of affected residents.

1.4 Basis for Property Lines on Drawings

Indicate, whenever possible, whether property lines shown on existing topographic (topo) maps, drawings, or sketches of the site are based on an actual site survey or merely scaled from existing drawings, field sketches, or topo maps. (Scaled measurements are less reliable, since they can be in error by 25 feet or more.)

Indicate whether the site has been mapped for the project and whether field notes are available. Alternatively, to indicate the level of accuracy of site drawings, note any existing topographical data obtained by others (e.g., U.S. Geological Survey) that have been used for the RI/FS.

1.5 Likely Future Use of Site

Provide a description, if known, of the proposed future use of the site. This information makes it

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easier for the designer to tailor the design to future needs.

2. Real Estate Issues

2.1 Real Estate Requirements Assessment

Obtain an assessment of real estate issues in the form of a Real Estate Planning Report (REPR). The REPR will provide information on real estate properties or easements that must be acquired or from which residents must be relocated before RA proceeds. Real estate information includes data on estimated acreage, number of owners and their names, property value, problems, and the need for temporary relocation of affected residents or businesses. Make arrangements for completion of the REPR before preparing the preliminary design (submitted when approximately 30 percent of the design is complete) by either the designer or the U.S. Army Corps of Engineers (USACE) under an interagency agreement (IAG).

2.2 Real Estate and Access Issues

Point out any restrictions or special agreements made with State or local officials or property owners. Special agreements might include requirements such as the following:

- Limiting the use of a primary access road to certain times of the day to minimize the disruption to local traffic
- Limiting excessive noise and traffic congestion by using alternative transportation routes for equipment and materials
- Strengthening a bridge so that it may provide an access route for heavy construction vehicles
- Using or acquiring property that could affect the design or restrict the construction

3. Availability of Utilities

3.1 Location and Availability

Describe the location, if known, of any utilities (gas, electric, water, sewer, Publicly Owned Treatment Works (POTW), and telephone) available for use at the site. When known, include information on the maximum capacity of each utility and the name and telephone number of a contact person. This information probably can be obtained from the preparer of the RI/FS.

3.2 Existing Agreements or Conditions

Describe any discussions or agreements made with a utility or local boards. Include the date of the discussion and the name of the representative(s) who attended the meeting.

Performance Standards

For each medium to be addressed (e.g., soil, ground water, air) include, if appropriate, the following information on the ROD's remediation standards, goals, requirements, or objectives:

- Clearly defined treatment or performance standards
- Applicable point(s) of compliance (e.g., 5 ppm trichloroethylene (TCE) in ground water at the discharge point to the stream)
- Percentage or order of magnitude reduction expected from treatment
- Best Demonstrated Available Treatments (BDATs)
- Maximum discharge levels to be attained throughout the plume/soil matrix, at property boundaries, or at the point of release into surface water or air
- Specific types of analyses (Toxicity Characteristic Leaching Procedure (TCLP), total waste analyses) that will be used to document achievement of required reductions
- Criteria for disposal of treated materials
  - delisting of residual ash
  - demonstrating that treated wastes do not exhibit Resource Conservation and Recovery Act (RCRA) characteristics
  - meeting notification and certification requirements

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- shipping to an off-site RCRA Treatment, Storage, and Disposal (TSD) facility

- A description of the level of closure or capping that is required (RCRA Subtitle C or D)

Information that is already clearly presented in the ROD or FS, and that is appropriately referenced, need not have lists provided concerning target cleanup goals and objectives.

Availability of Data

1. Physical and Chemical Data Collected to Date

Identify all available data and documents that may be pertinent to design activities, providing information on the date of collection and the physical location of each round of data. Include all of the following:

- "Available for review" analytical data collected to date

- Survey notes (including the location of monuments and benchmarks) and engineering or physical data (soil strength and compressibility)

- Soil boring logs

- Treatability studies

Note, for design purposes, any known data gaps or areas of significant data variability and the relative accuracy of the data. You may find it useful to request the RI/FS contractor to identify data items and possible data gaps for the design. Such data could be included in either the FS or a post-ROD design planning submittal.

A listing of physical and chemical data collections will aid in developing the design SOW. It will also enable you and the designer to determine the availability of required data. Emphasize two facts: that this data listing does not necessarily constitute a complete catalog of all data that will be needed, and that it remains the responsibility of the designer to identify all data needs for the appropriate design of the remedy.

2. Data Retrieval

Make provisions for clear labeling and proper storage of all site data. This will make it possible for the data to be readily identified and retrieved by the designer if the remedial design will not begin immediately after the ROD is signed.

Technology and Design Approach

1. Waste Characterization

Review the site data on wastes and develop a general description of the wastes to be treated. Whenever appropriate, prepare a table or chart to provide information on the type, location, condition, uniformity, volume, and any unusual features (e.g., high toxicity, high oil and grease content) of the waste. If this information is listed in the ROD or FS, it can be referenced and a new list does not need to be created.

2. Treatment Scheme

List any description of the selected treatment process including any pertinent design criteria or parameters from the ROD, if present.

2.1 Schematic Diagram

When you have enough information, give the designer a schematic diagram that indicates the basic features of the selected treatment process. The RI/FS and treatability studies may provide additional schematics as well. Be careful to avoid giving the designer schematics that have more detail about the treatment process than is provided in the ROD or that would lock the designer into an illconceived equipment configuration.

2.2 Pretreatment Requirements

If pretreatment requirements are specified in the ROD, describe (to the extent possible) the type, purpose, and level of treatment to be achieved. Reference the ARARs or other mechanisms from which the performance criteria have been derived.

2.3 Treatment Design Criteria

List or describe any treatment performance criteria identified in the ROD. These may include the following:

- Input and output rates

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- Maximum and minimum flow rates
- Extraction rates
- Influent or effluent quality
- Sampling frequency and test methods

For the RD to proceed smoothly, these criteria must be established before the design is begun.

Describe any unusual operating or site conditions that could affect the specified technology. For instance, you may know from the RI/FS that an existing landfill, which is slated to be capped, has unusually steep slopes. Providing this information to the designer will allow her or him to anticipate the need for a special cover design to provide long-term stability on the slopes. Likewise, the designer should be made aware of any unusual bedrock formations before designing a diversion trench because this information could affect construction phasing, cost, and design.

3. Long-Term Monitoring and Maintenance Requirements

Review the remedy specified in the ROD and predict the kinds of long-term activities that will have to be performed. Long-term activities involve monitoring and maintaining cleanup equipment that might be used for extended periods. Examples include maintenance of ground-water extraction and treatment equipment, periodic maintenance of mechanical and electrical parts, and continual exchange of carbon filters for air stripping or chemicals for a metal precipitation process. For each type of long-term activity, include information on the frequency of sampling and inspections, the parameters of the analysis to be performed, and the timeframe for these activities.

Longer term (30-year) programs may be required to meet certain RCRA postclosure requirements for capped areas containing hazardous wastes. Activities for these programs could consist of regular inspection for erosion and subsidence, periodic maintenance of the leachate collection and treatment system, the vegetative cover, and the ground-water monitoring system.

Estimate the basic requirements for monitoring: include regulatory requirements, performance requirements, and reevaluation periods. Explain that the designer is responsible for verifying the completeness of this estimate and for determining the frequency and type of sampling or monitoring needed to meet the performance requirements.

Provide information on who (State or Potentially Responsible Parties) will be responsible for the monitoring and maintenance of the site. Explain that the responsible party may have input on design considerations that need to be established at the beginning of the design, such as the complexity of monitoring systems and the automation of systems.

Explain that when the design calls for engineering solutions that leave contaminants on-site, a compliance monitoring program should also be developed or required from the contractor. This program should be designed to provide sufficient information to allow you to determine whether the protectiveness of the remedy has been maintained. These plans will aid in the performance of the 5-year review of the remedy (see Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02, dated May 23, 1991).

4. Sole Source or First-Time Use of a Technology or Innovative Technology

Point out any potential requirements for specialized or patented equipment that is likely to be required to meet the goals of the ROD. Also, describe specialized equipment that has been used in predesign activities (bench-scale treatability pilot studies) that also will be required for the RA. This information can prevent delays in completing and implementing the RA by alerting the designer to the need to make provisions for early procurement or installation of the equipment. The procurement of equipment may require a significant lead time, and RA time may increase significantly if the RA contractor has to make major adjustments to calibrate the equipment before treatment.

If noncompetitive (sole-source) procurement is anticipated for a Fund-lead project, include or reference information that the designer can use to justify the procurement. Providing justification for a noncompetitive procurement will place additional requirements on the procuring agent.

5. Treatability Study

Tell the designer if it will be necessary to perform a treatability study (bench or pilot scale) during the design. The primary purpose of the treatability study should be to obtain scale-up information, and

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not to determine whether a treatment technology will be effective. Do not automatically require treatability studies if a detailed database already exists for the contaminants of concern. Treatability studies may not be required when adequate treatability data are available from the RI/FS, or when information already exists about the performance of the treatment process because it has been used elsewhere on wastes like those found at the site. Consult with the technical review team, technical advisors employed by the RI/FS contractor, equipment vendors, and the Office of Research and Development's (ORD's) Superfund Technical Assistance Response Team (START) to confirm the appropriate design approach. Also, give the designer some flexibility in determining the necessity of these studies or tests.

When treatability studies are required, they should follow accepted protocols. When using certain remedies, such as innovative technologies for difficult-to-treat wastes, the use of scaled-up versions during design should be considered. This method allows better assessment of, for example, separation techniques or volatilization rates, or estimated changes in heat transfer rates.

6. Special Design Conditions

Describe any special conditions required of the technologies being used and, if known, state why these conditions were established. Special conditions may be associated with an ARAR or an agreement with State or local officials. For example, normally, it may be acceptable to operate an incinerator as long as stack emissions fall within a certain range for the various particulates or gases involved. However, for a given site, the federally established range of emissions may not be acceptable to State or local officials; as a result, higher efficiencies may be required. Other conditions could include specific requirements for a trial burn or off-site disposal, or restrictions on the operating hours because of the noise levels produced by treatment equipment operated adjacent to a residential neighborhood.

7. Flexibility in Design

When the ROD allows flexibility in design, do not attempt to restrict the designer to the use of a specific technology or material. Instead, point out the flexibility allowed, and encourage a review of available alternatives and consultation with appropriate technical advisors, as previously indicated for pilot studies.

Explain that the designer should include a comparison of life-cycle costs (capital, operating, replacement) in the evaluation of treatment processes. This comparison of life-cycle costs should not be confused with the value engineering study that must also be conducted.

8. Schedule Constraints That Could Affect the Rate of Treatment or Unit Size

Point out any target date that must be met (because of court mandate, permit requirements), since this date could affect the rate at which treatment must be performed. Knowledge of this date will enable the designer to make better decisions concerning treatment unit sizes or numbers and the scheduling of construction activities.

9. Confirmation Monitoring (Achievement of Performance Standards)

Confirmation monitoring is the sampling and analysis program that is performed during and after the removal of wastes or contaminated soils, or ground-water remediation, and prior to project closeout. Its purpose is to determine whether the final cleanup levels have been met for the hazardous constituents of concern. The monitoring is done by acquiring sufficient environmental media sampling data to confirm that no residual contamination in excess of the approved levels remains as a threat to human health and the environment and that the remedy is, therefore, complete.

Explain that a confirmation monitoring activity may be a necessary element of the project design requirements, if not already specified in the ROD. Under these circumstances, the designer would need to supply information on specific aspects of monitoring, such as the number of samples and the degree of statistical accuracy that would be required.

Guidance on confirmation monitoring can be found in *Methods for Evaluating the Attainment of Cleanup Standards: Volume 1—Soils and Solid Media* (February 1989, EPA 230/02-89-042) and *Volume 2—Ground Water (July 1992)*.

