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Superfund

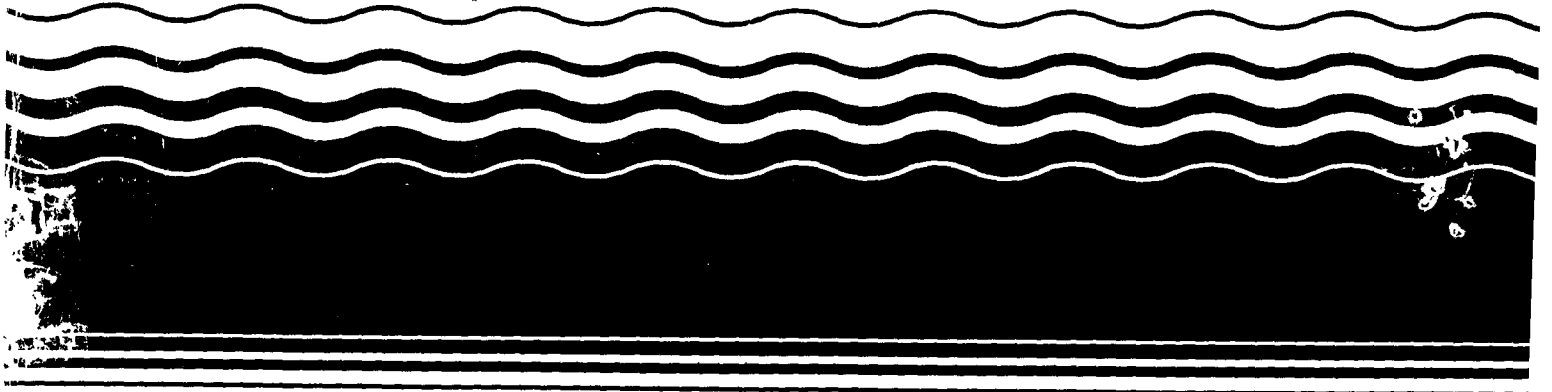
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**EPA**

# **Guidance on Preparing Superfund Decision Documents:**

**The Proposed Plan  
The Record of Decision  
Explanation of Significant  
Differences  
The Record of Decision  
Amendment**

**Interim Final**





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JUN 12 1989

OFFICE OF  
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02)

FROM: Jonathan Z. Cannon  
Acting Assistant Administrator

TO: Regional Administrators  
Regions I - X

I am pleased to transmit to you the Interim Final Guidance on Preparing Superfund Decision Documents, commonly known as the "ROD Guidance." This document supersedes the original 1985 guidance on preparing Records of Decision (RODs) and the March 1988 draft revised guidance that you have been following during the past year.

The ROD Guidance establishes procedures and standardized formats for four important remedial documents: the Proposed Plan, Record of Decision, Explanation of Significant Differences, and ROD Amendment. These documents serve the legal function of certifying that our decisions regarding remedy proposal, selection or modification have been carried out in accordance with CERCLA and the National Contingency Plan. These decision documents also outline the technical parameters which form the basis of remedial design. In addition, our decision documents also perform the vital function of communicating the rationale for Superfund remedy selection decisions to the public. As communication tools, it is therefore essential that these documents are logical, complete, and clear. In order to promote consistency in our remedies and better public understanding of these documents and consistency in presentation, I urge you to adhere to the formats and approaches contained in the guidance.

In addition to establishing requirements for the necessary contents and format for remedial decision documents, this guidance specifies the roles and responsibilities of EPA, the States, and other Federal agencies in developing and issuing Superfund decision documents. The ROD Guidance also establishes procedures for implementing CERCLA sections 117(b) and (d) to document significant changes made during the remedy selection process.

Should you or your staff have any questions concerning this guidance you should contact Sandra Panetta (FTS 475-9757) or Betsy Shaw (FTS 382-4635) in the Site Policy and Guidance Branch (OERR).

Attachment

cc: Directors, Waste Management Division, Regions I, IV, V, VI,  
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The Record of Decision  
Explanation of Significant Differences  
The Record of Decision Amendment

Interim Final

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



## **Notice**

Development of this document was funded by the United States Environmental Protection Agency in part under contract No. 68-W8-0098 to CH2M HILL SOUTHEAST. It has been subjected to the Agency's review process and approved for publication as an EPA document.

The policies and procedures set out in this document are intended solely for the guidance of response personnel. They are not intended, nor can they be relied upon, to create any rights, substantive or procedural, enforceable by any party in litigation with the United States. The Agency reserves the right to act at variance with these policies and procedures and to change them at any time without public notice.

## **Foreword**

This Interim Final Guidance on Preparing Superfund Decision Documents was issued in order to improve the quality and completeness of Records of Decision and related documents. This guidance benefited from a review of past Superfund Records of Decision and defines important items to be addressed in documenting site remediation decisions.

This guidance does not cover the selection of remedy process itself. This will be the subject of a separate guidance that will be developed in concert with the final National Contingency Plan rulemaking.

## **Acknowledgments**

This document was developed by EPA's Office of Emergency and Remedial Response (OERR) in conjunction with the Record of Decision (ROD) Workgroup and with assistance provided by ICF Incorporated. Darsi Foss was the EPA project manager and co-chairperson of the ROD Workgroup along with Mary A. Gade, Associate Division Director, Office of Superfund, EPA Region V. The ICF project team included Gerald DiCerbo, Alice Whitfield, and Georgeann Morekas.

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### **Acronyms Used in this Guidance**

AA	- Assistant Administrator
ACL	- Alternate Concentration Limit
ARAR	- Applicable or Relevant and Appropriate Requirement
BDAT	- Best Demonstrated Available Treatment Technologies
CA	- Cooperative Agreement
CAA	- Clean Air Act
CERCLA	- Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	- Code of Federal Regulations
CWA	- Clean Water Act
EP	- Extraction Procedure
EPA	- Environmental Protection Agency
ESD	- Explanation of Significant Differences
FR	- Federal Register
FS	- Feasibility Study
HRS	- Hazard Ranking System
IAG	- Interagency Agreement
LDR	- Land Disposal Restrictions
LSI	- Listing Site Investigation
MCLs	- Maximum Contaminant Levels
MEP	- Maximum Extent Practicable
MPRSA	- Marine Protection Research and Sanctuaries Act
NCP	- National Contingency Plan
NPDES	- National Pollutant Discharge Elimination System
NPL	- National Priorities List
OERR	- Office of Emergency and Remedial Response
OSC	- On-Scene Coordinator
OSWER	- Office of Solid Waste and Emergency Response
OU	- Operable Unit
OWPE	- Office of Waste Programs Enforcement
PA	- Preliminary Assessment
POTW	- Publicly-Owned Treatment Works
PRP	- Potentially Responsible Party
RA	- Regional Administrator
RCRA	- Resource Conservation and Recovery Act
RI	- Remedial Investigation
RD/RA	- Remedial Design/Remedial Action
ROD	- Record of Decision
RPM	- Remedial Project Manager
SARA	- Superfund Amendments and Reauthorization Act of 1986
SDWA	- Safe Drinking Water Act
SIP	- State Implementation Plan
SMOA	- Superfund Memorandum of Agreement
SSC	- State Superfund Contract
SSI	- Screening Site Investigation
SWDA	- Solid Waste Disposal Act
TBC	- To Be Considered
TMV	- Toxicity, Mobility, or Volume
TSCA	- Toxic Substance Control Act

## CHAPTER 1

### INTRODUCTION

#### 1.1 PURPOSE OF THIS GUIDANCE

This "Guidance on Preparing Superfund Decision Documents" (commonly referred to as the "ROD Guidance") has been developed to: (1) present standard formats for documenting Superfund remedial action decisions; (2) clarify the roles and responsibilities of the Environmental Protection Agency (EPA), States, and other Federal agencies in developing and issuing decision documents; and (3) explain how to address changes made to proposed and selected remedies. The decision documents addressed by this guidance are the Proposed Plan, the Record of Decision (ROD), the Explanation of Significant Differences (ESD), and the ROD amendment.<sup>1</sup> Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires the issuance of these decision documents for remedial actions taken pursuant to sections 104, 106, 120, and 122.<sup>2</sup> The proposed National Oil and Hazardous Substances Contingency Plan (NCP) incorporates the requirements and provisions of SARA.<sup>3</sup> This guidance has been prepared on the basis of SARA and the existing NCP (1985) and is consistent with the proposed NCP.

The first purpose of the ROD guidance is to standardize the format of the Proposed Plan, ROD, and other relevant decision documents. Standardized formats for these documents are necessary because the remedies selected in the Superfund program should be reviewed by the public on a national as well as a local level. Standardizing these decision documents should:

- Provide consistency among Regions, with respect to the organization and content of decision documents;

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<sup>1</sup> This guidance replaces the February 27, 1985, memorandum: "Preparation of Decision Documents for Approving Fund-Financed and Potentially Responsible Party Remedial Actions under CERCLA."

<sup>2</sup> References made to CERCLA throughout this document should be interpreted as meaning CERCLA, as amended by SARA.

<sup>3</sup> "National Oil and Hazardous Substances Pollution Contingency Plan" Proposed Rule, (53 FR 51394), December 21, 1988.

- Ensure that all statutory and regulatory documentation requirements are met; and
- Promote clear and logical presentations of rationales for remedy selection decisions based on site-specific information and supporting analysis.

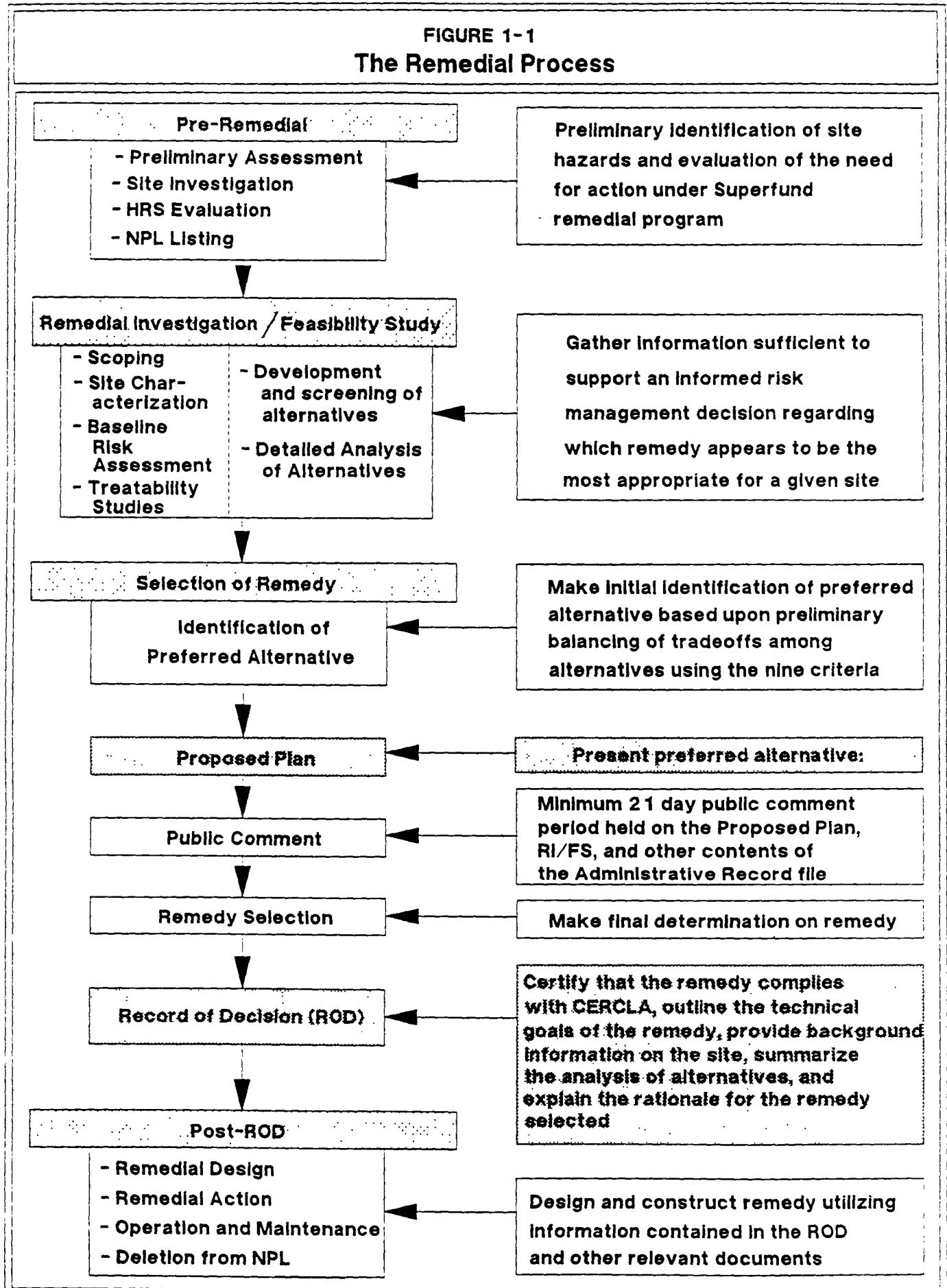
In addition to the emphasis on providing a standard format to document remedial action decisions, this guidance specifies the roles and responsibilities of EPA, the States, and other Federal agencies in developing and issuing Superfund decision documents. The emphasis on a larger State role in the remedial process is contained in CERCLA section 121(f)(1), which provides "for substantial and meaningful involvement of each State in the initiation, development, and selection of remedial response actions to be undertaken in that State." In addition, because Executive Order 12580 ("Superfund Implementation," January 23, 1987) delegates authority for certain CERCLA activities to other Federal agencies, this guidance also discusses the roles and responsibilities of these other agencies (e.g., the Departments of Defense, Energy, and the Interior) in the remedial process.

Finally, this guidance addresses the statutory requirement in CERCLA sections 117(b) and (d) to document significant changes made during the remedy selection process. For example, when significant changes are made to the Proposed Plan after its publication, certain activities should be undertaken to document these changes. In the event that significant changes are made to the selected remedy after the ROD is signed, specific documentation and public participation requirements should be met. Procedures to fulfill these requirements are outlined in this guidance.

## **1.2 OVERVIEW OF THE SUPERFUND REMEDIAL PROCESS**

This section describes the relationship between the decision documents addressed in this guidance and the overall Superfund remedial response process. Each stage of the remedial process is briefly summarized to show the reader how the decision documents, including the Proposed Plan and the ROD, fit into the overall Superfund remedial response process (see Figure 1-1).

**FIGURE 1-1**  
**The Remedial Process**





### **1.2.1 The Pre-Remedial Stage**

The **Pre-Remedial Stage** encompasses the identification, investigation, and listing of a site on the National Priorities List (NPL). The pre-remedial stage consists of a three-part process for determining whether hazards at a site justify performing a CERCLA remedial action or whether the site can be cleaned up under some authority other than CERCLA. This process begins with a **Preliminary Assessment (PA)**, during which existing information on the site is reviewed. If the results of the PA indicate that further investigation is warranted, either a **Screening Site Investigation (SSI)** or a **Listing Site Investigation (LSI)** is conducted. An LSI is performed to gather sufficient information to "score" the site using the **Hazard Ranking System (HRS)**. The HRS is a site evaluation methodology that EPA uses to estimate the relative hazards posed by different sites. Those sites that score above the HRS cut-off score of 28.5 are eligible to be placed on the NPL.

### **1.2.2 Determination of Lead and Support Agencies**

After a site is placed on the NPL, interagency negotiations are initiated to determine which agency should act as the **Lead Agency** in the remedial process and which as the **Support Agency**. These negotiations include EPA, States, and other Federal Agencies. The lead agency, which is represented by the **Remedial Project Manager (RPM)**, has the primary responsibility for coordinating a response action. Either EPA, a State environmental agency, or another Federal agency (e.g., the Department of Defense for cases of hazardous waste sites on military bases) can serve as the lead agency. The lead agency RPM is responsible for overseeing all technical, enforcement, and financial aspects of a remedial response.

The support agency plays a review and concurrence role throughout the remedial process. When EPA or another Federal agency acts as the lead agency, the State in which the site is located usually serves as the support agency. When the State is the lead agency, EPA usually serves as the support agency.

When EPA and a State are involved in remedial activities, the lead and support agencies are identified in a Superfund Memorandum of Agreement, a Cooperative Agreement, or a State Superfund Contract. A **Superfund Memorandum of Agreement (SMOA)** is a general agreement that specifies the nature and extent of interaction between EPA and the State for one or more sites. A **Cooperative Agreement (CA)** is a site-specific agreement that establishes

Federal and State responsibilities for a specific CERCLA response action.<sup>4</sup> A **State Superfund Contract (SSC)** is an agreement that documents any required cost shares and assurances necessary from a State but does not involve the disbursement of Federal monies.<sup>5</sup>

A Federal agency other than EPA could also assume the roles and responsibilities of the lead agency. These responsibilities include coordinating and communicating with EPA and the State in their shared role as support agencies. The division of authority and responsibility between the Federal agency as lead and the support agencies, particularly in preparing the Proposed Plan and the ROD, should be specified in an **Interagency Agreement (IAG)**. This agreement should be reached by considering the process and activities outlined in this guidance, the CERCLA requirements, and the proposed revisions to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Federal agencies conducting response actions are expected to comply with this and other Agency guidance, as specified in CERCLA section 120.

### **1.2.3 Potentially Responsible Party(ies) (PRPs)**

Under CERCLA section 104, an individual or company identified as potentially liable for a release of hazardous substances into the environment, a **Potentially Responsible Party (PRP)**, may also conduct CERCLA response actions, if that party is qualified and otherwise capable. For a PRP-prepared response action, either EPA or the State is the lead agency for overseeing the PRP's work and for developing the Proposed Plan and the ROD. PRPs may participate in the remedy selection process by recommending their own preferred alternative to the lead agency at the conclusion of the feasibility study and by submitting comments on the Proposed Plan and other information in the administrative record during the formal public comment period that is held before the final selection of a remedy for a site.

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<sup>4</sup> With a CA, EPA establishes an account to enable the State to use Trust Fund monies to finance response actions.

<sup>5</sup> Because a State may be either the lead agency or the support agency for most remedial activities, this guidance often makes general reference to "lead" and "support" agency responsibilities, rather than EPA or State responsibilities. Federal agencies (other than EPA) have lead responsibility at sites under their jurisdiction; however, EPA has final authority regarding remedy selection at such sites.

#### **1.2.4 Remedial Investigation/Feasibility Study (RI/FS)**

Once a site is listed on the NPL and a lead agency has been identified, the lead agency performs a **Remedial Investigation and Feasibility Study (RI/FS)**. During an RI/FS, the lead agency gathers information sufficient to support an informed risk management decision regarding which remedy appears to be most appropriate for a given site or an operable unit within a site.

**Operable Units (OUs)** are discrete parts of an entire response action. An OU can be defined as a certain geographic portion of a site or an environmental medium at the site (e.g., alternative water supply, source control measures, mitigation of contamination in off-site areas, or ground-water remediation). Operable units may also be comprehensive but temporary remedies (e.g., temporary caps across a site) that can provide interim protection of human health and the environment prior to final remediation.

The RI and the FS are usually conducted concurrently, in an interactive, iterative manner. The data collected during the RI are used to develop remedial alternatives in the FS, and the alternatives identified in the FS determine the necessity of treatability studies or the collection of additional data in the RI. In general, the RI consists of:

- Collecting data to characterize site conditions;
- Determining the nature and extent of contamination at the site or operable unit;
- Assessing risks to human health and the environment; and
- Conducting treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered for the site.

In characterizing the site, the lead agency identifies the source of contamination, potential routes of migration, and current and potential human and environmental receptors. The baseline risk assessment conducted during the RI identifies the contaminants of concern and exposure and toxicity information that are used to determine the risks posed by the conditions at the site to human health and the environment. Treatability studies are bench, pilot, or full-scale tests of a particular technology on samples of actual

site wastes. Such studies are conducted to identify which technologies are suitable for addressing the waste to be treated.

The FS involves the identification and detailed evaluation of potential remedial alternatives. This process begins with the formulation of viable alternatives, which involves defining remedial action objectives, general response actions, volumes or area of media to be addressed, and potentially applicable technologies. The alternatives should be screened, as appropriate, down to a reasonable number that undergo a detailed analysis using the nine evaluation criteria (for a discussion of this analysis, see Chapter 6). The analysis profiles individual alternatives against the criteria and compares them with each other to gauge their relative performance against each factor. Each alternative, with the exception of the required no action alternative, is designed and continually refined to ensure that it should be protective of human health and the environment and that it should be compliant with its respective **Applicable or Relevant and Appropriate Requirements (ARARs)**.<sup>6</sup>

### **1.2.5 Preferred Alternative**

The lead agency identifies a **Preferred Alternative** prior to holding a formal public comment period on the proposed cleanup for a site. The detailed analysis provides the lead and support agencies with sufficient information to identify a preferred alternative. The preferred alternative is identified as the protective, ARAR-compliant approach that is judged to provide the best balance of tradeoffs with respect to the five primary balancing criteria. This evaluation should also consider State (support agency) and community acceptance of each alternative, when that information is available. The preferred alternative and, ultimately, the selected remedy should be chosen considering the Superfund program's "expectations." These are presented in Exhibit 1-1.

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<sup>6</sup> ARARs include any Federal or State standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate to a CERCLA site or action. These requirements may include regulations promulgated under the Solid Waste Disposal Act (SWDA), the Toxic Substances Control Act (TSCA), the Safe Drinking Water Act (SDWA), the Clean Water Act (CWA), and other Federal environmental statutes or State laws. Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. Relevant and appropriate requirements are requirements that, while not "applicable" to circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site whose use is well suited for that particular site. Additional guidance on ARARs is provided in the CERCLA Compliance with Other Laws Manual, Draft (OSWER Directive 9234.1-01, August 1988).

### **1.2.6 Proposed Plan**

The preferred alternative for a site is presented to the public in a **Proposed Plan**. The Proposed Plan provides a brief summary of all of the alternatives studied in the detailed analysis phase of the RI/FS, highlighting the key factors that led to the identification of the preferred alternative. The Proposed Plan is made available for public comment, in addition to the RI/FS and the other information, in the administrative record.

### **1.2.7 Record of Decision (ROD)**

Following receipt of public comments and any final comments from the support agency, a remedy is selected and documented in a **ROD**. The ROD, which documents the remedial action plan for a site or operable unit, serves three basic functions:

- It certifies that the remedy selection process was carried out in accordance with CERCLA and, to the extent practicable, with the NCP;
- It describes the technical parameters of the remedy, specifying the treatment, engineering, and institutional components, as well as remediation goals; and
- It provides the public with a consolidated source of information about the site and the chosen remedy, including the rationale behind the selection.

### **1.2.8 Remedial Design (RD)**

The ROD provides the framework for the transition into the next phase of the remedial process, **Remedial Design (RD)**. Remedial Design is an engineering phase during which technical drawings and specifications are developed for the subsequent Remedial Action. These specifications are based upon the detailed description of the remedy and the cleanup criteria provided in the ROD.