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Similarly, the designer must call for or develop requirements for a shakedown or testing program to demonstrate that equipment installed by the RA contractor performed as the designer intended.

Materials

1. Volume Estimation and Basis of Calculations

Describe the degree of accuracy of existing RI/FS data for the following items:

- Volume estimates
- Delineations of contaminated areas
- Chemical and physical descriptions of all contaminated materials to be stored, treated, or disposed of
- Estimates of off-site disposal needs (drums, ash, sludge)

You and the technical review team should review these items closely, as the accuracy of these values is vital to the validity of cost estimates and to the proper design and implementation of the RA. For example, an on-site RCRA disposal unit built to handle an original volume that was inaccurately estimated may not have the capacity to contain the actual increased volume. Knowledge of relevant volume uncertainties will enable the designer to gather more data or to incorporate conservative design estimates for processes such as on-site excavation, treatment, and disposal.

2. Spatial Requirements, Staging, Logistics

You and the technical review team should evaluate and advise the designer of the possible need for large areas to stage materials and to construct or operate the project. For example, incineration, solidification or stabilization, and other soil or sludge treatment remedies often require space for the following activities:

- Dewatering
- Source separation
- Dredging
- Ash, sludge, and materials treatment and storage
- Tank containment
- Stockpiling
- Staging of equipment or materials
- Decontamination
- Treating
- Locating access roads, trailers, and buildings

Explain that the designer must consider carefully aad determine whether project components should be located on-site or off-site and whether in a contaminated or uncontaminated zone. For certain projects, the acquisition of easements or the outright purchase of properties may be an efficient means for implementing the remedy (using an underground discharge line to connect with a sewage treatment plant intercepting sewer for purposes of groundwater treatment). In addition, depending on remedy uncertainties, you and the technical review team may want to provide a flexible design. This design would allow for expansion by including provisions for additional unit processes, pumps, and various other items or materials needed to accommodate increased flow capacities or additional treatment processes that might arise during remedial action.

3. Durability of Materials

Explain that testing the durability of materials with regard to physical and chemical characteristics may be warranted for certain design components. For example, process system integrity can be affected by wet and dry or freeze and thaw cycling, inadequate design-life assumptions, or corrosion from contact with chemically contaminated media.

If the total volume of materials processed or the length of operation for a treatment facility is tentative, conservative estimates may be warranted, and more durable materials may be appropriate (e.g., using stainless steel instead of carbon steel piping).

4. Materials and Equipment Availability

Alert the designer to review the project and advise you whenever the selected remedy requires locating a source for large quantities of a particular material. Certain materials or equipment needed during the remedial action may require long-lead procurement,

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significant distances or size limitations for transportation, or extensive off-site involvement. As an example of off-site involvement, you may need to alert the designer to give early attention to determining the availability of off-site borrow sources or treatment or disposal facilities if the remedy calls for any of the following:

- Placement of an extensive clay cap
- Use of a POTW
- Placement of riprap on embankments, requiring large quantities of 6-inch stone
- Disposal of on-site treatment plant sludge or spent carbon

5. Mixed Materials

List any ROD requirements for the handling of contaminated materials, particularly if the requirements relate to heterogeneous materials. For example, for certain remedies such as soil washing, it is often necessary to separate out large particles (so that the fine ones can be treated). For such remedies, the level of separation and treatment required for the materials should be described to the extent known. Also include a description of the waste to be handled when it contains materials such as the following:

- Organic matter (roots, bushes, trees)
- Large cobbles or boulders
- Debris (tires, batteries, autos, machinery, drums, tanks)
- Difficult-to-treat materials (creosoted piles, oily sediments)

State, if known, whether any permit waivers or treatability variances, such as soil and debris variances under the RCRA land disposal restrictions, should be pursued.

ARARs/Permits/State Involvement

1. ARARs List

OSWER Directive 9355.7-03, *Permits and Permit "Equivalency" Processes for CERCLA On-Site Response Actions* (February 19, 1992), states that

> Remedial actions must comply with those requirements that are determined to be ARARs at the time of ROD signature. [The proposed and final 1982 National Oil and Hazardous Substances Pollution Contingency Plan (NCP)] [S]ection 300.430(f)(1)(ii)(B), in effect, "freezes" ARARs when the ROD is signed unless compliance with newly promulgated or modified requirements is necessary to ensure the protectiveness of the remedy. If ARARs were not frozen at this point, promulgation of a new or modified requirement could result in a reconsideration of the remedy and a restart of the lengthy design process, even if protectiveness was not compromised. This lack of certainty would adversely affect the operation of the [Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)] program, would be inconsistent with Congress' mandate to expeditiously clean up sites, and could adversely affect negotiations with potentially responsible parties.

List or reference the ARARs that were in effect on the date that the ROD was signed and therefore are required as part of the remedy. This list will be useful in preparing the design SOW, and in establishing an initial agreement between EPA and the designer as to which ARARs must be met in the design.

Explain that the designer must ensure the accounting of all appropriate ARARs, off-site permits, and TBCs (nonpromulgated or enforceable Federal or State "To Be Considered" criteria, advisories, guidance, or proposed standards) that need to be followed or attained during the RD/RA. An example of a TBC is a requirement that all electrical codes be met when constructing a pump station or force main. Duplicative ARARs should not appear on this list, for they should already have been screened out during ROD development. Categorize the ARARs as either chemical-specific, location-specific, or action-specific. Also, identify TBCs that should be addressed during the RA.

Identify for the designer (to the extent possible) any ARARs, variances, waivers, and exemptions that have been used or are available for use. This might include a land ban treatability variance or a waiver of certain Maximum Concentration Levels (MCLs) for remediating contaminated ground water in fractured bedrock.

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Explain that the designer is responsible for any potential ARARs that can be established only during design—for example, through treatability studies to be conducted or through specific processes selected during design to satisfy the general remedy selected.

2. On-Site Versus Off-Site Waste Management

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) provide that "on-site"* actions will be exempt from having to obtain Federal, State, and local permits through administrative procedures. Although on-site actions must comply with (or waive) the substantive requirements of the permits, these RAs will generally proceed more quickly than off-site actions. In contrast, off-site actions must usually meet the substantive and often lengthy administrative permit components of these ARARs, and comply with the requirements of the Off-Site Policy (in accordance with CERCLA §121(d)(3).

3. Permits and Land-Use Restrictions

Provide a preliminary list of off-site permits to be obtained. Point out situations where institutional controls such as restrictive easements or water-use restrictions are needed, and note all parties who have specific responsibilities for implementing controls: EPA, the State, the local government and/or the designer or constructor. For example, the designer may be required to develop a restrictive easement prohibiting the use of certain wells as a potable water supply.

4. Extent of State Involvement

Describe the anticipated responsibilities of the State during the RD. Include the role of the State in

- help in applying State-developed RD/RA ARARs
- helping to resolve and expedite permitting issues
- gaining access to properties

Unresolved Issues

Provide a list of all known, unresolved issues; include enough detail to enable the designer to understand the concerns of everyone involved. For example, a local sanitation board could be reluctant to accept wastewater from the site for treatment at their POTW. The board's concerns might include the impact of the wastewater on the treatment process or the ability of the plant to accommodate additional volumes of water during peak flow periods. When you resolve issues of this type with help from the designer early in the process, substantial cost savings may result.

Health and Safety Concerns

Alert the designer to potential health and safety concerns (air releases, traffic) that may be posed by the site and the planned remedial activities at the site both for on-site workers and for the neighboring community.

List or reference all known threats posed by the site and the planned remedial activities. Reference and require modification and reuse of any existing data or Health and Safety Plan (HASP) from previous work at the site. This list will facilitate the preparation of a site-specific HASP for any on-site activities to be performed by the designer or by the RA contractor, as defined and required by 29 CFR 1910.120 and 40 CFR 300.150.

The designer should be required to delineate the nonhazardous portions of the post-RD work, because the efficiency of work in hazardous areas is limited in direct proportion to the level of protective clothing required.

Advise the designer of the following contingencies:

- Potential for off-site migration of toxic vapors or particulates that might result from remedial activities
- Associated controls, such as dust suppression, that may be required to minimize health risks to off-site receptors

* "On-site," according to the NCP, may include the areal extent of contamination (as well as reasonably close noncontiguous facilities having wastes compatible with a selected treatment or disposal approach) and all suitable areas, in close proximity to the contamination, involved in implementation of the response action.

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- Applicable community air emission standards (an example of an ARAR)
- Site-specific risks from chemical, biological, or physical hazards (such as unusual employee exposure)
- Potential for fire or explosion

Air dispersion modeling might be recommended for predicting potential off-site concentrations. Ambient monitoring requirements as well as realtime air monitoring with action levels may also be required at the site perimeter to determine the need for implementing control measures.

Miscellaneous Concerns

1. Community Involvement Activities

Summarize the community involvement activities that have taken place. Highlight any special interests or concerns that the community has expressed. Include a preliminary list of additional community involvement activities that should be performed as part of the design and construction efforts.

List or reference representatives of citizen groups that have expressed interest in the site.

2. Confidential Business Information

Identify any documents being used for the site RD that also contain confidential business information. Reference each document and its location in the files. Responsibilities for safeguarding confidential business information are explained in EPA's guidance document entitled *Contractor Requirements for the Control and Security of RCRA Confidential Business Information*, dated March 1984, available from OSWER's Confidential Business Information Office.

3. Other RD/RA Requirements

Explain that designer- or RA contractor-developed documents should be provided for each RA and should be called for in the project specifications. These might include a Health and Safety Plan, an Emergency Response Plan, a Community Involvement Plan, a Field Sampling and Analysis Plan, a Quality Assurance Project Plan, or an Operation and Maintenance Plan. These plans may have been developed for an earlier design or for the RI/FS and can be provided to the designer for modification rather than having the designer start from scratch.

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CHAPTER 4

DEVELOPING THE PRELIMINARY REMEDIAL DESIGN SCHEDULE

CHAPTER OVERVIEW

Successful management of a remedial design (RD) depends on maintaining schedules and budgets and resolving problems quickly. Techniques for establishing good RD management include requirements for monthly Remedial Project Manager (RPM) and revision of the RD schedule. The designer may not change the RD schedule without your prior written approval. This chapter will help you develop a preliminary schedule to be used during negotiations. Because you may not have all the skills, experience, or insight to develop the schedule, you should rely on the technical review team to help you. To develop the schedule, first produce a comprehensive list of activities or subtasks that, when completed, will achieve the goals specified in the Record of Decision (ROD). In contrast to the preliminary schedule that you prepare, the final, established RD schedule is prepared by the designer. The final schedule must specify reasonable goals, contain sufficient detail to allow monitoring of progress on key activities, and follow the approved Work Plan.

THE PRELIMINARY RD SCHEDULE

Schedule Components

You are responsible for negotiating the preliminary RD schedule with the State, other Government agencies, or a remedial contractor (for Fund-lead projects) or with the Potentially Responsible Party (PRP) (for Enforcement-lead projects). As a starting point for negotiation, develop a preliminary, independent RD schedule—consistent with the draft design Statement of Work (SOW) (see Chapter 6 and Appendix A)—using the 11 standard RD tasks as the basis for establishing schedule milestones. Request that the contracting party (the State, other Government agency, remedial contractor, or PRP) develop a schedule in a similar manner by separating the work into tasks. This parallel organization will provide a common basis for evaluating differences between the two schedules.

Initially, the durations for the individual tasks can be approximated by referring to the generic RD schedules in Appendix B and selecting or adapting values from the tables. (It is anticipated that CERCLIS 3 will be used to record historic data, including the durations of standard tasks for work assignments, from which new data schedules can be developed.)

Generic RD Schedules and Assumptions

The generic RD schedules found in Appendix B were developed to match the 11 standard tasks found in ARCS (Alternative Remedial Contracting Strategy) contracts for RD work assignments. This generic schedule can also be used with slight modification to establish schedule durations for the similar standard tasks for RD found in the RACs (Response Action Contracts) SOW and summarized in Exhibit 4-1.

The assumptions used in developing the generic RD schedules typically apply to all the schedules regardless of the technology applied to remedy the site. If the design activities differ from these assumptions, adjust the schedule accordingly. These assumptions are listed below.

- The Feasibility Study data are sufficient to specify the bench and pilot testing for any treatability study.
- Design reviews are conducted in parallel with the continuing design process rather than in series.
- The duration of individual activities for each of the remedy-specific schedules was selected based on a review of ongoing RD projects and on discussions with consultant and regulatory personnel knowledgeable about the various cleanup technologies, the design requirements, and procurement and planning needs.

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Exhibit 4-1
RACs (Response Action Contracts) Standard Tasks for Remedial Action

TASK 1: PROJECT PLANNING AND SUPPORT

- Attend scoping meeting
- Conduct site visit
- Develop work plan and associated cost estimate
  - prepare construction cost estimate
  - initiate discussion regarding 6% design limitation
- Negotiate work plan and make necessary revisions
- Provide conflict-of-interest disclosure
- Evaluate existing data and documents
- Prepare the following (or reference existing) plans:
  - Site Management Plan
  - Field Sampling Plan
  - Quality Assurance Project Plan
  - Health and Safety Plan
- Develop an EPA-approved laboratory quality assurance program
- Develop/review qualifications of the laboratory
- Accommodate external audits or review mechanisms
- Perform site-specific project management
- Manage, track, and report status of site-specific equipment
- Prepare meeting minutes

TASK 2: COMMUNITY INVOLVEMENT

- Update Community Involvement Plan
- Prepare fact sheets
- Prepare or update site mailing list
- Provide public meeting and/or open house support
- Implement other community involvement activities
- Prepare presentation materials

TASK 3: DATA ACQUISITION

- Environmental survey
- Mobilization/demobilization
- Test boring and monitoring well installation and development
- Soil boring, drilling, and testing
- Environmental sampling/monitoring, including the following:
  - ground water
  - surface soil
  - soil boring/permeability
  - air
- Physical/chemical testing
- Field-generated waste characterization and disposal in accordance with local, State, and Federal regulations

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Exhibit 4-1 (continued)

TASK 4: SAMPLE ANALYSIS

- Perform environmental sample analysis
- Perform waste sample analysis
- Produce analytical data
- Task implementation mechanisms include:
  - field screening
  - Contract Laboratory Program
  - subpool or Team subcontracts laboratories
  - Regional Environmental Services Division
  - Environmental Response Team laboratory
  - regionally procured laboratories

TASK 5: ANALYTICAL SUPPORT AND DATA VALIDATION

- Collect, prepare, and ship environmental samples in accordance with the Field Sampling Plan; the following may be required:
  - field screening
  - ground-water sampling
  - surface/subsurface soil sampling
  - surface water and sediment sampling
  - air monitoring and sampling
  - biota sampling
- Develop Data Quality Objectives
- Request, obtain, and perform oversight of analytical services
- Coordinate with the EPA Sample Management Office, the Regional Sample Control Coordinator, and/or the Environmental Services Division
- Implement the EPA-approved laboratory quality assurance program
- Provide sample management
- Perform data validation
- Review data for useability for its intended purpose
- Provide reports on data validation and useability

TASK 6: DATA EVALUATION

- Data useability evaluation/field quality assurance/quality control
- Data reduction and tabulation
- Comparison of data acquired during design with historic data
- Data trend evaluation and/or modeling and submission of Technical Memorandum

TASK 7: TREATABILITY STUDY/PILOT TESTING

- Provide test facility and equipment
- Test and operate equipment
- Retrieve sample for testing
- Prepare Technical Memorandum
- Characterization and disposal of residuals in accordance with local, State, and Federal regulations

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Exhibit 4-1 (continued)

TASK 8: PRELIMINARY DESIGN

- Prepare preliminary design, including the following specific components:
  - recommended project delivery strategy and scheduling
  - preliminary construction schedule, including project phasing
  - specifications outline
  - preliminary drawings
  - basis of design report
  - preliminary cost estimate
  - a detailed statement of how all applicable or relevant and appropriate requirements as well as Federal and State public health and safety environmental requirements and standards will be met
  - land acquisition/easement requirements
  - technical support to EPA/State/USACE in land acquisition
  - conduct and/or assist in value engineering screening

TASK 9: EQUIPMENT/SERVICES/UTILITIES

- Procure long-lead equipment, services, and/or utilities

TASK 10: INTERMEDIATE DESIGN

- Prepare intermediate design, including the following specific components:
  - update construction schedule
  - preliminary specifications
  - intermediate drawings
  - basis of design report
  - revised cost estimate
  - a revised detailed statement of how all applicable or relevant and appropriate requirements as well as Federal and State public health and safety environmental requirements and standards will be met, if required
  - an intermediate design review/briefing for EPA
  - Initiate VE study if VE screening identified potential project savings

TASK 11: PREFINAL/FINAL DESIGN

- Prepare the prefinal design, including the following specific components:
  - subcontract award document
  - prefinal design specifications
  - prefinal drawings
  - basis of design report/design analysis
  - revised cost estimate
  - a prefinal/final design review/briefing for EPA
  - biddability (offerability) and constructability reviews
  - revised project delivery strategy
  - the 100% design submittal shall include the final plans and specifications in reproducible format, a final cost estimate, and a schedule of the overall remedial action
  - report results of VE study and incorporate accepted VE recommendations into final design

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Exhibit 4-1 (continued)

TASK 12: POST-REMEDIAL DESIGN SUPPORT

- Solicit the procurement
- Evaluate offers received
- Inform EPA Contracting Officer of the best qualified/cost-effective offer
- Perform prebid (presolicitation) activities, including:
  - duplication and distribution of contract documents
  - advertising/soliciting of bids
  - issuing addenda
  - prebid (presolicitation) meetings
  - resolution of bidder (offeror) inquiries
  - on-site visits
  - compilation of contract documents
  - resolicit bids/offers and repackage documents if necessary
- Perform preaward activities, including:
  - receipt of bids (offers)
  - determination of responsive, responsible bidders (offerors)
  - bid (offer) tabulation
  - bid (offer) analysis
  - receipt of followup items from lowest responsible bidder (offeror)
  - review of EEO, MBE requirements, SDB subcontracting plans, etc.
  - reference checks
  - request for consent from EPA
- Write site-specific plans before beginning Remedial Action field activities, including:
  - Site Management Plan
  - Sampling and Analysis Plan
  - Health and Safety Plan
  - Community Involvement Plan

TASK 13: WORK ASSIGNMENT CLOSE OUT

- Return documents to EPA or other document repositories
- Duplicate, distribute, and store files
- Archive files to meet Federal Records Center requirements
- Use microfiche, microfilm, or other EPA-approved data storage technology
- Prepare a Work Assignment Close Out Report

- The intermediate design submittal and formal value engineering (VE) are not required for the Simple designs.

- The pilot-scale equipment is available; i.e., long-lead procurement or fabrication is not required.

- Laboratory analysis is conducted similar to EPA's data quality objectives (DQO) Level III; i.e., full Contract Laboratory Program (CLP) validation is not required.

- Resource requirements do not restrain the duration of an activity.

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Schedule Development

EPA has developed nine remediation categories (see Exhibit 4-2, Total Design Durations for Nine Remediation Categories/Schedules) that encompass the universe of technologies being used to remediate National Priorities List sites. These nine remedy-specific, generic schedules are included as Charts B.1 through B.9 in Appendix B. We recommend the "bar chart" format to depict the generic RD schedules because it provides a clear display of each task, including the start and completion dates and the relationship to other tasks. Other formats are also acceptable; their usage will depend on the complexity of the project. The generic RD schedules can be used to develop an initial site-specific schedule; however, when you use the schedules, consider (1) the assumptions used in preparing the schedules, and (2) the recommendations provided in this chapter.

You and the technical review team will have knowledge of site data that will enable you to select the remedy-specific, generic RD schedule appropriate for the site. Wherever two or more remedy categories are applicable to the same site (e.g., ground-water treatment and on-site thermal destruction) and the design activities for both remedy categories are to be conducted in parallel, a base generic schedule is to be selected.

The schedule for the remedy of longest overall duration should be selected as the base schedule, with the schedule for the other remedy incorporated into it. The longest duration for each common task should be used in the base schedule and the total duration revised accordingly.

Such use of the generic RD schedules will result in an approximate, first-cut schedule. This schedule can then be used directly for simple projects, or as the basis for refinement into more detailed, site-specific schedules for projects that are complex or that vary from the assumptions for the generic schedules. The site-specific schedule may differ from the first-cut schedule by taking into account features such as the deletion of certain standard design activities that may have been previously performed or the consideration of unique technical design requirements for the site that will cause revision of the time estimates for some of the standard tasks.

You may also use "Timeline" software, along with a computer module that was developed by EPA based on the same principal remediation categories and schedules included as Charts B.1 through B.9 in Appendix B. Additional information on this EPA-developed system can be obtained from Regional Local Area Network (LAN) Administrators.

Exhibit 4-2
Total Design Durations for Nine Remediation Categories/Schedules

	Remedy/Schedule	Total Duration* (months)
1.	Ground-Water Treatment—Complex	13–16
2.	Ground-Water Treatment—Simple	10–13
3.	Ground-Water Treatment—Simple (Expedited)	4–7
4.	Treatment of Soils and/or Sludge—Complex	13–19
5.	Treatment of Soils and/or Sludge—Simple	9–13
6.	Civil Engineering—Complex	13–15
7.	Civil Engineering—Simple	9–13
8.	Civil Engineering—Simple (Expedited)	4–7
9.	On-Site Thermal Destruction	12–15

*Estimated durations are based on completed remedial management (REM) contract design projects. Shorter durations could be achieved through the use of performance specifications or "off-the-shelf "designs.

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REMEDY-SPECIFIC SCHEDULES AND ASSUMPTIONS

Nine characteristic RD categories typify the universe of remedial actions being considered or implemented at Superfund sites. A general definition of the nature of each of the nine principal categories, along with the assumptions that were made in developing the generic schedule for each category, is described below. (See Exhibit 4-2 above for these nine principal remediation categories and their range of durations from RD start to 100-percent design approval.) These schedules have been developed using reasonable approximations for performing the standard tasks; however, each Superfund site must be individually analyzed to determine whether the approximate durations apply.

It should be noted, as previously discussed, that a site-specific design may have a combination of these remedies as the overall project solution. It is assumed, in that case, that the component remedies are applied in parallel and that the more complex, time-consuming remedy will determine the overall project duration.

Ground-Water Treatment—Complex
(Appendix B, Chart B.1)

This design category is for withdrawal of ground water, treatment and discharge or disposal of ground water, and surface water or leachate treatment. The technology categories include physicochemical or biological treatment of liquids. Specific technologies may include air stripping, carbon adsorption, metals precipitation, ion change, multimedia filtration, aerobic and anaerobic biodegradation, evaporation, and distillation. However, the aquifer, contaminants, duration of operation and maintenance (O&M), disposal requirements, performance monitoring difficulties, and pumping and treatment system design effort is a more complex, time-consuming effort than in the Simple case. Innovative water treatment technologies may be considered.

Scheduling assumptions

- The complexity of the aquifer system requires extensive aquifer testing.
- The contaminants present and the processes selected require pilot-scale testing in addition to bench-scale testing.
- The complexity of the design effort dictates an intermediate design submittal.