**EXHIBIT 1-1****Expectations for Superfund Remedial Actions**

The following expectations guide the decisionmaker in determining what method (or combination of methods of protection) is appropriate for a particular site or operable unit.

- The objective of the Superfund program is to select remedies that provide reliable, effective protection over the long term. To meet this objective, remedies should either reduce all wastes to health-based levels or manage contaminants to such an extent that there is a high degree of certainty that future exposures will not harm human health or the environment.
- Treatment is the preferred means by which to address the principal threats posed by a site, wherever practicable. Principal threats are characterized as areas contaminated with high concentrations of toxic compounds, liquids, and other highly mobile materials. Principal threats may include contaminated media (e.g., contaminated ground water, sediments, or soil) that pose significant risk of exposure.
- The most appropriate remedy for a specific site frequently will be a combination of treatment and containment.
- Containment is more likely to be appropriate for low concentrations of materials and immobile wastes that do not pose substantial long-term threats, for example:
  - Wastes of which the contaminants are near health-based levels or that are substantially immobile or can otherwise can be reliably contained over long periods of time;
  - Wastes that are technically difficult to treat, such as mixed wastes of widely varying composition or wastes dispersed over extraordinarily large sites, such as municipal landfills or mining sites, where treatment is impracticable; and
  - Wastes with characteristics such that a treatment-based remedy would increase overall risk to human health and the environment due to risks posed to workers, the community, or the environment during implementation.
- Ground waters will be returned to their beneficial uses within a reasonable period of time, wherever practicable.
- Institutional controls (e.g., deed restrictions, prohibitions of well construction) are important in controlling exposures during remedial action implementation and as supplements to long-term engineering controls. Institutional controls alone should not substitute for more active measures (treatment or containment) unless such active measures are found to be impracticable.

### **1.2.9 Remedial Action (RA)**

After completion of the RD, the Remedial Action (RA) begins, during which the actual construction of the remedy, or implementation phase of site cleanup, occurs. When all phases of remedial activity at a site have been completed and no further remedial action is warranted, the site can be deleted from the NPL. Completed cleanup results should be compared with the terms in the ROD to determine whether remediation goals have been fulfilled such that the site should be deleted from the NPL.

## **1.3 OUTLINE OF THIS GUIDANCE**

While this guidance addresses only the preparation of Superfund decision documents, other guidance documents that address other stages of the remedial process are also available. Because preparation of the Proposed Plan and ROD relies to a great extent on the information collected and analyzed during the RI/FS process, the Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (OSWER Directive 9355.3-01, October 1988) is of particular importance. The ROD guidance and RI/FS guidance are interrelated documents that should be used when conducting remedial actions pursuant to CERCLA sections 104, 106, 120, and 122. Many portions of Proposed Plans and RODs contain summaries of information that should have been generated during the RI/FS. Additional sources of information on the remedy selection process and other stages of the remedial process are listed in Appendix F of this guidance.

The chapters included in this guidance address the following different aspects of the Superfund remedy selection process that require specific documentation:

- Chapter 2 presents the purpose of and the statutory requirements for the Proposed Plan and provides guidelines for issuing the Plan;
- Chapter 3 summarizes the roles and responsibilities of lead and support agencies in developing the Proposed Plan;

- Chapter 4 summarizes requirements for the newspaper notification of availability of the Proposed Plan and discusses the public comment period;
- Chapter 5 describes the general framework for categorizing minor and significant changes made to the preferred alternative before issuance of the ROD and discusses documentation and public information activities that may be necessary;
- Chapter 6 presents the standard format for the ROD and discusses key elements to be included in each section;
- Chapter 7 summarizes the roles and responsibilities of lead and support agencies in developing the ROD;
- Chapter 8 discusses the standards and procedures to follow when Post-ROD significant changes occur; and
- Chapter 9 examines the three types of remedial decisions (no action, interim action, and contingency remedy decisions) that should include modifications to the standard ROD and Proposed Plan format.



## CHAPTER 2

### THE PROPOSED PLAN

This chapter presents the purpose of the Proposed Plan and the statutory requirements for issuing the Plan pursuant to CERCLA sections 104, 106, 120, and 122. In addition, this chapter provides a suggested outline and format for writing the Proposed Plan.<sup>1</sup>

#### 2.1 PURPOSE OF THE PROPOSED PLAN

The purpose of the Proposed Plan is to facilitate public participation in the remedy selection process by:

- Identifying the preferred alternative for a remedial action at a site or operable unit and explaining the reasons for the preference;
- Describing other remedial options that were considered in detail in the RI/FS report;
- Soliciting public review and comment on all the alternatives described; and
- Providing information on how the public can be involved in the remedy selection process.

The Proposed Plan is a public participation document and is expected to be widely read. The Proposed Plan, therefore, should be written in a clear and concise manner using non-technical language. In addition, the Proposed Plan should direct the public to the RI/FS report as the primary source of detailed information on the remedial alternatives analyzed, as well as other site-specific information.

The Proposed Plan should present the lead agency's preliminary recommendation concerning how best to undertake a cleanup action at the site

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<sup>1</sup> Chapter 9 should be consulted when preparing Proposed Plans for no action, interim action, and contingency remedy decisions.

but should not select the final remedial action for a site or operable unit. The Proposed Plan should make clear that the lead agency has "identified" a preferred alternative based on available information, but has not "selected" a remedy to implement. The Proposed Plan supports only preliminary decisions for a site and should include observations and tentative recommendations. The Proposed Plan should not make definitive findings or declarative statements that would be difficult to revise later.

In emphasizing that the preferred alternative is only an initial recommendation, the Proposed Plan should clearly state that changes to the preferred alternative, or a change from the preferred alternative to another alternative, may be made if public comments or additional data indicate that such a change would result in a more appropriate solution. The final decision regarding the selected remedy should be documented in the ROD after the lead agency has taken into consideration all comments from both the support agency and the public. An important function of the Proposed Plan is to solicit public comment on all of the alternatives considered in the detailed analysis phase of the RI/FS because the lead and support agencies may select a remedy other than the preferred alternative.

### **2.1.1 Statutory Requirements**

Three separate statutory requirements in CERCLA provide the basic framework in the Proposed Plan and the process for developing this document. These are CERCLA sections 113(k)(2)(B), 117(a), and 121(f)(1)(G).

**Section 113(k)(2)(B)** establishes the minimum procedures for public involvement in selecting a response action. The specific procedures for the Proposed Plan are to provide:

- A notice to potentially affected persons and the public, which shall be accompanied by a brief analysis of the [proposed]<sup>2</sup> plan and alternative plans that were considered; and
- A reasonable opportunity to comment and provide information regarding the [proposed] plan.

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<sup>2</sup> [                      ] Denotes paraphrase.

Section 117(a) establishes the baseline public participation requirements for remedial activities. The subsections relating to the Proposed Plan require that the lead agency:

- .(1) Publish a notice and brief analysis of the proposed plan and make such plan available to the public;
- (2) Provide a reasonable opportunity for submission of written and oral comments and an opportunity for a public meeting at or near the facility at issue regarding the proposed plan and regarding any proposed findings under section 121(d)(4) (relating to cleanup standards) [e.g., waivers]. The [lead agency] shall keep a transcript of the meeting and make such transcript available to the public; and
- [Include in] the notice and analysis published under paragraph (1) ... sufficient information ... as may be necessary to provide a reasonable explanation of the proposed plan and alternative proposals considered [in the RI/FS report].

Section 121(f)(1)(G) specifies the minimum involvement EPA should afford the State in the remedial decision process. The requirements specific to the Proposed Plan are to provide:

- [a] Notice to the State and an opportunity to comment on the proposed plan for remedial action as well as on alternative plans under consideration. The [EPA's] proposed decision regarding the selection of remedial action shall be accompanied by a response to the comments submitted by the State including an explanation regarding any decision on compliance with promulgated State standards. A copy of such response shall also be provided to the State.

## 2.2 WRITING THE PROPOSED PLAN

The Proposed Plan summarizes essential information from the RI/FS report. At a minimum, the Plan should:

- Summarize the environmental conditions at the site as determined during the RI;
- Describe the remedial alternatives evaluated in sufficient detail to provide a reasonable explanation of each alternative;
- Identify the lead agency's preferred alternative;
- Provide a general summary of the support agency comments, if available (e.g., concurrence, nonconcurrence, or no comments at present time) and the lead agency's response to the comments;
- Identify and provide a summary explanation of any proposed waivers to the ARARs in CERCLA section 121(d)(4); and
- Provide a brief analysis that supports the preferred alternative, discussed in terms of the nine evaluation criteria.

Exhibit 2-1 provides a recommended outline of the Proposed Plan. This outline contains elements that are both specifically required by CERCLA and others that are recommended for inclusion. Variations may be made as appropriate.

The following subsections provide more specific guidance on the key elements of the Plan. Chapter 9 provides additional guidance on modifications to the Proposed Plan when the Plan calls for no action, interim action, or a contingency remedy. A sample Proposed Plan is presented in Appendix A of this Guidance for a hypothetical Superfund site.

**EXHIBIT 2-1****Outline for the Proposed Plan****Introduction**

- Provide site name and location.
- Identify lead and support agencies.
- Introduce document's purpose, which is to:
  - fulfill requirements of section 117(a);
  - describe alternatives analyzed;
  - identify preferred alternative and explain rationale for preference;
  - serve as companion to the RI/FS and administrative record file; and
  - solicit public involvement in selection of a remedy.
- Stress importance of public input on all alternatives.

**Site Background**

- Provide brief overview of site.
- Describe site history.

**Scope and Role of Operable Unit or Response Action**

- Describe scope of problem that the action will address.
- Describe role of action within site strategy.
- Identify how action addresses principal threat(s).

**Summary of Site Risks**

- Provide overview of baseline risk assessment, by describing the:
  - contaminated media;
  - chemicals of concern;
  - baseline exposure scenarios (e.g., routes of exposure - current and future land-use scenarios); and
  - current and potential site risks (including both carcinogenic and noncarcinogenic threats).
- Discuss ecological risk(s), as appropriate.

**Summary of Alternatives**

- Provide narrative description of alternatives evaluated in detailed analysis of FS (including engineering components, treatment components, estimated present-worth cost, implementation time, and the major ARARs associated with the alternative(s)).

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## **EXHIBIT 2-1 (continued)**

### **Outline for the Proposed Plan**

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#### **Evaluation of Alternatives and The Preferred Alternative**

- Identify the preferred alternative
- Introduce the nine evaluation criteria and discuss how they are utilized in the Superfund program.
- Provide the rationale for the preferred alternative by profiling it against the nine criteria and highlighting how it compares to the other alternatives (major advantages and disadvantages). State/support agency and community acceptance should be addressed to the extent adequate information is available at the time.
- Discuss the lead agency's belief that the preferred alternative would satisfy the statutory findings, including the preference for treatment as a principal element.
- When the support agency concurs with the preferred alternative, its recommendation that the alternative meets the statutory findings also should be included.

#### **Community Participation\***

- Provide notice of public comment period (written comments are encouraged).
- Note time and place for a public meeting(s) (if they are scheduled) or offer opportunity for meeting.
- Provide the location of administrative record files and information repositories.

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\* Community includes the general public and PRPs.

## 2.3 SECTION-BY-SECTION DESCRIPTION OF THE PROPOSED PLAN

### 2.3.1 Introduction

This introductory section should include the site name and location, and identify the lead and support agencies for the remedial action. The introduction should state that the Proposed Plan is a document that the lead agency is required to issue to fulfill CERCLA section 117(a).

The public should be informed of the function of the Proposed Plan in the remedy selection process, specifically, that its fourfold purpose is to:

- Identify the preferred alternative for remedial action at a site or operable unit and explain the reasons for the preference;
- Describe the other remedial options considered in detail in the RI/FS report;
- Solicit public review of and comment on all the alternatives described; and
- Provide information on how the public can be involved in the remedy selection process.

A clear statement should be made that the Proposed Plan highlights key information from the RI/FS report but is not a substitute for that document. The Plan should refer the reader to the RI/FS report and administrative record file(s) as more complete sources of information regarding the remedial action.<sup>3</sup> The first section of the Proposed Plan should stress that public input on all alternatives, and on the information that supports the alternatives, is an important contribution to the remedy selection process. The public should be encouraged to submit comments and should be informed that their comments can influence the lead agency's preference. The point should

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<sup>3</sup> Subpart I of the proposed revisions to the National Contingency Plan (40 CFR Part 300) and the Interim Guidance on Administrative Records for Selection of CERCLA Response Actions (OSWER Directive 9833.3A, March 1989) provide detailed information on developing, maintaining, and providing access to the Administrative Record for the selection of the CERCLA response action.

be made that the final remedial action plan, as presented in the ROD, could be different from the preferred alternative, depending upon new information or arguments the lead agency may consider as a result of public comments.

### **2.3.2 Site Background**

The site background should include a site map and a brief description of the site, including the history of waste generation or disposal that has taken place there, the major contaminants of concern, the contaminated media, and the extent of contamination.

### **2.3.3 Scope and Role of Operable Unit or Response Action**

This section of the Proposed Plan should summarize the lead agency's overall strategy for remediating the site and describe how the action being considered in the Proposed Plan fits into that overall strategy.

If the response is being carried out in operable units, the purpose of each operable unit and their sequence should be described. For example, the following language could be included in this section. "This is the second of three planned operable units for the site. The first operable unit provided the community with an alternate water supply to prevent ingestion of contaminated ground water. This operable unit addresses remediation of the contaminated ground water, one of the principal threats posed by the site. The third and final operable unit addresses the contaminated soil, which represents the source of the ground-water contamination which is the other principal threat posed by the site."

As the above example illustrates, the Proposed Plan's description of the overall site strategy and the function of the proposed response action should indicate how and through what action or series of actions the principal threats posed by the site will be addressed. In general, an environmental medium or physical area is identified as a principal threat when it is contaminated with high concentrations of toxic compounds, liquids, or highly mobile materials. Each site at which a Superfund remedial action is undertaken has at least one, and often more than one, principal threat (e.g., contaminated soil and drinking water). This section of the Proposed Plan should help establish the basis for the finding made in the ROD as to whether or not the selected remedy satisfies the preference for using treatment as a



principal element which occurs when principal threats are addressed through treatment.

#### **2.3.4 Summary of Site Risks**

This section of the Proposed Plan should summarize the extent of contamination at the site and the risks posed to human health and the environment using information developed during the RI. The summary of site risks should include key findings made in the baseline risk assessment conducted as part of the RI. This discussion should:

- Identify contaminated media;
- Identify contaminants of concern;
- Describe exposure pathways (e.g., routes of exposure - ground water, surface water, air, and soil);
- Describe the potentially exposed population;
- Discuss environmental risks as appropriate (ecological receptors, potential exposures, and potential effects of exposures); and
- Describe how current risks compare to remediation goals (e.g., current carcinogenic risks of  $10^{-2}$  will be reduced to  $10^{-6}$ ).

The description of site risks should not rely solely on standard numeric risk representations (such as cancer risks of  $10^{-3}$  or a hazard quotient value of 22). These risk numbers should be accompanied by a discussion that explains, for example, that a cancer risk level of  $10^{-3}$  means that one additional person out of a thousand is at risk of developing cancer if the site is not cleaned up. Similarly, for noncarcinogenic effects, the discussion of the hazard quotient and hazard index should state that a hazard quotient (the ratio of the level of exposure to an acceptable level) greater than 1.0 indicates that the exposure level exceeds the protective level for that particular chemical. If the hazard quotients for individual chemicals are less than 1.0 but the sum of the hazard quotients for all substances in an

exposure medium (i.e., the hazard index) is greater than 1.0, then there may be a concern for potential health effects.

In addition, for proposed remedies other than "no action," this section of the Proposed Plan should conclude with the following statement.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

### **2.3.5 Summary of Alternatives**

The Summary of Alternatives section should provide a brief narrative of the alternatives studied in the detailed analysis phase of the RI/FS report. This description should specify the treatment technology(ies), engineering controls, institutional controls, quantities of waste handled, implementation requirements, the estimated construction and operation and maintenance costs, and the estimated implementation time frame associated with each remedy.

These descriptions also should incorporate the major ARARs associated with each option. For example, ARARs associated with a source control remedy, such as RCRA Subtitle C or D closure standards, should be incorporated into the discussion, as appropriate. For treatment-based alternatives, the ARARs associated with treating hazardous substances (e.g., RCRA land disposal restrictions, RCRA incineration standards in Subpart O, Clean Air Act Standards, etc.) also should be described. The sample Proposed Plan in Appendix A of this Guidance provides examples of the level of detail for these discussions.

### **2.3.6 The Evaluation of Alternatives**

This section should begin by identifying the preferred alternative. Next, the nine criteria used to evaluate the alternatives in the detailed analysis in the FS should be presented. The nine criteria encompass statutory requirements and include other technical, economic, and practical factors that assist in gauging the overall feasibility and acceptability of remedial alternatives.

The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The threshold criteria must be satisfied in order for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. Generally, the modifying criteria are taken into account after public comment is received on the Proposed Plan. Exhibit 2-2 presents information on the organization of the criteria and the major points that should be addressed under each criterion. Additional information on the nine criteria and detailed analysis of alternatives are provided in the proposed revisions to the NCP, and the Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (OSWER Directive 9355.3-01, October 1988).

The Proposed Plan uses the nine criteria to profile the performance of the preferred alternative, explaining the rationale for the preference by briefly comparing the preferred alternative to the other alternatives under each criterion. For example, under the long-term effectiveness and permanence criterion, the quantity of residuals the preferred alternative leaves on-site and the reliability of the long-term management controls used should be stated and compared with the other alternatives. Additional information on the major points to be addressed under each criterion are presented in Exhibits 2-2 and 2-3.

The discussion in this section of the Proposed Plan should develop the initial rationale for the preferred alternative; however, it need not provide a comprehensive analysis of each alternative in relation to each of the nine criteria nor should it make conclusive, binding statements about an alternative. For a more detailed explanation, the reader should be directed to the comparative analysis contained in the RI/FS. Appendix B includes some sample worksheets that could be used during the preliminary stages in preparing this section of the Proposed Plan.

The conclusion of this section of the Proposed Plan should include a summary by the lead Agency that says, based on information currently available, the preferred alternative provides the best balance of tradeoffs among the other alternatives with respect to the evaluation criteria. This section should include a statement summarizing the support agency's concurrence or nonconcurrence of the preferred alternative and should note that the lead agency expects that the preferred alternative satisfies the statutory requirements in CERCLA section 121(b) that the selected alternative:

## EXHIBIT 2-2

# The Nine Remedial Evaluation Criteria

### THRESHOLD CRITERIA

①

#### Overall Protection of Human Health and the Environment

- How Alternative Provides Human Health and Environmental Protection

②

#### Compliance with ARARs

- Compliance with Chemical Specific ARARs
- Compliance with Action-Specific ARARs
- Compliance with Location-Specific ARARs
- Compliance with Other Criteria, Advisories, and Guidances (TBCs)

### PRIMARY BALANCING CRITERIA

③

#### Long-term Effectiveness And Permanence

- Magnitude of Residual Risk
- Adequacy and Reliability of Controls

④

#### Reduction of Toxicity, Mobility, or Volume Through Treatment

- Treatment Process Used and Materials Treated
- Amount of Hazardous Materials Destroyed or Treated
- Degree of Expected Reductions in Toxicity, Mobility, and Volume
- Degree to Which Treatment is Irreversible
- Type and Quantity of Residuals Remaining After Treatment

⑤

#### Short-Term Effectiveness

- Protection of Community During Remedial Actions
- Protection of Workers During Remedial Actions
- Environmental Impacts
- Time Until Remedial Action Objectives are Achieved

⑥

#### Implementability

- Ability to Construct and Operate the Technology
- Reliability of the Technology
- Ease of Undertaking Additional Remedial Actions, If Necessary
- Ability to Monitor Effectiveness of Remedy
- Ability to Obtain Approvals from Other Agencies
- Coordination with Other Agencies
- Availability of Offsite Treatment, Storage, and Disposal Services and Capability
- Availability of Necessary Equipment and Specialists
- Availability of Prospective Technologies

⑦

#### Cost

- Capital Costs
- Operating and Maintenance Costs
- Present Worth Cost

### MODIFYING CRITERIA

⑧

#### State<sup>1</sup> Acceptance

- Features of the Alternative the State Supports
- Features of the Alternative About Which the State has Reservations
- Elements of the Alternative the State Strongly Opposes

⑨

#### Community<sup>1</sup> Acceptance

- Features of the Alternative the Community Supports
- Features of the Alternative About Which the Community has Reservations
- Elements of the Alternative the Community Strongly Opposes

<sup>1</sup>These criteria are assessed primarily following comment on the RI/FS report and the Proposed Plan.

## **EXHIBIT 2-3**

### **Hints for Preparing the Nine Criteria Analysis**

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#### **Overall Protection**

In every FS, a "no action" alternative is developed for comparative analysis purposes. In most cases, this alternative should not be selected because it does not adequately protect human health and the environment based on the risks posed by the site or media. In such cases, the no action alternative can be ruled out for further consideration under the protectiveness criterion and need not be discussed further in the criteria analysis.

#### **Compliance with ARARs**

For an alternative to pass the screening process and thus become eligible for selection, it must comply with its ARARs or a waiver should be identified and the justification for invoking it provided. An alternative that cannot comply with ARARs, or for which a waiver cannot be justified, should not be presented in the Proposed Plan or ROD.

#### **Long-Term Effectiveness and Permanence**

In addressing the long-term effectiveness and permanence of an alternative, the terms "effectiveness" and "permanence" should be used carefully. Long-term effectiveness and permanence are viewed along a continuum; an alternative can be described as offering a greater or lesser degree of either long-term effectiveness or permanence.

#### **Cost**

The costs of remedies always should be qualified as estimates.

#### **State/Support Agency Acceptance**

Where there are major support agency comments, they should be summarized under the state (support agency) acceptance criterion. The lead agency's response to those comments also should be summarized here.

#### **Community Acceptance**

Because information available on the community acceptance criterion may be limited prior to the public comment period for the Proposed Plan and the RI/FS report, the Proposed Plan should indicate that this factor will be evaluated in the ROD or, if appropriate, the Proposed Plan should provide a preliminary summary based on available information. Proposed Plans should not speculate on community acceptance of the alternatives.

2-14

- Be protective of human health and the environment;
- Comply with ARARs (or justify a waiver);
- Be cost-effective;
- Utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable; and
- Satisfy the statutory preference for treatment as a principal element, or justify not meeting the preference.

### **2.3.7 Community Participation**

The public should be informed of the following:

- Dates of the public comment period (e.g., March 1-30);
- Date, time(s), and location(s) of the public meeting(s) held pursuant to CERCLA section 117(a), (offer to hold a meeting upon request if one has not been scheduled);
- Location of information repositories and administrative record file(s), and hours of availability; and
- Names, phone numbers, and addresses of the lead and support agency personnel who will receive comments or supply additional information.