Ground-Water Treatment—Simple
(Appendix B, Chart B.2)

In the Simple case, the technologies are proven for the contaminants of concern and are available in "off-the-shelf" package treatment units. In addition, the aquifer characteristics are not complex, and standard pumping systems are used.

Scheduling assumptions

- Bench-scale testing without pilot-scale treatability testing is sufficient for design.
- The following are not required:
  - Extensive aquifer testing and collection of chemical analytical data
  - Intermediate design submittal.

Ground-Water Treatment—Simple (Expedited)
(Appendix B, Chart B.3)

EPA has developed expedited categories for sites where the RD is simple and straightforward and where additional data collection is not required. Sites where the scope is limited to minor removal actions or administrative controls fall into these categories.

Scheduling assumptions

- A single contractor performs the Remedial Investigation/Feasibility Study (RI/FS), the RD, and construction management.
- The following are not required:
  - Additional data collection to support the RD
  - Treatability studies
  - VE
  - Intermediate design submittal.
- Client agrees at predesign meeting to initiate some aspects of design before approval of the Work Plan.

Treatment of Soils and Sludge—Complex
(Appendix B, Chart B.4)

This design category includes the physical, chemical, or biological treatment or volatilization of soils and sludges. All nonthermal destruction of solids is treated under this category. As a result of complex contaminants and site conditions,

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innovative processes requiring extensive testing and development are required.

Scheduling assumptions

- The selected process requires extensive bench- and pilot-scale testing.
- The design magnitude and complexity dictate the submittal of an intermediate design package.

Treatment of Soils and Sludge—Simple
(Appendix B, Chart B.5)

In the Simple case, the process chosen is a well-proven technology for the contaminants of concern and for the existing site conditions.

Scheduling assumptions

- Bench- and pilot-scale testing programs are required; however, they are relatively short.
- The simplicity of design activity and magnitude of the design effort allow elimination of the intermediate design submittal.
- Formal VE is not required.

Civil Engineering—Complex
(Appendix B, Chart B.6)

This design process is principally a civil engineering design. The Complex case may require a more extensive data collection or design effort such as a Resource Conservation and Recovery Act (RCRA) cap, extensive or complicated excavation or demolition activities, or the design of other engineered structures.

Scheduling assumptions

- The magnitude of data-gathering activities is greater than in the Simple case, making the durations of sampling and analysis also greater.
- An intermediate design submittal is required.
- VE is required.

Civil Engineering—Simple
(Appendix B, Chart B.7)

As with the Complex case, this design is principally a civil engineering design. This category will contain such remedies as fencing, ground-water monitoring, and minor earthwork, demolition, or removal activities.

Scheduling assumptions

- No treatability studies are required.
- Data-gathering activities include collection of survey, geotechnical, and chemical analytical data.
- The simplicity of the design activity and magnitude of the design effort allow elimination of the intermediate design submittal.

Civil Engineering—Simple (Expedited)
(Appendix B, Chart B.8)

Both of the expedited categories were developed for sites where the RD is simple and straightforward and where additional data collection is not required. Sites where the scope is limited to minor removal actions or administrative controls also fall into these categories.

Scheduling assumptions

- A single contractor performs the RI/FS, the RD, and construction management.
- The following are not required:
  - Additional data collection to support the RD
  - Treatability studies
  - VE
  - Intermediate design submittal.
- Client agrees at predesign meeting to initiate some aspects of design before approval of the Work Plan.

On-Site Thermal Destruction
(Appendix B, Chart B.9)

This design category includes on-site incineration, pyrolysis, or in situ vitrification.

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Scheduling assumptions

- Performance specifications are produced in the design of the thermal destruction unit.
- Detailed design of auxiliary systems is required (e.g., water supply, electricity, fuel, material handling).
- Bench-scale treatability and a pilot-scale test burn are required. It is assumed that pilot test burns are conducted at an existing facility.

RECOMMENDATIONS

Consider the following recommendations to further enhance the usefulness of the concept of a generic RD schedule:

- To maximize cost and technical efficiencies and to become aware of and to correct possible deficiencies, initiate the technical reviews (biddability, constructibility, environmental, claims prevention, and operability) as early as possible during intermediate design. For similar reasons, initiate VE screening early in the project schedule and conduct a formal VE review, if appropriate, during intermediate design.
- The use of "standard" specifications (specifications modeled for a particular type of equipment or treatment process and then modified to be site-specific) or the use of completed plans and specifications for a similar remedy as a starting point for design will save time and resources. Standard specifications are currently available from the U.S. Army Corps of Engineers. A list of these standard specifications can be obtained by calling Ms. Tommian McDaniel at (202) 504-4363.
- For sites where RD will be conducted outside the limits of the assumptions presented here, obtain specific information about duration requirements and current practice for procurement, interagency agreements, owner reviews, and other factors that may affect the start or overall duration of an RD.
- For sites where early RA starts are required to protect the health and safety of the public or for other reasons, you can organize the RD/RA schedule to allow for early RD completion and RA implementation on the simplest operable units first. This method allows earlier RA starts with simultaneous design of the more complex operable units.
- The standard tasks for RD services are described in more detail in the model SOW (Appendix A), and use of the standard tasks is intended to provide a consistent method of reporting design work. Use them as much as possible.

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CHAPTER 5

DEVELOPING AN ESTIMATE OF REMEDIAL DESIGN COSTS

CHAPTER OVERVIEW

For Fund-lead projects, EPA's Work Assignment Manager (WAM) is required to prepare an Independent Government Cost Estimate (IGCE) before issuing the work assignment to the selected remedial designer. The *Federal Acquisition Regulation* (FAR) at 48 CFR 36.603 requires that an independent estimate of the cost of design services be prepared for each contract or contract modification (work assignment) that is expected to exceed $25,000. As the WAM of the contract action, it is your responsibility as Remedial Project Manager (RPM) to develop the IGCE during preparation of the Statement of Work (SOW) for the remedial design (RD). This estimate should include a projection of the labor hours necessary to accomplish the work as well as subcontractor costs and other direct costs (ODCs), which may include travel and per diem, communications, equipment, sampling and laboratory analysis, printing, and computer time.

This chapter provides information on the preparation of the IGCE to be used in negotiating a reasonable price for the design of a remedial action (RA) project. IGCEs are important when cost reimbursement contracts are the method of contracting because very little risk falls to the contractor, and the Government must be in a position to determine if the proposed costs are fair and reasonable. You should also prepare an estimate to establish the cost when developing either (1) an interagency agreement with another Government agency (the U.S. Army Corps of Engineers), or (2) a cooperative agreement with a State for the performance of a remedial design.

When a Potentially Responsible Party (PRP) is the project lead, you must have a general understanding of the PRP's design costs, although a detailed estimate is not necessary. You will have to prepare a detailed IGCE for RD oversight and community involvement activities.

Guidance on the roles and responsibilities for preparing IGCEs for work assignments was issued as OSWER Directive 9202.1-2, dated July 29, 1993.
A copy of this Guidance is provided in Appendix C along with OERR Directive 9355.5-0l/FS, (September 1989), *ARCS Construction Contract Modification Procedures.*

IGCE COORDINATORS

A number of Regional offices have cost estimators to help RPMs/WAMs to prepare IGCEs. In other Regions, RPMs/WAMs can seek the assistance of the Project Officer. The IGCE Coordinators can provide information on labor rates, per diem, travel, and ODCs. They may also be able to provide computer program spreadsheets for estimating costs.

DEVELOPING THE ESTIMATE

In preparing a cost estimate for an RD project, first divide the work into the 13 standard tasks for RD work assignments issued under Superfund RACs (Response Action Contracts). (See Exhibit 4-1, Chapter 4.) The activities to be performed under each task should then be outlined in as much detail as possible, consistent with the draft RD SOW. (See Chapter 6 and Appendix A.)

While many of the activities are similar for various sites, each site will have characteristics that require an individual evaluation of the resources necessary to complete the RD. To determine the needed resources, each task should be evaluated for the specific site to estimate its complexity and to identify obstacles that might affect its completion. Consider factors such as the amount of detail required in each of the design documents and the level of expertise needed to evaluate the data and develop the documents. By dividing the work into discrete tasks and defining each functional activity and product in as much detail as possible, you can more accurately estimate the labor hours required to accomplish the work at a given site.

Estimation of Design Labor Hours and/or Level of Effort

Data that characterize the range of the labor hours or level of effort (LOE) for the 11 standard tasks for RD, found in ARCS (Alternative Remedial

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Contracting Strategy) contracts, for the Complex, Simple, and Simple (Expedited) versions of the nine principal categories of RA are provided in Appendix D, Tables D.1 through D.9. (See Exhibit 5-1, List of LOE Tables for Remediation Categories.) These tables can also be used with slight modification to establish an estimate of the LOE required to perform work for the 13 standard tasks for RD found in the RACs Sow. These LOE estimates **do not include** labor hours required for program management (i.e., cost and schedule control and management reporting). The data are to be used as a rough check on the more detailed site-specific estimate of labor hours that the RPM has prepared for the standard tasks. When a site uses a combination of categories of RA (e.g., On-Site Thermal Destruction and Civil Engineering-Simple), the labor-hour range may not be completely additive for a given task; again, evaluate the functional activities that comprise each of the 11 standard tasks. Then use your best professional judgment, in conjunction with historical data from similar work assignments, to estimate the number of labor hours needed to complete each task.

Cost Estimation

Once you have estimated the labor hours for all required tasks, the final step in developing the IGCE is relatively straightforward. Obtain the total direct labor costs by multiplying the total labor hours by an estimated loaded hourly rate that falls somewhere between the high and low rates listed in the specific contract. The loaded hourly rate includes the costs of fringe benefits and overhead.

The IGCE should also include ODCs and the cost of subcontracts (site surveys, drilling). Other direct costs include such items as travel or equipment and are computed based on past experience or from established cost parameters such as per diem and travel costs. You can also determine these costs by considering the individual activities that comprise each task. Accounting records for similar projects will provide useful data to verify your estimate. Examples of typical ODCs and subcontractor activities for the 11 standard tasks (under ARCS) are included in the LOE charts (D.1–D.9) provided in Appendix D. These charts are based on early Superfund work assignments. Use these examples as a starting point, keeping in mind that they represent an approximation of the LOE requirements for RD.

Appendix D also contains sample forms for use in preparing an IGCE for RD work assignments. The IGCE should include the information outlined on these sample forms even though formats may vary across Regions. Contact your Regional IGCE Coordinator to obtain computer-based spreadsheets for cost estimate compilation.

Design Fee Limitation

For federally funded projects, the total fee for the preparation of designs, plans, drawings, and specifications must not exceed 6 percent of the estimated construction cost. The FAR at 48 CFR 15.903(d)(1)(ii) states that:

> For architect-engineering services for public works or utilities, the contract price for the estimated cost and fee for production and delivery of designs, plans, drawings, and specifications shall not exceed 6 percent of the estimated cost of construction of the public work or utility, excluding fees.

This statutory limitation, however, applies to the estimated cost of design only; other costs such as travel, site surveys, sampling and analysis, and printing are not subject to the 6-percent design cost ceiling. The design cost estimate should, therefore, include a calculation of the 6-percent ceiling to verify that neither your estimated design costs nor the contractor's proposed design costs exceed the statutory limit for the project. A form for this purpose is provided in Appendix D.

REMEDY-SPECIFIC COST ESTIMATES

Assumptions used to analyze the activities for each standard task in the nine remediation categories are presented in the following paragraphs.*

Ground-Water Treatment—Complex
(See Appendix D, Table D.1)

*The Ground-Water Treatment—Complex remediation category is presented in greater detail than the other eight categories to serve as a template or guide for developing the other schedules.