## **2.4 FORMATS FOR THE PROPOSED PLAN**

There are two basic formats available to the lead agency for preparing the Proposed Plan. The first option is to issue the Proposed Plan in a fact sheet format, similar to the community relations fact sheets that traditionally have been issued by the Superfund program.

The second option for issuing the Proposed Plan is to prepare an expanded, more detailed document that is similar to a draft ROD, yet less lengthy and conclusive than a ROD. This latter option is more of a "stand alone" document because it relies less on references to the RI/FS and other documents in the administrative record file than does the briefer format.

While the fact sheet format is expected to be effective for most Proposed Plans, there may be specific site circumstances (e.g., complexity, public controversy) that warrant use of the expanded format. Regardless of the format chosen, the Proposed Plan should be written so that the information presented can be readily understood by the general public. After the Proposed Plan is issued, a copy should be sent to Headquarters as soon as possible. Appendix E, "Helpful Hints: How to Prepare and Submit Decision Documents to Headquarters," describes the process for preparing and submitting the Proposed Plan to Headquarters. Sections 2.4.1 and 2.4.2 summarize the advantages and disadvantages associated with the two alternative formats for the Proposed Plan.

### **2.4.1 Fact Sheet Format**

EPA and the States currently distribute fact sheets as part of the community relations activities for a site. Preparing the Proposed Plan in a fact sheet format would fulfill the statutory requirements related to the Plan. Because the Proposed Plan is issued to fulfill a statutory requirement, the Plan may be organized differently or may discuss information not traditionally contained in community relations fact sheets. Exhibit 2-4 discusses the advantages and disadvantages of the fact sheet format.

**EXHIBIT 2-4****Advantages and Disadvantages of the Fact Sheet Format****ADVANTAGES**

- The fact sheet is an established tool used to communicate information to the public.
- Fact sheets can easily be distributed to the public.
- Fact sheets are already issued by EPA and States; Superfund personnel are familiar with fact sheet production and distribution.
- Some Regions and States already use the fact sheet format to announce a preferred alternative.

**DISADVANTAGES**

- The format may not be appropriate if the lead agency determines that the circumstances of remedy selection at a particular site warrant a lengthier, detailed document that more thoroughly describes the site conditions and the remedial alternatives.

**2.4.2 Expanded Format**

The lead agency may determine that the development of a more detailed document is the most appropriate option for the site or operable unit. In many instances, this document may be similar to a draft ROD. The use of an expanded format for the Proposed Plan is more likely to occur when an in-depth discussion of the alternatives in the RI/FS report is necessary (e.g., if the site is technically complex, involves a series of operable units, or is the subject of enhanced public concern). Documents following an expanded format should include the same information specified in Exhibit 2-1, but in greater detail. Exhibit 2-5 discusses the advantages and disadvantages of the expanded format.



## **EXHIBIT 2-5**

### **Advantages and Disadvantages of the Expanded Format**

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#### **ADVANTAGES**

- A document with an expanded format can provide an in-depth discussion of the lead and support agencies' rationale for the initial preference of an alternative.
- The document may provide a more direct basis for the ROD.

#### **DISADVANTAGES**

- A lengthy discussion of the rationale may give the impression that a remedy has already been selected.
- Such a document could unintentionally divert attention from the RI/FS report.
- Such a document may not encourage public participation due to its length and degree of detail regarding the technical complexities of the site.

## CHAPTER 3

### THE PROCESS FOR DEVELOPING THE PROPOSED PLAN

#### 3.1 OVERVIEW

This chapter summarizes the roles and responsibilities of the lead and support agencies in developing the Proposed Plan. Agreement on the viable alternatives for a site or operable unit is critical to the remedy selection process. Therefore, personnel in the lead and support agencies should begin discussions on the alternatives analyzed in the FS as early as possible. As the RI/FS progresses, discussions between the lead and support agencies should begin to focus on identification of a preferred alternative. These early discussions should help prevent delays in the later stages of the remedy selection process.

If PRPs conduct the RI/FS, the lead agency should be informed of the alternatives developed, screened, and analyzed for the FS, because this information constitutes the basis for the selection of the response action. Early discussions on remedy selection should help prevent delays in the later stages of the remedial process. The lead agency should ensure that the PRPs and all support agencies are well informed of site activities by regularly updating the administrative record file.<sup>1</sup>

##### **3.1.1 Preparing the Proposed Plan**

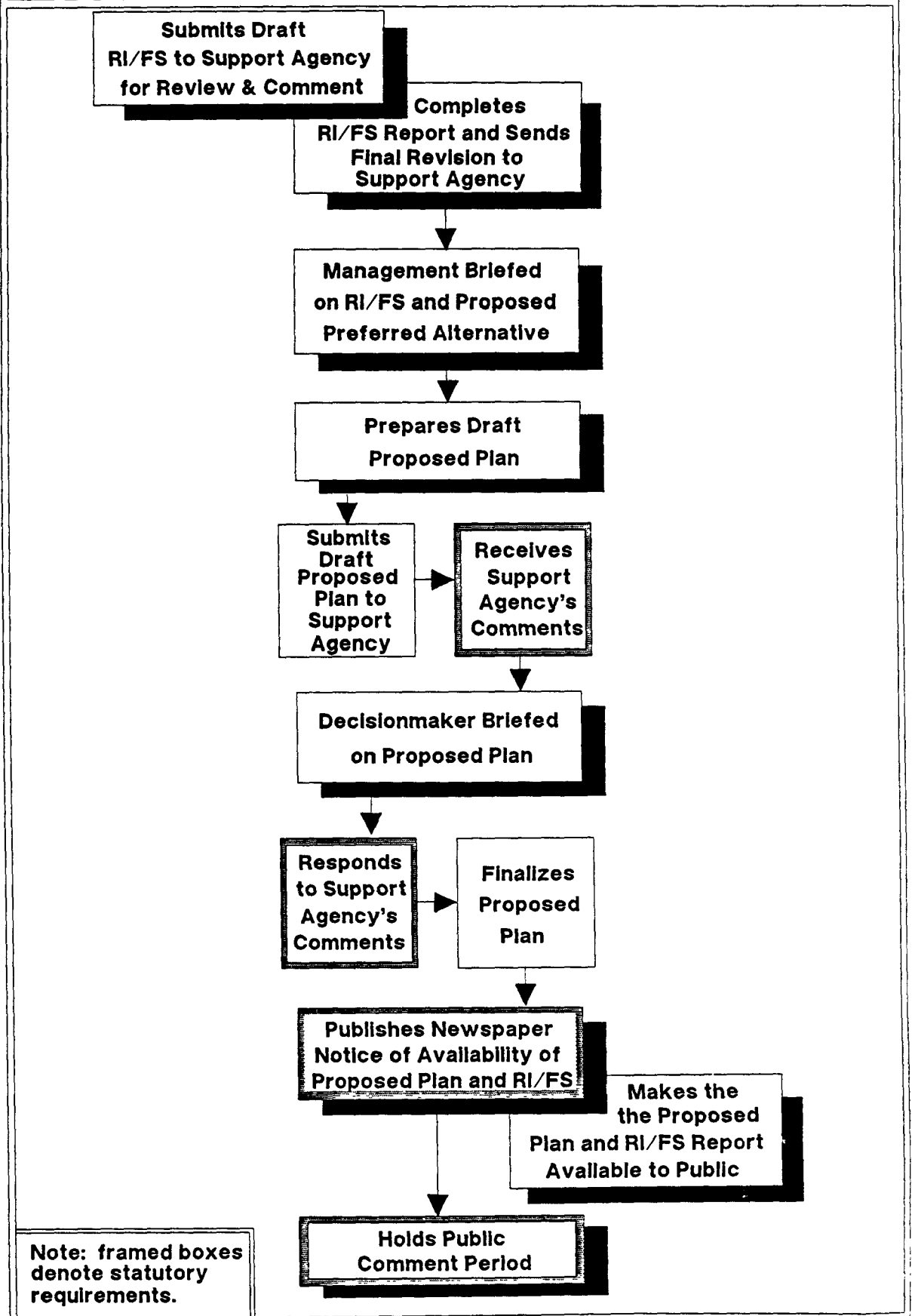
The general steps in preparing the Proposed Plan for public comment are summarized in Figure 3-1. The sequence in which these steps are taken may vary among Regions and States.

The lead agency should begin drafting the Proposed Plan upon completion of the RI/FS report. If a PRP prepares the RI/FS, then the Proposed Plan should be drafted by the lead agency after the lead agency approves the RI/FS. The RI/FS report should be sent to the support agency as soon as the report is available, but no later than when the draft Proposed Plan is transmitted to the support agency for review and comment.

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<sup>1</sup> If a State has taken responsibility for an NPL site and is conducting the cleanup under the State's own authority (i.e. a State-lead enforcement action), the State should keep EPA informed of the progress at the site.

**FIGURE 3-1**  
**Preparation of the Proposed Plan by the Lead Agency**



A preferred alternative is identified tentatively on the basis of the RI/FS report and ongoing discussions between the lead and support agencies. To augment the regular flow of information to management, a formal briefing on the RI/FS and the preferred alternative should be made to management at this time. After this meeting, a draft Proposed Plan is written and submitted to the support agency and lead agency management for review and comment. Other intra-agency program offices should complete their review of the RI/FS report if they haven't already during this period.

The lead agency should prepare the final Proposed Plan based on the comments from the support agency and the results of the internal program and management review process. This final version should include either a summary of the support agency's agreement with the Plan or its dissenting comments. If the State is the lead agency and EPA does not concur with the Proposed Plan, then EPA could assume lead responsibility for the Proposed Plan if a resolution cannot be reached (see Section 3.3 for more details). Finally, the notice of availability of the RI/FS report and the Proposed Plan should be published in a major newspaper, and both documents should be made available to the public for comment.

### **3.2 ROLES AND RESPONSIBILITIES OF THE LEAD AGENCY AND SUPPORT AGENCY**

In order for the remedy selection process to be successful, lead and support agencies should interact throughout the entire RI/FS and Proposed Plan process. The goal of this continued interaction is to reach agreement on the Proposed Plan and the RI/FS report before the public comment period. Agreement by these agencies depends on the interaction and flow of information that occurs during the RI/FS process.

#### **3.2.1 Designation of Roles and Responsibilities**

EPA and the State play specific roles throughout the remedial process. These roles should be defined in the Superfund Memorandum of Agreement (SMOA), Cooperative Agreement (CA), or State Superfund Contract (SSC).<sup>2</sup> The SMOA

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<sup>2</sup> The SMOA is a procedural agreement that outlines cooperative efforts between States and EPA Regions and defines the roles and responsibilities of each party in the conduct of a Superfund program in a State. For more information on these, see Draft Guidance on Preparing a Superfund Memorandum of Agreement (SMOA) (OSWER Directive 9375.0-01, September 1988). The CA is a contractual agreement between EPA and the State, in which EPA appropriates money to the State to conduct remedial planning

and/or CA should designate the lead and support agency for conducting the RI/FS, developing the Proposed Plan, and drafting the ROD. The SMOA, if applicable, should describe the general procedures for oversight and interaction between EPA and the State. Additionally, the SMOA should contain site-specific agreements between EPA and the State, such as which agencies are designated to take the roles of the lead and support agencies at specific sites. In the absence of a SMOA, a CA negotiated between EPA and the State should provide this information for each specific site. The SSC, in contrast, should be used when the State has no lead responsibilities for a particular site or project and only when documentation of the cost-share is necessary.

### **3.2.2 Lead and Support Agency Responsibilities**

The lead agency's responsibilities for developing the Proposed Plan are to:

- Draft the Proposed Plan;
- Solicit comments on the Proposed Plan from the support agency(ies);<sup>3</sup>
- Respond in writing to comments from the support agency(ies) and include both the comments and responses in the administrative record file(s);
- Summarize the comments received from the support agency(ies) and present the lead agency's response in the Proposed Plan;
- Publish a newspaper notice announcing availability of the RI/FS report and Proposed Plan; and
- Make the RI/FS report and Proposed Plan available to the public in the administrative record file.

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activities and/or remedial action in compliance with the proposed NCP. The SSC documents any required cost sharing between EPA and the State but does not involve disbursement of Federal monies.

<sup>3</sup> If the State has taken responsibility for an NPL site and is conducting the cleanup under the State's own authorities (i.e., as a State-lead enforcement site), the State should keep EPA informed about progress at the site.

The support agency's primary responsibilities are to review and comment in a timely fashion on (1) specific RI/FS deliverables, (2) the draft RI/FS report(s), and (3) the Proposed Plan. The statute requires that this review specifically address the preferred alternative, other remedial alternatives, ARARs, and any proposed waivers to ARARs.

The role of other program offices within EPA and State agencies is to provide specific comments on the alternatives analyzed in the RI/FS report. EPA and the State should establish the appropriate procedures and time frames for these intra-agency reviews. Review of the RI/FS report by other program offices should be conducted at appropriate times during the RI/FS process to ensure that alternatives in the detailed analysis phase of the RI/FS report comply with other program requirements (e.g., ARARs). For EPA, this should involve review by program offices such as the Water Program, the Resource Conservation and Recovery Act Program, and the Toxic Substances Control Act Program. If a draft Proposed Plan is available when the RI/FS report is ready to be circulated, then the Plan should be circulated at the same time. Alternatively, a cover memorandum indicating the preferred alternative and any proposed waivers to ARARs should accompany the RI/FS report.

### **3.2.3 Management Review of the Proposed Plan**

The lead and support agencies should determine the appropriate level of managerial review for the draft Proposed Plan and, as appropriate, include this in the SMOA, CA, or SSC. The Regional Administrator and State Director should be briefed on the RI/FS report and the Proposed Plan by their respective staffs prior to the release of these documents to the public. The Assistant Administrator of the Office of Solid Waste and Emergency Response (OSWER) should be briefed if the Proposed Plan and ROD for a site have not been delegated to the Regional Administrator. Because the Proposed Plan provides the first opportunity for the public to comment on the remedial action identified as the preferred alternative by EPA and the State, the Regional Administrator or State Director should be apprised of the contents of both the RI/FS report and Proposed Plan, as well as of any unresolved or potential issues. This is especially true if a waiver to an ARAR is involved or if there are unresolved issues between the staffs of the lead and support agencies.

### **3.2.4 Support Agency Comment Period**

The support agency's comment period presents an important opportunity for the lead and support agencies to reach agreement on the preferred alternative. The lead agency should seek agreement from the support agency on the Proposed Plan prior to making the Plan available to the public. The comment period begins when the support agency receives the Proposed Plan from the lead agency and should last at least five, but no more than ten, working days. If a different time period for review is established in the SMOA, CA, or SSC, that time period should be followed. As previously mentioned, the draft RI/FS report could be given to the support agency before the Proposed Plan is ready for review. The review period for the draft RI/FS report should last at least 15 working days, unless a different time period is established in the SMOA, CA, or SSC, or by some informal arrangement between the lead and support agencies.

During the review period, the support agency should provide written comments on the preferred alternative and other components of the Proposed Plan. These comments should specify one of the following:

- Agreement, with or without comments;
- Disagreement, with or without comments; or
- No comment on the Plan at this time.

If the support agency does not respond to the lead agency's request for comments or prefers to withhold its comments until the public comment period, a copy of the written request for comments and a note documenting that the support agency did not provide comments should be placed in the administrative record file by the lead agency prior to the public comment period.

The lead agency should respond formally to the support agency's comments that it receives prior to making the Proposed Plan available to the public. The lead agency should address any unresolved issues with the support agency through a written explanation sent to the support agency. The response should address any concerns relating to the alternatives identified in the Proposed Plan, the preferred alternative, ARARs, and any proposed ARAR waivers, particularly any that relate to State standards. In addition to the formal response (i.e., letter) sent to the support agency that addresses the points

raised, comments from the support agency should also be summarized in the Proposed Plan under the State/support agency acceptance criterion in the Evaluation of Alternatives section. These comments and the lead agency's formal response to these comments should be included, in their entirety, in the administrative record file.

### 3.3 PROCEDURES FOR RESOLVING DISPUTES

If a dispute should arise between the lead and support agencies during any phase of the remedial process, the staffs of the lead and support agencies should attempt to resolve these issues in a timely manner. In the event that staff resolution is not possible, the issue(s) should be elevated promptly to the attention of management for resolution.

The lead and support agencies should use the dispute resolution process specified in the SMOA or CA, when these are appropriate. If Federal agencies are involved, the dispute resolution process specified in the IAG should be followed. Alternatively, the lead and support agencies could consider utilizing the dispute resolution process specified in Subpart F of the proposed NCP.

Subpart F, "State Involvement in Hazardous Substance Response," of the proposed NCP (40 CFR Part 300) outlines a dispute resolution process that EPA Regions and States should use to resolve disputes that arise during the RI/FS and remedy selection process. This approach encourages the lead and support agencies' Remedial Project Managers to resolve any disputes promptly. If this cannot be accomplished, the issue could be referred to their supervisors for further EPA/State consultation.<sup>4</sup> This supervisory referral and resolution process should continue, if necessary, to the level of Director of the State Agency and the Regional Administrator, respectively. If agreement still cannot be reached, the dispute should be referred to the Assistant Administrator (OSWER) who serves as final arbiter.

Regardless of the process utilized, the result should be an equitable resolution of outstanding issues. There may be instances, however, in which a final resolution cannot be achieved. If this should occur, there are two alternatives for continuing effective action. First, if EPA is the lead

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<sup>4</sup> It is possible that one of the participants will choose to refer an unresolved issue to upper management while the other participant chooses to maintain jurisdiction over the issue.



agency (pursuant to sections 104, 106, or 122), the Region should use its discretion as to whether to proceed with publication of the Proposed Plan. Second, in the event that the State is the lead agency (pursuant to section 104), EPA could elect to become the lead agency for the Proposed Plan, public participation activities, and the ROD. (This applies only to Fund-financed, State-lead projects.) It should be noted, however, that mutual acceptance by EPA and the State of the preferred alternative and, ultimately, the selected remedy by EPA and the State is crucial to effecting cleanup at the site.

### **3.4 ROLE OF OTHER FEDERAL AGENCIES**

Executive Order 12580 delegates the authority for carrying out the requirements of CERCLA sections 117(a) and (c) to Federal agencies with Federal facilities under their jurisdiction. A Federal agency, therefore, has the responsibility to issue the Proposed Plan. The IAGs between a Federal agency, EPA, and, in many cases, the State should establish the responsibilities for each party in preparing the Proposed Plan for Federal facilities.

As the lead agency, a Federal agency's responsibilities for preparing the Proposed Plan include those lead agency responsibilities specified in Chapters 2 and 3 of this guidance. As the support agency, EPA and/or the State should have an adequate period of time prior to publication of the Proposed Plan to comment on the RI/FS report and the draft Proposed Plan. The length of the review period should be specified in the IAG. The Federal agency should respond formally to comments made by EPA and the State. The formal response to the comments should be sent to the support agency(ies) and included in the administrative record file prior to the beginning of the public comment period.

Support agency (i.e., EPA and/or the State) comments and Federal agency responses to those comments should also be summarized in the Proposed Plan. Under the State/support agency acceptance criterion in the Evaluation of Alternatives section, the Federal agency should:

- Explain whether the support agency agrees or disagrees with the Proposed Plan (especially the preferred alternative);

- Indicate which alternative the support agency prefers when there is a disagreement; and
- Provide a summary of any outstanding support agency comments.

### **3.5 ROLE OF POTENTIALLY RESPONSIBLE PARTIES**

In accordance with the requirements of CERCLA sections 104 and 122, EPA can provide PRPs with the opportunity to conduct the required response actions (i.e., the RI/FS, remedial design, and remedial action). In the event that the PRPs conduct the RI/FS, either EPA or the State will become the lead governmental agency for general oversight of the RI/FS. EPA or the State should prepare the Proposed Plan and the ROD, even if the PRP conducts the RI/FS.<sup>5</sup>

PRPs could participate in the remedy selection process by commenting on the Proposed Plan and on other publicly available information contained in the administrative record file during the formal public comment period. The lead agency, while not legally obligated to respond to comments submitted by PRPs and members of the public prior to the formal public comment period, is encouraged to do so.

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<sup>5</sup> At those sites for which the PRP conducts the RI/FS, the PRP should not indicate its preferred alternative in the RI/FS report. If the PRP wants to communicate this information to the lead agency, it should do so through some other mechanism, such as a memorandum.

## **CHAPTER 4**

### **THE NEWSPAPER NOTIFICATION OF AVAILABILITY OF THE PROPOSED PLAN AND THE PUBLIC COMMENT PERIOD**

This chapter summarizes the requirements for the newspaper notification, which announces the availability of the Proposed Plan, and presents guidance on procedures for the public comment period.

#### **4.1 STATUTORY REQUIREMENTS**

CERCLA section 117 requires that upon completion of the Proposed Plan, the lead agency shall notify the public of the availability of the Plan, the RI/FS report, and the administrative record file. The statutory requirements are as follows:

- Section 117(a)(1) requires the lead agency to do the following:
  - Publish a notice and brief analysis of the Proposed Plan and make such Plan available to the public; and
  - Include sufficient information in the notice and analysis as may be necessary to provide a reasonable explanation of the Proposed Plan and alternative proposals considered.
- Section 117(d) further specifies that:
  - Publication shall include, at a minimum, publication in a major local newspaper of general circulation. In addition, each item developed, received, published, or made available under this section to the public shall be available for public inspection and copying at or near the facility or site where the remedial action is being considered.

## 4.2 WRITING THE NEWSPAPER NOTIFICATION

The lead agency's newspaper notification should include a brief abstract of the Proposed Plan, which describes the alternatives analyzed and identifies the preferred alternative. The notice should be published in a widely read section of the newspaper, rather than in the classified advertisements or legal notices. Key elements of the notification are summarized below. Exhibit 4-1 provides a sample newspaper notification.

### 4.2.1 Section-by-Section Description of the Newspaper Notification

The newspaper notification should consist of the following elements:

- Site Name and Location. The notice should include the proper site name and location.
- The Date and Location of a Public Meeting (if scheduled). If a meeting has not been requested or scheduled, the notice should inform the public of its right to request one.
- Identification of Lead and Support Agencies. The notice should identify which entities (i.e., EPA, State agency, or other Federal agency) have served as lead and support agencies for the response action.
- Alternatives Evaluated in the Detailed Analysis. The notice should list the remedial alternatives evaluated in the detailed analysis phase of the FS.<sup>1</sup>
- Identification of Preferred Alternative. A brief statement of the major components of the preferred alternative should be included.<sup>2</sup>

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<sup>1</sup> Statutory requirements of CERCLA section 117(a).

<sup>2</sup> Statutory requirements of CERCLA section 117(a).