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Exhibit 5-1
List of LOE Tables (in Appendix D) for Remediation Categories

Remedy	Table
Ground-water Treatment—Complex	D.1
Ground-water Treatment—Simple	D.2
Ground-water Treatment— Simple (Expedited)	D.3
Treatment of Soils and Sludge—Complex	D.4
Treatment of Soils and Sludge—Simple	D.5
Civil Engineering—Complex	D.6
Civil Engineering—Simple	D.7
Civil Engineering—Simple (Expedited)	D.8
On-Site Thermal Destruction	D.9

1. Assumptions

1.1 Task 1. Project Planning

Three technical experts (civil engineering, hydrogeology, and chemical process engineering) are needed to support the Work Plan preparations. The contracting party will consolidate comments to maximize efficiency of review and comment resolution.

1.2 Task 2. Community Involvement

This task builds on the community involvement activities of the predesign Remedial Investigation/ Feasibility Study (RI/FS) phase. Level of effort is proportional to the schedule. Activities include revision of an existing Community Involvement Plan, one public meeting, and continued community involvement support through the start of construction.

1.3 Task 3. Data Acquisition

Four technical specifications are required: drilling and well installation, laboratory analytical services, surveying, and waste disposal. In the example, a field data collection effort that takes 6 weeks, including a 2-week pumping test, is assumed.

1.4 Task 4. Sample Analysis and Validation

1.5 Task 5. Data Evaluation

Twenty samples are analyzed and validation is conducted by using data quality objectives (DQO) Level III.

1.6 Task 6. Treatability Study and Pilot Tests

For contracting and evaluation, assume that one contract modification is issued and that one person is needed at the site periodically to oversee the pilot test programs.

1.7 Task 7. Preliminary Design

1.8 Task 8. Equipment and Services Procurement

We assume that at least five permits will be required, including the National Pollutant Discharge Elimination System (NPDES), air, wetlands, erosion and sedimentation control, and local municipality. The RA contractor will acquire the building and construction permits.

1.9 Task 9. Intermediate Design

1.10 Task 10. Prefinal and Final Design

1.11 Task 11. Post-Remedial Design Support

Essentially there should be no difference in LOE between prescriptive and performance specifications. Most site designs will require the use of both prescriptive specifications for site-specific requirements, such as earthwork, and performance specifications for many of the innovative

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technologies that have limited performance histories.

You can reduce the LOE, however, by using "standard" specifications or by giving the designer completed plans and specifications for a similar remedy to use as a starting point for the new design.

The final technical design reviews (constructibility, biddability, operability, environmental, and claims prevention) are included here.

The Operation and Maintenance Manual is, at this stage, a detailed "specification" to guide the contractor. The Manual is completed by the RA contractor during startup operations.

2. Summary

The total estimated LOE for the Ground-Water Treatment—Complex version of the generic RD schedule is 8,750 to 11,149 hours. With a schedule of 13 months (to approval of 100-percent design), this loading is equivalent to 4**a** to 5½ full-time positions.

Ground-Water Treatment—Simple
(See Appendix D, Table D.2)

1. Assumptions

Task 3, data acquisition, is set at 6 weeks with 10 samples collected and analyzed. Also, we assume that a pumping test is not required. The design task's LOE is estimated at one-third that of the Complex design. The submittal of an intermediate design and formal value engineering (VE) are not included in this design. The LOE required to obtain permits and site access is held constant for all cases. Permit requirements are typically tied to specific data acquisition and reporting formats irrespective of the complexity of the design.

1. Summary

The total estimated LOE for the Ground-Water Treatment—Simple version of the generic RD schedule is 3,368 to 4,691 hours. With a schedule of 10 months (to approval of 100-percent design), this loading is equivalent to 2 to 3 full-time positions.

Ground-Water Treatment-Simple (Expedited)
(See Appendix D, Table D.3)

1. Assumptions

The expedited schedule assumes that no additional field data collection is required to complete the design. A portable, "off-the-shelf" treatment system will be selected. The treatment system vendor will supply much of the design analysis.

The product of the design tasks will be a package consisting of 20 specifications (civil, chemical, and mechanical) and 5 drawings (site plan, general arrangement, piping and instrumentation diagram, electrical diagram, and process diagram).

2. Summary

The total estimated LOE for the Ground-Water Treatment—Simple (Expedited) version of the generic RD schedule is 1,641 to 2,225 hours. With a 4-month schedule (to approval of 100-percent design), this loading is equivalent to 2½ to 3½ full-time positions.

Treatment of Soils and Sludge—Complex
(See Appendix D, Table D.4)

1. Assumptions

Field data acquisition requires specifications for five activities: drilling, surveying, analytical laboratory, geotechnical laboratory, and waste disposal service.

The average National Priority List site is 10 acres. Assume the field data collection requires 5 weeks and includes the collection of 300 samples; all but 30 are analyzed using an on-site laboratory. Assume that one technology of a complex nature will be studied under the treatability task.

The design criteria to be considered include civil and process engineering, health and safety, and environmental. The design components are estimated using a large east coast Superfund project as a template. This project design package included 50 specifications and 33 drawings.

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2. Summary

The total estimated LOE for the Treatment of Soils and Sludge—Complex version of the generic RD schedule is 10,850 to 13,463 hours. With a 17-month schedule (to approval of 100-percent design), this loading is equivalent to 4 to 5 full-time positions.

Treatment of Soils and Sludge—Simple
(See Appendix D, Table D.5)

1. Assumptions

This category is considered appropriate for a 1-acre site. Fifty samples are taken during the field investigation, of which 10 are sent to an off-site analytical laboratory. Design criteria and design activities are similar to those in the Complex category; however, LOE is considerably reduced. As with the other Simple categories, the intermediate design submittal and VE are not required.

2. Summary

The total estimated LOE for the Treatment of Soils and Sludge—Simple version of the generic RD schedule is 4,406 to 5,860 hours. With a 9-month schedule (to approval of 100-percent design), this loading is equivalent to 3 to 4 full-time positions.

Civil Engineering—Complex
(See Appendix D, Table D,6)

1. Assumptions

The model for this design category was a large east coast Superfund site that included several activities: soil excavation, water treatment, a slurry wall, and building decontamination. The actual LOE for this site was reduced by removing the ground-water treatment aspect from consideration.

The activities of field data collection are assumed to be similar to those required in the Soils and Sludge—Complex category. Similar design criteria are considered. An intermediate design submittal and formal VE are included in this category.

2. Summary

The total estimated LOE for the Civil Engineering—Complex version of the generic RD schedule is 10,720 to 13,605 hours. With a 12-month schedule (to approval of 100-percent design), this loading is equivalent to 5¾ to 7¼ full-time positions.

Civil Engineering—Simple
(See Appendix D, Table D.7)

1. Assumptions

The field data acquisition consists of installing three shallow monitoring wells and excavating several test pits. Ten samples are analyzed at an off-site laboratory. Four design criteria are considered in developing the basis of design: civil, hydrogeologic, environmental, and health and safety.

The design is straightforward, with 20 specifications and 5 drawings required for the procurement package. The design reviews are performed by a single person (rather than a team) and the operability review is not performed.

2. Summary

The total estimated LOE for the Civil Engineering—Simple version of the generic RD schedule is 3,106 to 4,187 hours. With a 9-month schedule (to approval of 100-percent design), this loading is equivalent to 2¼ to 3 full-time positions.

Civil Engineering—Simple (Expedited)
(See Appendix D, Table D.8)

1. Assumptions

In this generic category, there are no activities for field data collection and no laboratory analysis. A Basis of Design Report is issued. The design activities are simple and uncomplicated with minimal institutional concerns.

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2. Summary

The total estimated LOE for the Civil Engineering—Simple (Expedited) version of the generic RD schedule is 1,633 to 2,210 hours. With a 4-month schedule (to approval of 100-percent design), this loading is equivalent to 2½ to 3½ full-time positions.

On-Site Thermal Destruction
(See Appendix D, Table D.9)

1. Assumptions

An existing Superfund incineration project with a required quantity of excavation close to 20,000 cubic yards was selected as the template for the generic design.

Some water treatment will be necessary for incineration of sludges (treating effluent of the dewatering effort). Treatability studies are required at the bench scale for the water treatment and at bench and pilot scales for the material to be incinerated. Five specifications are needed to conduct activities for field data collection.

The LOE to support the activities for field data collection is assumed to be similar to that required for the Treatment of Soils and Sludge—Simple category. A 1-acre site with a required depth of excavation of 10 feet satisfies the area and volume assumptions presented here and under the Soils and Sludge—Simple category.

Four design criteria are considered: civil and process (including electromechanical) engineering, environmental, and health and safety.

The design activities are similar to the Complex categories previously described and include formal VE and an intermediate design submittal.

2. Summary

The total estimated LOE for the On-Site Thermal Destruction version of the generic RD schedule is 9,411 to 12,939 hours. With a 12-month schedule (to approval of 100-percent design), this loading is equivalent to between 5½ and 7 full-time positions.

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CHAPTER 6

DEVELOPING A STATEMENT OF WORK FOR REMEDIAL DESIGN

INTRODUCTION

The purpose of this chapter is to guide you, the Remedial Project Manager (RPM) in developing a site-specific, project-specific Statement of Work (SOW) for remedial design (RD). The chapter is divided into discussions of the development of either a Fund-lead or Enforcement-lead SOW. A model Fund-lead SOW based on the 13 standard tasks found in RACs (Response Action Contracts) is provided in Appendix A.

FUND-LEAD DESIGN

Roles and Responsibilities

1. Remedial Project Manager's Role

When EPA decides to assign a design project to one of its remedial contractors (i.e., EPA acting as the "contracting party"), you must establish the tone and level of the performance required. Your role is not to be all-knowing, but to marshal the resources needed to perform the task at hand. You will be responsible for establishing and maintaining connection with the technical review team, articulating particular needs, assuring that funding is available, establishing project requirements, making decisions affecting RD, and providing other essential information. Failure to fulfill these responsibilities can have serious consequences, regardless of the talent and abilities of the other team members.

Among your responsibilities as RPM are the following tasks;

- Prepare a complete, detailed SOW for design.
- Communicate project objectives and critical-need dates.
- Identify special expertise needed and form a multidisciplinary technical review team.
- Establish reasonable and attainable design criteria.
- Require the designer to implement programs for quality assurance, quality control, and peer review.
- Provide timely reviews and approvals.
- Allow freedom for innovation in design. (Do not impose undue restraints.)
- Stress completeness, timeliness, and professional presentation of submittals.
- Assure that value engineering (VE), biddability, constructibility, operability, claims prevention, and environmental reviews of the design are conducted.
- Be prepared to coordinate, negotiate, and resolve conflicts in a timely manner.
- Assure that both the cost and the schedule for the RD are reasonable.

Effective communication with the technical review team members and the remedial designer is a key element of a successful RD effort. Clear communication about relevant facts, schedules, requirements, expectations, status of work, and funding is critical in any quality project. Lack of communication about changes and delay in sharing new information both result in wasted time and money.

2. The Designer's Role

The designer's primary role is to conceive, plan, and provide quality design solutions in response to the stated requirements of the contracting party. This effort is documented by plans and specifications and other remedial action (RA) contract documents (submittals) used for solicitation and award of the RA contract. After the designer has completed these documents, the contracting party reviews and approves them.

The designer follows the design development criteria and the Basis of Design approved by the contracting party, who plans and executes the design effort. For example, the designer is

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primarily responsible for design-phase activities such as the following.