4-3

**EXHIBIT 4-1****Sample Newspaper Notification  
of Availability of the Proposed Plan**

**THE UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
Invites  
PUBLIC COMMENT ON THE  
PROPOSED CLEANUP OF THE EIO INDUSTRIAL SITE  
at  
129 FRANKLIN STREET, NAMELESS, TN**



The U.S. Environmental Protection Agency (EPA) and the Tennessee Pollution Control Board (TPCB) will hold a **Public Meeting** to discuss the Remedial Investigation/Feasibility Study Report (RI/FS) and the Proposed Plan for the EIO site. The meeting will be held on October 17, 1989 at 7:30 p.m. in the Community Hall, 123 Elm Road, Nameless, Tennessee.

EPA (the lead agency) and the TPCB (the support agency) evaluated the following options for addressing the contaminated soil at the EIO site:

- Capping the contaminated soils
- Excavation and disposal in an off-site landfill
- Excavation, treatment of organics (in a vaporization loop), stabilization of residual metals, and disposal in an on-site landfill
- Excavation and off-site incineration
- Excavation, on-site incineration of soil (for organics), and stabilization of residual metals
- No action

Based on available information, the preferred option at this time is to excavate the 7,500 cubic yards of contaminated soil at the site, treat the volatile organics in a vaporization loop, stabilize the soils to immobilize metal contaminants, and dispose of them in an on-site landfill.

Although this is the preferred alternative at the present time, EPA and TPCB welcome the public's comments on all alternatives identified above. EPA and TPCB will choose the final remedy after the public comment period ends and may select any one of the options after taking those comments into account.

The Proposed Plan has been mailed to all known interested parties. Also, complete documentation of the analysis is presented in the RI/FS Report and in the Proposed Plan, which are available with the rest of the administrative record file at the Nameless Public Library, 125 Elm Street.

The public may comment in person at the public meeting and/or may submit written comments today and until October 31, 1989 to Joshua Doe at the EPA address below. For further information, contact:

Joshua Doe  
Community Relations Coordinator  
U.S. Environmental Protection Agency  
123 Peachtree Street  
Atlanta, GA 00000  
(555) 555-4640

Toll Free (800) 333-3333 between 8:30 a.m. and 4:30 p.m. Monday to Friday

- Request for Public Comments. The notice should emphasize that the lead agency is soliciting public comment on all of the alternatives evaluated in the detailed analysis phase of the FS, as well as on the preferred alternative. It should include a clear statement that the preferred alternative is only a preliminary determination and that any of the other options presented could be selected as the remedy based upon public comment, new information, or a reevaluation of existing information. The readers should be referred to the RI/FS report and other contents of the administrative record file for further information on all of the remedial alternatives considered.
- Public Participation. The notice should inform the public of its role in the remedy selection process and provide the following information:
  - The location of the information repositories and administrative record file(s);
  - The methods by which the public may submit comments; and
  - The dates of the public comment period;

### 4.3 PUBLIC COMMENT PERIOD

This section provides guidance on the procedures the lead agency should follow to satisfy the public participation requirements in section 117 of CERCLA. Section 117(a)(2) requires that the lead agency do the following:

... [provide] a reasonable opportunity for submission of written and oral comments and an opportunity for a public meeting at or near the facility at issue regarding the proposed plan and regarding any proposed findings [relating to cleanup standards and any proposed waiver]... [and] keep a transcript of the meeting and make such transcript available to the public.

The lead agency is charged with making the relevant documents, such as the Proposed Plan and the RI/FS report, available to the public at the time

the public comment period begins.<sup>3</sup> In addition, the lead agency should ensure that any information considered or relied upon in selecting the response action is included as part of the administrative record file and is available to the public during the public comment period.

CERCLA section 117(a)(2) also requires the lead agency to provide the public with a reasonable opportunity to submit written and oral comments on the Proposed Plan. Currently, the lead agency must allow the public a minimum of 21 days to comment on the information contained in the RI/FS report (including any proposed waivers relating to ARARs). Proposed revisions to the NCP would increase the minimum period allowed for public comment to 30 days. Longer time periods may be determined to be appropriate, depending on specific site circumstances.

While the lead agency could respond to oral or written comments received during the RI/FS process, prior to the public comment period, the lead agency has no legal obligation to do so. To ensure that all comments are addressed, the lead agency should ask individuals to resubmit comments that were initially made during the RI/FS process during the formal public comment period.

Further guidance on the public comment period and the lead agency's responsibilities can be found in Community Relations in Superfund: A Handbook (OSWER Directive 9230.0-3B, June 1988) and the draft Interim Guidance on Administrative Records for the Selection of CERCLA Response Actions (OSWER Directive 9833.3A, March 1989).

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<sup>3</sup> In addition to the newspaper notice, the notice of the Proposed Plan should be sent directly to the PRPs via the community relations or enforcement mailing list for the site. (Although this is not a statutory requirement, this may allow those PRPs, who may be outside the circulation area of the local newspaper, to participate in a timely manner.)

## **CHAPTER 5**

### **PRE-ROD SIGNIFICANT CHANGES**

#### **5.1 OVERVIEW**

After the public comment period ends, a final remedial alternative is selected for adoption in the ROD. The remedy is selected based on the analysis presented in the Proposed Plan and RI/FS report, giving consideration to the comments from the support agency and the public, as well as any other new and significant information received or generated. The lead agency may re-evaluate the preferred alternative in light of this information and may change a component of the preferred remedy or choose to implement a remedy other than the preferred alternative.

If a change is made, according to CERCLA section 117(b), the lead agency should analyze these changes to determine if the modifications are "significant". When the lead agency makes significant changes (such as a change to the component of an alternative or a change from the preferred alternative to another alternative presented in the Proposed Plan), these changes should be explained in the ROD. In some instances, significant changes may also warrant issuance of a revised Proposed Plan and additional public comment. What constitutes a "significant" change is a site-specific determination made by the lead agency, taking into consideration the information available to the public, the original description of the alternatives studied in detail in the Proposed Plan and RI/FS report, and the impact that the changes may have on the scope, performance, or cost of the remedy.

This chapter: (1) presents a general framework for categorizing minor and significant changes made to the Proposed Plan after it is issued for public comment; and (2) specifies documentation and communication activities that may be necessary to inform the public of these changes. Because what constitutes a significant change will vary depending upon site circumstances and the manner in which the information was presented in the RI/FS and Proposed Plan, "significant change" cannot be specifically defined in this guidance.



## 5.2 REQUIREMENT TO ADDRESS CHANGES

CERCLA section 117(b) requires that the final remedial action plan (i.e., the ROD) be accompanied by:

a discussion of any significant changes (and the reasons for such changes) in the proposed plan and a response to each of the significant comments, criticisms, and new data submitted [in the RI/FS report and the Proposed Plan].

Based on this requirement, the lead agency should document significant changes that are identified and the reasons for these changes in the Decision Summary of the ROD. In addition to complying with the statutory requirement in CERCLA section 117(b), the lead agency should determine whether additional public comment is necessary. If significant changes are made to the Proposed Plan such that the public, through its review of the RI/FS report and Proposed Plan, could not have reasonably anticipated these changes, then a revised Proposed Plan should be issued for public comment before a ROD is prepared. Section 5.4 provides criteria for determining whether or not a significant change could reasonably have been anticipated by the public. Where such changes could reasonably have been anticipated by the public, the lead agency need not provide an additional opportunity for public comment.

## 5.3 IDENTIFYING CATEGORIES OF CHANGES

The lead agency has the discretion to make changes to the Proposed Plan based either on new information received from the public or support agency or on information generated by the lead agency itself during the remedial process. In evaluating new information, the lead agency's initial focus should be on whether the new information causes the lead agency either to change a significant or minor aspect of the selected remedy or to choose a remedy other than the alternative that was preferred in the Proposed Plan.

New information received during the public comment period typically will relate to the scope, performance, or cost of the remedial approach. Typical significant changes generally include the following:

**Scope:** Changes that alter the selected alternative by addressing a substantially greater or lesser volume

## 5-3

of waste, a new environmental pathway, or by encompassing a substantially greater physical area of the site;

**Performance:** Changes in treatment technologies or processes that significantly alter the long-term effectiveness of the remedy or that have significantly different short-term effects.

**Cost:** Changes to any aspect of the selected alternative such that the capital or operation and maintenance cost estimates for the final alternative are significantly altered.

Sections 5.3.1 and 5.3.2 elaborate on the distinction between minor and significant changes and describe the documentation requirements specific to each category of change. Figure 5-1 summarizes the process for analyzing and documenting significant changes.

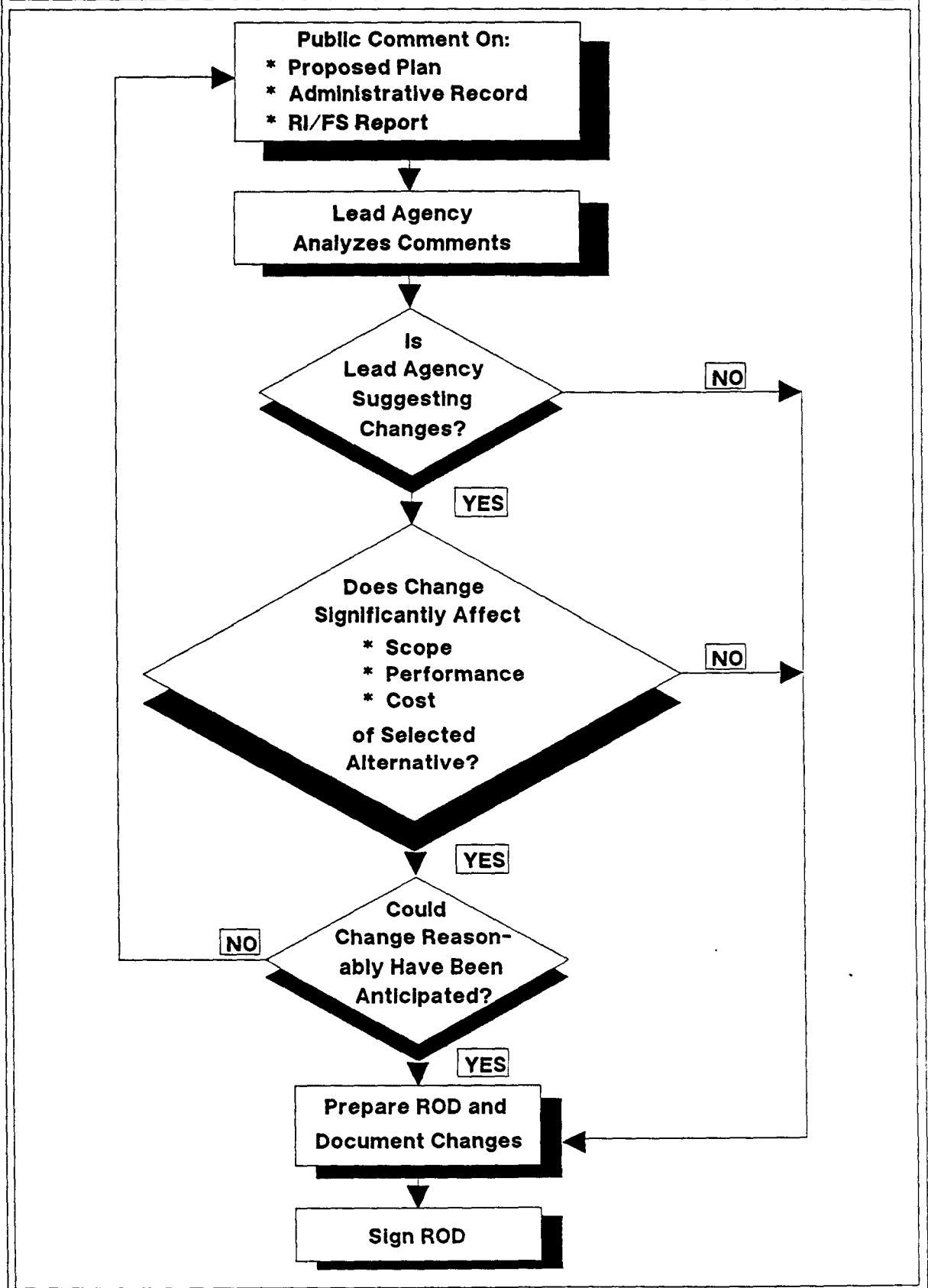
### **5.3.1 Minor Changes**

Minor changes are those that have little or no impact on the overall scope, performance, or cost of the alternative, as originally presented in the RI/FS report or Proposed Plan. Such changes typically will be clarifications, administrative changes, and minor technical or engineering changes that do not significantly alter the overall scope, performance, or cost of the alternative. Although the statute does not require documentation of these minor changes, these should be noted in the Description of Alternatives section of the ROD Decision Summary or in supporting information in the administrative record file. Minor changes should not be discussed in the significant changes section of the ROD Decision Summary.