- Planning and managing the design
- Coordinating and communicating
- Monitoring and controlling design costs and schedules
- Providing professionally qualified staff
- Performing design-related quality control
- Designing in compliance with codes and standards, laws and regulations, and regulatory agency requirements
- Arranging for appropriate design reviews and peer reviews

In addition to the responsibilities stated in the designer's contract, the designer is responsible for protecting the public health, safety, and welfare under State licensing laws and for conforming to the code of ethics of the design profession.

Designers are responsible for providing professional quality work that meets professional standards of care, skill, and diligence. If the designer fails to meet these standards, or fails in any other contractual duty, the party that contracted for the design must review the circumstances involved, including the resulting damages and subsequent recovery activities.

By common law, if it is found that a design defect has been the result of either (1) the designer's lack of the ordinary skill, knowledge, and judgment possessed by members of the profession, or (2) the designer's failure to apply professional knowledge and skill, then the party that contracted for design would be entitled to recover from the designer the amount of damages suffered. The damages suffered will vary with the circumstances of each case. In most instances, the damages are considered to be the cost of the RA that would not have been incurred had the design not been defective because of professional negligence on the designer's part.

Such damages might include the cost of redesign to correct the defect during RA and damages to the RA contractor attributed to the delay. However, proving fault with the designer will likely be far more difficult than using the technical review process to make sure that the work is done correctly in the first place.

Design Reviews

It is your responsibility to assure that the technical review team reviews and comments on the design documents and other contractor submittals. These activities may occur concurrently with or prior to other design activities. In the latter case, design activities do not begin until the review is completed, all comments are resolved, and approval to proceed is granted. Concurrent reviews eliminate the inefficiencies and delays caused by stopping and restarting design at the 30- and 60-percent stages; however, in a concurrent review, there is a risk of proceeding with the design of a feature that could require change as a result of the technical review. Other methods for speeding the remedial design process are discussed in the document entitled *Guidance on Expediting Remedial Design and Remedial Action.*

You will coordinate the review process, including collecting the review comments and providing the designer with a concise comments package. This will allow you to screen and respond to comments that need not be passed on to the designer. The designer has a professional responsibility regarding the consequence of the comments on the design and must communicate any adverse effects to you.

The review of the plans and specifications and other required design submittals by the technical review team generally is for administrative purposes only. That is, the review should ensure that the project will achieve its remediation goals and that its performance and operations requirements have been correctly identified. The structural, mechanical, and electrical aspects of the design documents should be reviewed in detail by a qualified member of the technical review team. However, EPA's acceptance of the plans and specifications does not relieve the designer of professional liability for the adequacy of the design.

The duration of review activities for any particular project is a function of the complexity of both the site characteristics and the design, as well as of the administrative requirements of the party who contracts for design, and the design reviewers. The specific review and approval activities, which are the responsibility of both you and the technical review team, should be clearly and separately identified on the project schedule. This level of

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precision will reinforce the responsibilities of all parties and will provide early knowledge of any consequences of allowing these activities to move onto the critical path of the design process.

Value Engineering During Design

It is your responsibility to ensure that VE screening and a VE study, if appropriate, are conducted on each Fund-lead RD. We recommend that for most designs, either the U.S. Army Corps of Engineers (USACE), the Bureau of Reclamation (USBR), or an independent firm with the requisite experience be tasked to perform the work. The designer can be tasked to conduct the VE study if the screening performed during preliminary design indicates the need for the study and if an independent and objective study can be conducted by the design firm. (*See Value Engineering Fact Sheet*, Publication 9335.5-03FS, May 1990.) The items to be reviewed in screening a design are identified and discussed in the *RD/RA Handbook*, Publication 9355.5-22 (8/93 Draft).

Developing a Fund-Lead SOW for RD

1. Background

The Fund-lead SOW describes the project-specific professional services to be accomplished by the designer. The SOW should be clear, concise, and enforceable. Services are grouped by tasks that are defined and correlated with services required, level of effort by the designer, project time, and compensation.

The designer is expected to produce certain documents during the development of the project. Among these are the RD Work Plan, cost estimates and schedule, preliminary design and outline specifications, and final design. Each of these documents is the result of one or more subtasks defined in the SOW, and each is scheduled for delivery to EPA on a mutually agreed-upon schedule.

You and the designer share the responsibility and the obligations for on-time performance of assigned tasks and subtasks, which may include providing existing information on the project, arranging for additional specialized information necessary for design, coordinating activities with other project team members, arranging for permits and approvals from other agencies, making prompt decisions, and other activities influencing the designer's ability to perform under the terms of the agreement. EPA's commitment to quality requires that these responsibilities be discussed and written into the SOW.

2. RACs Standard Tasks

Included in each of the RACs is an SOW that contains a full description of typical contractor services. General categories of remedial response activities are further subdivided into standard tasks. (See Exhibit 6-1, RACs Standard Tasks, on page 6-4.) You should use the standard tasks for a given activity to develop a detailed SOW to obtain contractor assistance for a work assignment.

2.1 Benefits of Using Standard Tasks

We strongly recommend that you use the standard tasks (and the model RD SOW found in Appendix A) when you prepare a remedial design SOW for a RACs work assignment. The standard tasks for RD provide uniformity in the remedial process and will ultimately benefit Superfund management functions and objectives. Some of the benefits derived from using standard tasks are listed on page 6-5 in Exhibit 6-2.

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Exhibit 6-1
RACs Standard Tasks

Remedial Investigation/Feasibility Study (RI/FS)

Task 1 Project Planning and Support
Task 2 Community Involvement
Task 3 Field Investigation
Task 4 Sample Analysis
Task 5 Analytical Support and Data Validation
Task 6 Data Evaluation
Task 7 Assessment of Risk
Task 8 Treatability Study/Pilot Testing
Task 9 Remedial Investigational Report
Task 10 Remedial Alternatives Screening
Task 11 Remedial Alternatives Evaluation
Task 12 FS Report and RI/FS Report
Task 13 Post RI/FS Support
Task 14 Negotiation Support
Task 15 Administrative Record
Task 16 Work Assignment Close Out

Remedial Design

Task 1 Project Planning and Support
Task 2 Community Involvement
Task 3 Data Acquisition
Task 4 Sample Analysis
Task 5 Analytical Support and Data Validation
Task 6 Data Evaluation
Task 7 Treatability Study/Pilot Testing
Task 8 Preliminary Design
Task 9 Equipment/Services/Utilities
Task 10 Intermediate Design
Task 11 Prefinal/Final Design
Task 12 Post-Remedial Design Support
Task 13 Work Assignment Close Out

Remedial Action

Task 1 Project Planning and Support
Task 2 Community Involvement
Task 3 Development and Update of Site-Specific PlansData Acquisition
Task 4 Procurement of Subcontract
Task 5 Management Support
Task 6 Detailed Resident Inspection
Task 7 Cleanup Validation
Task 8 Remedial Action Implementation
Task 9 Project Performance
Task 10 Project Completion and Close Out
Task 11 Work Assignment Close Out

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Exhibit 6-2
Benefits From Using Standard Tasks

- Establishes a common framework for remedial activities among the Regions, Headquarters, and contractors
- Results in cost savings because contractors can prepare Work Plans more efficiently in response to similarly structured SOWs
- Provides a checklist and Work Breakdown Structure (WBS) for work plan negotiations and tracking activities that are included in the SOW for a work assignment
- Enables the development of cost databases to help estimate the cost of future remedial activities
- Facilitates the development of SOW templates and, therefore, saves time and resources.

2.2 Use of Standard Tasks in SOWs

The detailed SOW that you develop for an RD will give the contractor the information needed to plan, schedule, estimate the cost of, and execute the work. The SOW must provide adequate detail on the project requirements so that you and the contractors can independently develop accurate budgets or cost estimates.

The recommended approach to establishing project requirements in the SOW for a work assignment is to rely on the standard tasks established in the RACs, to further define these specific activities, and to expand on site-specific requirements.

2.3 Standard Task Categories

Exhibit 6-1 shows the standard tasks for three (RI/FS, RD, and RA) of the five Fund-lead work areas found in the Statement of Work in RACs. Remedial Design includes the specific activities that occur between the signing of the Record of Decision (ROD) and the completion of design activities.

2.4 Using a Standard Task To Develop a Detailed Task

The examples shown in Exhibits 6-3 and 6-4 on pages 6-6 to 6-7 illustrate the process of using a standard task to develop the detailed task description for a work assignment. The standard task is provided exactly as it appears in the RACs. This task provides a starting point for developing each detailed task of the SOW. The standard task is expanded, broken down into subtasks, and tailored to the specific conditions of the site. It is important to remember that sufficient detail is required at the subtask level to provide clear instructions to the contractor and to facilitate preparation of the Independent Government Cost Estimate (IGCE).

2.5 Work Breakdown Structure

A work breakdown structure (WBS) is simply a numbering system for tasks and subtasks. Use of a WBS is recommended as the best approach for organizing the SOW. This approach allows you to organize the work assignment in the framework of the standard tasks. From this framework, you can develop the project schedule and the IGCE. A standard WBS has been developed for RD SOWs (based on the RACs standard tasks and the model RD SOW found in Appendix A) and is used in the examples shown in Exhibits 6-3 and 6-4.

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Exhibit 6-3
Excerpt From Standard Task 1 From RACs SOW

Explanation
This text is the standard task reproduced verbatim from the RACS contract SOW.

TASK 1 PROJECT PLANNING AND SUPPORT

This task includes work efforts related to project initiation and support. Typical activities the contractor may be tasked to perform include but are not limited to:

- Attend scoping meeting
- Conduct site visit
- Develop work plan and associated cost estimate
  - Prepare construction cost estimate
  - Initiate discussion regarding 6% design limitation
- Negotiate work plan and make necessary revisions as a result of EPA comments and/or negotiated agreements

Exhibit 6-4
"Detailed" Task 1 From Model SOW (Appendix A)

Explanation
Provide a task overview and objective.

The purpose of this task is to determine how the site-specific remediation goals, as specified in the ROD, will be met. The following activities shall be performed as part of the project planning task:

Location of meetings should be specified for budgeting purposes.

1.1.1 Attend scoping meeting. Before developing the Work Plan, the contractor shall attend a scoping meeting to be held at the EPA Regional Office.

A Health and Safety Plan (HASP) is required for the site visits.

1.1.2 Conduct a site visit. The contractor shall conduct a site visit with EPA's RPM/WAM during the project planning phase to assist in developing a conceptual understanding of the RD requirements for the site. Information gathered during the visit shall be used to better scope the project and to help determine the extent of additional data necessary to implement the RD. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a report that documents all EPA, contractor, and site personnel present at the visit; all decisions made during the visit; any action items assigned, including person responsible and due date; any unusual occurrences during the visit; and any portions of the site that were not accessible to the contractor and the effect of this on the RD. The contractor shall prepare a trip report and submit it to the RPM/WAM within 10 calendar days of the site visit.

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Exhibit 6-4
"Detailed" Task 1 (Continued)

To control expenses, limit review to pertinent documents specific to the site.	1.1.3	Evaluate existing data and documents, including the Remedial Investigation/Feasibility Study (RI/FS), Applicable or Relevant and Appropriate Requirements (ARARs), the Record of Decision (ROD), and other data and documents as directed by the EPA. This information shall be used to determine if any additional data are needed for RD implementation. The documents available for review are listed in Attachment 3.
Define scope and schedule requirements.	1.1.4	Develop a Work Plan including a schedule and cost estimate for the RD. Provide confirmation that there is no conflict of interest. Attend a meeting to negotiate the Work Plan.
	1.1.5	After approval of the Work Plan, prepare a Site Management Plan (SMP) that will provide EPA with a written understanding of how access, security, contingency procedures, management responsibilities, and waste disposal are to be handled.
Minimize FSP preparation costs by requiring use of the existing FSP.	1.1.6	Prepare a Field Sampling Plan (FSP) that defines the sampling and data collection methods that shall be used for the project. It shall include sampling objectives, sample locations and frequency, sampling equipment and procedures, and sample handling and analysis. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS should be used whenever possible in preparing the FSP for the RD.
Identify if audit will be performed and specify contractor response items.	1.1.7	Prepare a Quality Assurance Project Plan (QAPP) in accordance with QAMS-005/80 (December 29, 1980). The QAPP shall describe the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols that shall be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods (for identifying contamination and addressing contamination) consistent with the levels for remedial action objectives identified in the National Contingency Plan.
EPA does not **approve** contractor's HASP, but reviews it to ensure that it is complete and adequately protective.	1.1.8	Prepare a site-specific Health and Safety Plan (HASP) that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with 29 CFR 1910.120 1(1) and (1)(2). Use the HASP developed for the RI/FS, whenever possible, in preparing the HASP for the RD. A task-specific HASP must also be prepared to address health and safety requirements for site visits.
	1.1.9	Perform site-specific management including monitoring of costs, preparation of Monthly Progress Report, and preparation and submittal of invoices.

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2.6 Completing the Detailed SOW

Develop the detailed SOW for an RD work assignment task by task from the standard tasks using the same task numbers (i.e., WBS) as are listed for the standard tasks. If a standard task is not needed for a particular work assignment (e.g., if intermediate design is not required for a given RD), the numbering order should be kept intact and the words "omitted" or "not used" inserted after the task number.

Expand each standard task to provide the level of detail shown for our example. A model SOW for RD is provided as Appendix A of this Guidance. The purpose of this model SOW is to give you an effective tool for ensuring development of consistent and appropriate SOWs. Model SOWs are also available from Project Officers in most Regional Offices. There is an IGCE Coordinator in each Regional Office who can confirm that the level of detail used for tasks in the SOW is sufficient to allow preparation of the IGCE. The IGCE Coordinator can also be called on to review the detailed tasks for completeness.

Clear, detailed SOWs using standard tasks result in an understanding of project requirements. Planning the project in advance through a detailed SOW provides benefits such as the occurrence of fewer problems later in the project and the ability to track costs and schedules for use in estimating future work.

ENFORCEMENT-LEAD DESIGN

Background

The purpose of this section on Enforcement-lead design is to give you general guidance for developing a site-specific, project-specific SOW for remedial design. The Guidance will address *only* the preparation of the SOW that is an attachment to a Consent Decree (CD) for RD. The Guidance does not address the preparation of a remedial design SOW for use with either a Unilateral Administrative Order (UAO) or an Administrative Order on Consent (AOC).

The Consent Decree

After the ROD is signed, EPA will attempt to negotiate a CD, an agreement with the Potentially Responsible Parties (PRPs) for them to implement the remedy selected in the ROD. If the negotiations are successful, the site will be a PRP-financed site. This scenario is often referred to as an Enforcement-lead project. If the negotiations are not successful, the site will be a Fund-financed site (i.e., EPA will manage and fund the project).

For Enforcement-lead sites, EPA enters into a CD with the PRPs, at which time the parties become the Settling Defendants. The CD—-the primary enforcement document for EPA—specifies the responsibilities of the Settling Defendants for implementing an RD project. Major components of the CD include the ROD and the SOW. The SOW specifies the tasks, activities, and submittals that must be completed to fully implement the selected remedy for the site.

Roles and Responsibilities

Key individuals who understand their corresponding roles and responsibilities during an RD/RA project are necessary for project success. As the EPA representative, you are primarily responsible for developing the SOW, for defining the necessary tasks and submittals, and for overseeing the Settling Defendants' activities in the implementation of an RD/RA project. To fulfill this role, you must have a clear understanding of EPA's role in an Enforcement-lead RD/RA project. If State personnel or other parties are involved, the responsibilities of each of these parties must also be understood and addressed.

The Settling Defendants, responsible for day-to-day management of the RD/RA project, must have a clear understanding of the technical and administrative requirements for implementing an RD/RA project. Under the terms specified in the CD, the Settling Defendants are required to identify the names and professional qualifications of the key individuals (such as the Supervising Contractor) representing the Settling Defendants, and to provide this information to you for approval. Furthermore, the detailed Work Plans that the Settling Defendants are required to submit at the start of the RD and RA phases of the project must formally document the roles and responsibilities of all key individuals involved.

As you can see, delineating the roles and responsibilities of the key individuals representing EPA and the Settling Defendants is critical to ensuring effective implementation and oversight of

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the RD/RA tasks. A more complete discussion of these respective roles follows. Additional guidance on roles and responsibilities in an Enforcement-lead RD/RA project can be found in the *Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties* (April 1990).

1. RPM's Role: Oversight

As RPM, you have the overall responsibility for ensuring that the Settling Defendants satisfy the requirements of the CD and the SOW. To accomplish this, you are responsible for drafting the final SOW and reviewing and approving submittals specified in the SOW. EPA's approval of a submittal or activity is intended to ensure that the RD/RA tasks are implemented in a manner that is consistent with the selected remedy in the ROD.

In developing an SOW, you will identify these items:

- The RD tasks that are relevant to the specific project (not all projects will require every task that is listed in the model SOW)
- The major submittals (plans, drawings, reports) associated with each of these tasks
- A delivery schedule for all required submittals prepared and executed by the Settling Defendants

It is critical that you develop a clear and comprehensive SOW that is specific to the site and to the remedy selected in the ROD. This enables you (1) to effectively monitor and oversee the Settling Defendants' activities in implementing the RD project, and (2) to enforce the requirements of the CD and the SOW.

As mentioned previously, a clear and concise SOW should alleviate many potential problems that could otherwise result from misunderstandings either in terminology or in schedule dates for submittals. However, even the best-written SOW might not address everything that can arise. Once the SOW is final, it is critical that you meet with the Settling Defendants to discuss both the SOW and details of the RD task requirements. This meeting will ensure that all parties clearly understand their respective roles and responsibilities and will allow questions to be answered immediately. Finally, the meeting also provides an opportunity for you and the Settling Defendants' Project Coordinator to meet and establish rapport.

You will be assisted in the oversight role by an Oversight Official. The Oversight Official is generally tasked by EPA to give you technical support in reviewing submittals and monitoring on-site activities. We recommend using other Federal agencies (e.g., USACE) to help with oversight. See Chapter 7 for more detail on oversight of RD performance by the Settling Defendants.

You may rely on other EPA or State agency staff for technical and administrative support, if needed. These individuals are not considered key personnel but may play a role in the RD project.

You will determine the precise responsibilities of key project individuals based on the scope of the RD project. A summary of the roles and responsibilities and reporting relationships of key individuals are provided in Exhibits 6-5 and 6-6, respectively.

2. Settling Defendants' Role: Implementation

Although EPA reviews and approves submittals throughout the RD/RA project, the ultimate responsibility for implementation of the selected remedy lies with the Settling Defendants. EPA review and approval of your Work Plan or design is merely a statement on acceptability with regard to RA goals in accordance with the ROD and the CD; it in no way guarantees the success of the design in meeting the specified performance standards. The Settling Defendants' Project Coordinator is the focal point for project management and communication with EPA. The Project Coordinator handles various responsibilities: planning, budgeting, selecting contractors, managing contracts, monitoring the progress of project activities, and supporting EPA in community involvement activities.

The Project Coordinator is assisted by a Supervising Contractor who is responsible for the technical requirements of the RD project. All other contractors and subcontractors report to the Supervising Contractor, including the RD professional (lead contractor for implementing the RD).

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The QA Official, designated by the Project Coordinator, ensures that QA procedures and requirements are established and met. In this role, the QA Official routinely interacts with the supervising contractor. Quality Assurance comprises plans and actions, identified by the Project Coordinator, to ensure that the remedy meets the project requirements.

Developing an Enforcement-Lead SOW for RD

The Enforcement-lead SOW is a written document that you develop to define the scope of the RD project activities that will be undertaken by the Settling Defendants to meet the requirements of the CD. Ultimately, the SOW will specify the scope of each task and any associated activities required to implement the remedy selected in the ROD.

The SOW should identify the extent of the Settling Defendants' obligations for each task and activity. The Settling Defendants will use the SOW to prepare the RD Work Plan and other specified submittals necessary to implement the selected remedy. Also, because these submittals are critical to your evaluation of the performance of the Settling Defendants in meeting their obligations under the CD and SOW, the SOW must specify the outcome of each task and all required submittals.

The "performance standards" section includes cleanup standards, standards of control, quality criteria, and other substantive requirements, criteria, or limitations, including all ARARs set forth in the ROD. To help ensure enforceability, this section must be well written, clear, and concise. This section should list all ARARs from the ROD, provide all cleanup goal criteria or standards from tables or charts in the ROD, and provide a complete description of all RA objectives and remediation goals provided in the ROD.

You should clearly identify performance requirements to be met by the Settling Defendants, as well as EPA's role in the attainment of the performance standards (e.g., EPA shall confirm that the Settling Defendants met the cleanup standard numbers by . . .). The performance standards in the ROD, SOW, and CD must be consistent.

If the ROD is well written and comprehensive, much of the information on performance standards can be lifted directly from the document with minimal change. If any ARARs or performance standards in the ROD require clarification, the SOW should resolve any discrepancies or ambiguities in an enforceable way. However, in all cases, the performance standards listed in the SOW must be consistent with the ROD (unless EPA is contemplating a ROD amendment or Explanation of Significant Differences (ESD), in which case the standards should be consistent with the revised ROD).

A poorly written SOW can cause serious communication problems between EPA and the Settling Defendants. Ambiguity can result in misunderstandings and the execution of activities that do not conform to the CD and SOW. These misunderstandings can also produce incomplete submittals, schedule delays, and disputes—possibly requiring resolution in court.

Enforcement-lead model SOWs have been developed by each Regional Office; we recommend that you use the one preferred by your management. Compare the technical content of the preferred Regional SOW with the model SOW for Fund-lead RD (in Appendix A) as a check for completeness. Besides using Regional model SOWs, canvass the Region (and possibly other Regions) for recent SOWs written for similar remedies.

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Exhibit 6-5
Superfund RD/RA Project Roles and Responsibilities
(Enforcement-Lead)

Title	Designated by	Role	Major Responsibilities	
EPA Project Coordinator/Remedial Project Manager (RPM)	EPA	Oversee and monitor compliance	• Documents and maintains administrative record • Coordinates EPA review of designs and plans prepared by Settling Defendants • Implements Community Relations Plan	Management
Settling Defendants' Project Coordinator	Settling Defendants	Manage project	• Coordinates implementation of remedial design/remedial action (RD/RA) tasks • Manages budget, schedule, and contracts • Supports EPA's Community Relations activities • Prepares and reviews RD/RA plans • Communicates with EPA on progress of RD/RA implementation	
Settling Defendants' Alternate Project Coordinator	Settling Defendants	Assist Settling Defendants Project Coordinator	• As assigned by Settling Defendants' Project Coordinator	
Supervising Contractor	Settling Defendants	Principal Contractor to supervise and direct RD/RA	• Supervises implementation of all RD/RA tasks • Defines subtasks of RD/RA necessary to implement the RD/RA • Functions as the lead contractor at the site • Scopes out other contractors needed • Directs remedial design professional • Directs remedial action contractor • Supervises the implementation of all RD/RA plans	
Remedial Design Professional (Designer)	Settling Defendants	Implement remedial design tasks	• Conducts Value Engineering analysis • Prepares design plans and specifications • Implements field sampling and treatability studies (as needed)	Technical Support
Remedial Action Contractor	Settling Defendants	Implement remedial action tasks	• Directs and oversees construction activities • Maintains records • Conducts inspections and testing	
Quality Assurance Official	Settling Defendants	Implement Construction Quality Control Program	• Examines and tests materials, procedures, and equipment during construction • Implements Quality Assurance programs	Quality Assurance Support
Oversight Official	EPA	Monitor compliance for RPM	• Evaluates professional qualifications of Settling Defendants' professional staff • Reviews technical report and plans • Monitors activities of the Quality Assurance Official • Reviews and approves Construction Quality Assurance Project Plan	

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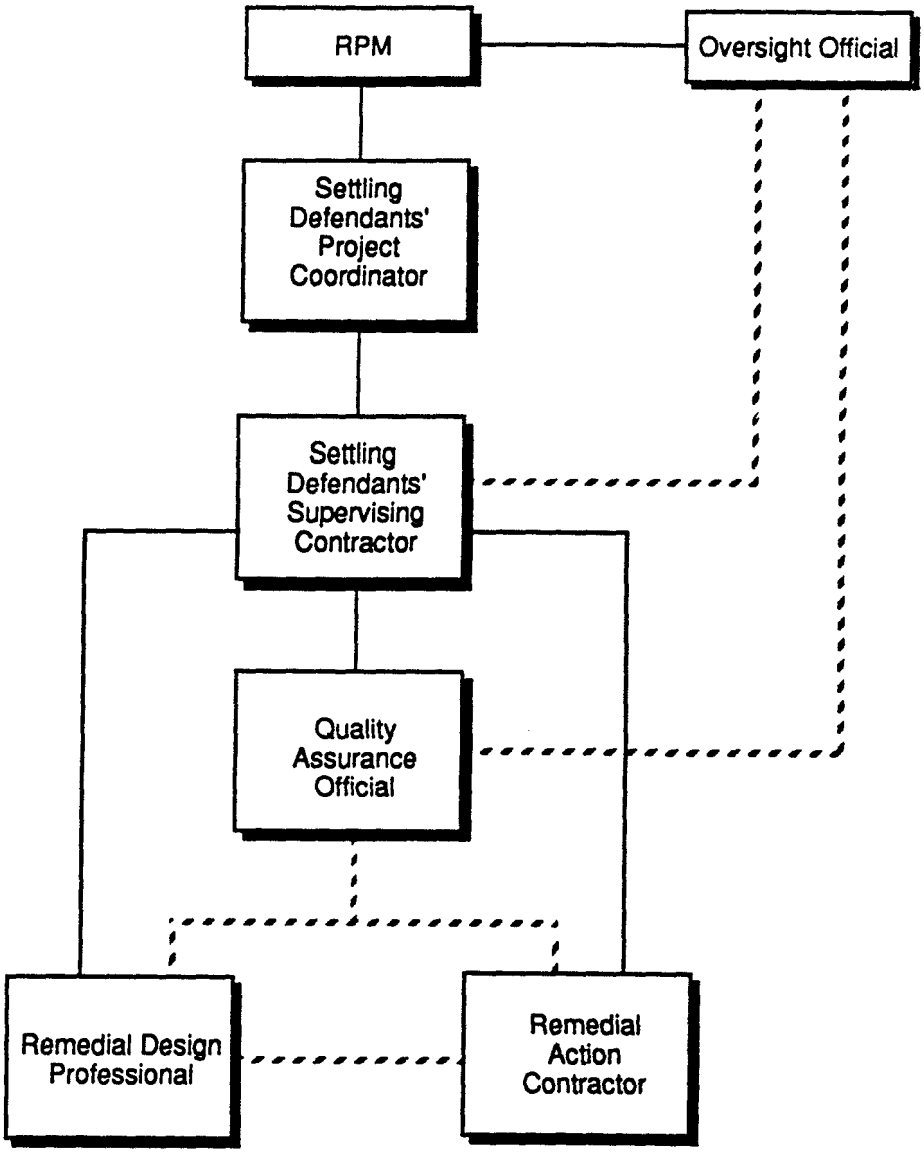
Exhibit 6-6
Relationships Among Parties During Enforcement-Lead RD/RA



Legend: solid line = formal relationship; broken line = informal communication.

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CHAPTER 7

DEVELOPING A STATEMENT OF WORK FOR REMEDIAL DESIGN OVERSIGHT

CHAPTER OVERVIEW

Remedial design (RD) oversight involves monitoring remedial design activities to ensure that the Settling Defendants comply with the Consent Decree (CD), Statement of Work (SOW), and applicable regulations (e.g., performance standards, permit limitations, and regulatory requirements). The overall objective of oversight is to focus your efforts as Remedial Project Manager (RPM) on environmental protection, consideration of public health concerns, overall project quality, scheduling, major changes based on changed field conditions, emergency actions, the preparation of design documents, and project closeout. While you have oversight responsibility, and ideally use the technical review team, you may choose to task another Federal agency or a remedial contractor to carry out certain oversight activities to lessen the workload and to gain the needed technical expertise of the contractor. When developing a site-specific SOW for RD oversight by a remedial contractor or other Federal agency, it is your responsibility to establish the appropriate level of oversight for the project.

ROLES AND RESPONSIBILITIES

Remedial Project Manager's Role

It is your responsibility to oversee the Settling Defendants' activities and to monitor compliance with all RD requirements included by incorporation or reference within the CD.

Depending on the complexity of the RD activities, the level of involvement in oversight varies in terms of what you deem necessary to perform adequate oversight. However, in most instances, you will ensure that EPA and its representatives review RD submittals (e.g., Work Plan, Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), preliminary design package).

You should use a high level of oversight at the beginning of the RD, determined by requirements specified in the CD, the complexity of the RD, past performance of the Settling Defendants, the qualifications of the Settling Defendant's design team, and any other relevant factors affecting the RD and the implementation of the remedial action (RA). The level of this oversight may then be adjusted accordingly as implementation proceeds, based on the performance of the Remedial Designer.

You may choose to obtain the services of an Oversight Official to assist in carrying out some of the oversight activities. The Oversight Official functions under some form of contractual (in the case where work is assigned to a remedial contractor) or interagency agreement with EPA and reports directly to you.

During RD, you should initiate the following oversight activities to be carried out with the help of an Oversight Official:

- Conduct periodic progress meetings with the Settling Defendants to address the status of project design activities, schedule changes, test results, observations and findings, issues of noncompliance, and upcoming activities. The frequency of the meetings depends on the environmental significance of site activities and the level of oversight desired. (Generally, the frequency will be spelled out in the CD.)

- Verify that data collection activities are not endangering public health and that the Contingency Plan is implemented in the event of an accident or emergency.

- Monitor the RD Quality Assurance (QA) program, including review of the sampling results and testing and inspection reports (prepared by the QA official).

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- Coordinate interaction among all Government entities involved, including State and local municipalities.

- Enhance community involvement by providing RD status reports to representatives of the public or to other agencies.

- Document all contacts with the Settling Defendants concerning implementation of the RD.

- Verify that RD tasks are completed.

- Verify that the Settling Defendants are in compliance. If it is determined that the Settling Defendants fail to comply, approach the problem in a constructive manner:

  - Identify the problem and devise corrective actions that are consistent with the CD

  - Document all contacts with the Settling Defendants concerning the inadequacies of the implementation

  - Discuss the proposed corrective action with Regional management to ensure that there is a consistent Regional approach in overseeing the Settling Defendants' response activities

  - If necessary, contact the office of Regional counsel for advice on how to proceed in the event that enforcement becomes necessary

Oversight Official's Role

The RD Oversight Official assists you in observing performance of the work of the design contractor (designer). The Oversight Official reports to you and supports you in monitoring compliance with the CD and the Record of Decision (ROD).

1. Duties and Responsibilities

The responsibilities of the Oversight Official during remedial design could include the following activities:

- Conferences and Meetings:

  Attend meetings with the designer (e.g., predesign conferences, progress briefings, and other project-related meetings) and document all decisions that are made in meetings and conversations with EPA.

- Observation:

  Make observations of RD data collection activities (e.g., field sampling, treatability study) proceeding in accordance with the RD Work Plan and the QAPP.

  Maintain a diary or log of observations as a result of site visits.

- Modifications:

  Evaluate suggestions from the designer and/or the contracting party for modifications to drawings and specifications, and report recommendations to EPA.

  Report to the RPM any actions that the RD contractor or the Settling Defendants take in interpreting the SOW or ROD documents in a way that may materially affect either the work in progress or the original intent of the plans and specifications.

- Submittals:

  Review RD contractor submittals including preliminary, intermediate, and final design drawings and specifications, and various documents including the RD Work Plan, Community Involvement Plan, Site Safety Plan, Field Sampling and Analysis Plan, and QAPP. The review should include checking the documents for conformance with CD, ROD, standard engineering practices, and applicable EPA policies, guidance, and regulations.

  Review submittals prepared by the Settling Defendants at your request.

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- Schedules:

  Review the progress schedule, and schedule of submittals prepared by the designer, and consult with EPA concerning acceptability.

- Liaison:

  Assist in obtaining (from EPA) additional details or information when required for proper execution of the work.

  Consult with EPA in advance of scheduled major tests, site visits, or start of important phases of the work.

- Inspection:

  Accompany visiting inspectors representing the public or other agencies having jurisdiction over the project; record the results of these inspections and report them to EPA.

- Records:

  Maintain orderly files for correspondence, reports of conferences, review of drawing and specifications, clarifications and interpretations of the CD, ROD, progress reports, and other project-related documents.

- Reports:

  Review progress reports of the RD contractor and furnish the RPM with routine reports on the schedule and progress of work.

  Furnish EPA with weekly reports of the progress of the work and the designer's compliance with the work schedule and schedule of submittals.

- Safety Concerns:

  Immediately notify the authorized representative of the RD contractor or Settling Defendants of any observed activities that present imminent and substantial endangerment to the public health or welfare or environment, and follow up with an appraisal of the situation to the RPM.

  Advise EPA as promptly as possible of discharges and releases that can affect natural resources or any endangered or threatened species, or that can result in destruction or adverse modification of the habitat of such species.

  Report to EPA on the designer's and contracting party's compliance with on-site worker health and safety requirements.

  Submit pollution reports to EPA as significant developments occur.

  Report any on-site accident immediately to EPA.

2. Limitations of Authority

The Oversight Official is limited from performing the following activities:

- Shall not authorize any deviation from the project documents.

- Shall not undertake any of the responsibilities of the designer or contracting party.

- Shall not issue directions relative to, or assume control over, any aspect of the means, methods, techniques, sequences, or procedures of design.

- Shall not issue directions regarding, or assume control over, safety precautions and programs in connection with site visits by the designer.

- Shall not accept submittals from anyone other than the contracting party.

- Shall not participate in specialized field or laboratory tests or inspections conducted by others.

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DEVELOPING AN SOW FOR RD OVERSIGHT

The SOW included in each of the RACs (Response Action Contracts) contains a work area for RD/RA oversight. From this work area a more detailed Model SOW that clearly denotes the activities to be performed by the contractor has been developed and is included in Appendix E of this guidance. As explained in Chapter 6, you should prepare a detailed site-specific SOW, using the Model RD Oversight SOW, that incorporates a work breakdown structure (or numbering system for tasks and subtasks).

The purpose of the Model SOW is to give you an effective tool for ensuring the development of consistent and appropriate SOWs for RD oversight. The Model SOW and work breakdown structure should be used as the framework for developing a detailed, site-specific SOW that describes the duties and responsibilities of the Oversight Official as listed earlier in this chapter. There is an Independent Government Cost Estimate (IGCE) Coordinator in each Regional office who should be asked to confirm that the level of detail used for tasks in the SOW is sufficient to allow preparation of the IGCE.

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