### **5.3.2 Significant Changes**

Prior to the final selection of a remedy, new information or public comments may cause the lead agency to make significant changes to the Proposed Plan that had been released for public comment. Modifying the selected alternative or changing from the preferred alternative to another alternative are examples of significant changes. When there are any proposed changes to a component of an alternative, the changes should be analyzed to determine if

**FIGURE 5-1**  
**Pre-ROD Changes**



they significantly affect the scope, performance, or cost of the selected remedy. The lead agency may decide, for example, to double the physical size of the site; to change the remediation period from three years to six; or to add an additional component of the long-term management controls that increases the operation and maintenance costs. When a significant change is made, the lead agency should, at a minimum, document the change and the reasons for such a change in the Decision Summary of the ROD. In some cases, additional public comment may be necessary. The basis for determining which significant changes warrant additional public comment is discussed in section 5.4 below.

## **5.4 CRITERIA FOR ANALYZING SIGNIFICANT CHANGES**

Once it has been determined that a significant change is necessary, the lead agency should decide whether the change warrants only documentation in the ROD or additional public comment. To make this assessment, the lead agency decides which of two categories the significant change(s) belongs: (1) changes that are a logical outgrowth of the information and analysis already presented to the public; or (2) changes that the public could not have reasonably anticipated, based on information available during the public comment period. If the lead agency determines that the significant change is a logical outgrowth, the change should be documented in the ROD Decision Summary. In those limited situations in which the public could not have reasonably anticipated the changes, the lead agency should issue a revised Proposed Plan for public comment. Additional means of classifying changes are presented below.

### **5.4.1 Significant Changes that may be Considered Logical Outgrowths of the Information Available to the Public**

In analyzing significant changes, three broad scenarios of changes are likely to be classified as logical outgrowths of the information on which the public had the opportunity to comment. The significant changes in each of these scenarios would only have to be explained in the ROD; additional public comment is not necessary. The three scenarios are as follows:

(1) **A Change to a Component of the Selected Alternative.** The lead agency may make a change to a component of the selected remedy (e.g., a change in cost, timing, level of performance, or ARARs) that may result in a

significant alteration to the scope, performance, or cost of the remedy, while the overall waste management approach represented by the alternative remains the same. If the significant change to a component of the alternative could have been reasonably anticipated by the public, taking into consideration the inherent uncertainties associated with the waste management/engineering process, the lead agency need only document the significant change in the ROD Decision Summary.

**(2) Selection of a Remedy Other than the one selected in the RI/FS and Proposed Plan.** The lead agency may determine, based on information received during the comment period, that the preferred alternative in the Proposed Plan no longer provides the most appropriate balance of tradeoffs among the alternatives with respect to the evaluation criteria. Information available to the lead agency may suggest that another alternative from the Proposed Plan and RI/FS report provides the best balance of tradeoffs, and the lead agency may select the other alternative. Such a change requires only documentation in the ROD because the public has been apprised previously that that alternative (or any other alternative in the detailed analysis) might be selected as the remedy; thus, the public had adequate opportunity to review and comment on it.

**(3) Combining Components of Alternatives.** In some instances, Proposed Plans and RI/FS reports may recommend two or more alternatives (or combinations of alternatives) for addressing different pathways at a site. For example, an RI/FS report prepared for a site could develop two alternatives, one to address contaminated soils and another to remediate the ground water. In identifying the preferred alternative for each of these media in the Proposed Plan, the lead agency did not make a conclusive determination regarding the most appropriate combination of the source control and ground-water alternatives for the site. Thus, if the lead agency chooses to retain the preferred alternative for the ground water, but rejects the preferred soil remediation alternative and chooses a different alternative from among those presented in the Proposed Plan, the new selection would be considered a logical outgrowth of the information on which the public already had the opportunity to comment and a new comment period would not be required. The change should, however, be documented in the ROD Decision Summary along with the reasons for the change.

#### **5.4.2     Significant Changes that may not be Considered Logical Outgrowths of the Information Available to the Public**

Changes that are not logical outgrowths of the information presented in the Proposed Plan and the RI/FS report should be documented by the lead agency in a revised Proposed Plan and a new public comment period held. When issuing a revised Proposed Plan to document a significant change that was not a logical outgrowth, the revised document should be prepared in accordance with the requirements of both CERCLA section 117 and the NCP. (These requirements are discussed in Chapters 2 and 3 of this guidance.) Two changes that require additional public comment are listed below.

(1) Selection of a New Alternative that was Not Previously Analyzed. The lead agency may determine that an alternative that was not presented in the Proposed Plan or detailed analysis phase of the RI/FS report should be selected as the remedy. In this case, the public could not have reasonably anticipated the lead agency making such a selection; therefore, the lead agency should issue a revised Proposed Plan presenting the new preferred alternative and provide appropriate supporting information for public comment. The significant change should also be described in the ROD. This description should note the initially preferred alternative, the new alternative, and the reason for the change.

(2) Significant Change to a Component of the Selected Alternative. A change to a component of the selected alternative (e.g., a newly discovered ARAR, which, if complied with, would radically alter the feasibility of the alternative, or a change in a portion of the treatment train to be used that would alter significantly the alternative's ability to reduce the toxicity, mobility, or volume of waste) requires additional public comment if making the change will radically alter the overall remedy with regard to its scope, performance, or cost in a manner that the public could not have reasonably anticipated. Such changes could radically alter the volume of waste managed or the physical scope of the action, as estimated in the Proposed Plan and the RI/FS report.

## 5.5 EXAMPLES OF PRE-ROD CHANGES

The following text provides examples of the three types of changes that can be made to the selected remedy (i.e., minor changes, significant changes that should be explained in the ROD, and significant changes that should be explained in both a revised Proposed Plan and a new public comment period). At a hypothetical site, disposal of septic waste and some hazardous substances has resulted in the contamination of 11,000 cubic yards of soil with volatile organic compounds (VOCs) and metals. There are six alternatives identified in the RI/FS report for controlling the source of contamination at the site:

- (1) No action;
- (2) Capping;
- (3) Excavation and disposal in an off-site landfill;
- (4) Excavation, vaporization of volatile organics, and disposal in an on-site landfill;
- (5) Off-site incineration; and
- (6) On-site incineration and solidification.

The preferred alternative in the Proposed Plan was the fourth alternative, which specifically calls for:

- The excavation, vaporization, and disposal in an on-site landfill of 11,000 cubic yards of contaminated soil;
- Capital cost: \$4,666,000;
- Annual O&M cost: \$41,000;
- Present worth cost: \$5,050,150; and
- Implementation time: 12 to 15 months.

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**NOTE:** The examples presented here do not represent strict thresholds for changes in cost, volume, and/or time. THIS GUIDANCE DOES NOT ESTABLISH STANDARDS FOR SIGNIFICANT CHANGES.

### **5.5.1 Minor Change**

Based on information received during the public comment period, the lead agency determines that the capital cost estimate in the Proposed Plan was about 10 percent too low; the actual capital cost of the remedy is \$5,100,000. The lead agency also identifies factors that would extend the implementation time frame to 18 months. These changes do not significantly alter the scope, performance, or cost of the remedy. Although the changes are not required to be explained in the Significant Changes section of the ROD, they should be discussed in the Description of Alternatives section of the ROD Decision Summary, and the supporting information should be included in the administrative record file(s).

### **5.5.2 Significant Change Requiring Documentation in the ROD**

The lead agency receives new information during the public comment period that prompts a change in the remediation goal for the soils; as a result, the volume of contaminated soils that should be addressed is increased by 10,000 cubic yards more than the initial estimate. To incorporate this change, the final remedial action plan specifications are modified as follows:

- Excavation, vaporization, and disposal in an on-site landfill of 14,600 cubic yards of contaminated soil;
- Capital cost: \$5,366,000;
- Annual O&M cost: \$41,000;
- Present worth cost: \$5,750,150; and
- Implementation time: 18 to 21 months.

To address the larger volume of contaminated soils, the lead agency decides to implement the preferred alternative with some changes made to those components presented in the Proposed Plan. The decision to increase the volume of soils could be considered a logical outgrowth of the information, even though doing so would impact the scope, performance, or cost of the remedy. Although the volume of soils being addressed is increased by one-third, there are economies of scale in the landfill construction and



volatilization process such that capital costs of the remedy are expected to increase only by 15 percent, and O&M costs are not expected to increase at all. The time required to implement the remedy is increased by approximately six months. The changes in the specifications of the components of the remedy are documented in the ROD Decision Summary, including an explanation of why the changes were made. No additional public comment period is necessary.

### **5.5.3 Significant Change Necessitating the Issuance of a New Proposed Plan, of a New Public Comment Period, and their Documentation in the ROD**

A remedy is selected that was **NOT** presented in the Proposed Plan or the detailed analysis section of the FS. The selected alternative is:

- In-situ vitrification of 11,000 cubic yards of contaminated soil;
- Capital cost: \$3,920,000 to \$5,292,000;
- Annual O&M cost: \$33,000;
- Present worth cost: \$4,229,200 to \$5,601,200;  
and
- Implementation time: 12 to 15 months.

This remedy is selected because new information is received indicating that in-situ vitrification could be used effectively at the site. This new remedy, however, is quite different in scope and performance from any other alternative considered in detail in either the Proposed Plan or RI/FS report. Because the public has not had an adequate opportunity to comment on the technical, environmental, and human health aspects of the remedy or to evaluate and compare its performance in terms of the nine evaluation criteria, a revised Proposed Plan should be prepared and a new public comment period should be held before the remedy is adopted in the ROD.

## CHAPTER 6

### WRITING THE RECORD OF DECISION

#### 6.1 INTRODUCTION

This chapter presents a section-by-section discussion of the components of a CERCLA Record of Decision (ROD). These components are the Declaration, the Decision Summary, and the Responsiveness Summary. This chapter applies specifically to decision documents prepared for final response actions that are planned either for a site or an operable unit within a site. Final response actions are those actions that address the principal threats posed by the site or operable unit, that comply with statutory determinations, and that address the statutory preference for treatment as a principal element.

Guidance on preparing a ROD that documents a no action or an interim (or limited) action is presented in Chapter 9. A no action decision is made when the lead agency determines that a response action is not necessary to control, mitigate, or eliminate exposure. An interim action decision is made for those actions of limited scope that will be followed by final response actions for that operable unit. Chapter 9 outlines the modifications to the standard format (as outlined in this chapter), which should be made when documenting these two kinds of remedial decisions. In addition, the procedures in Chapter 9 should be consulted when a decision is being contemplated that includes both a selected remedy and a contingency remedy which could be implemented in the event that the primary remedy does not attain its performance specifications.

##### **6.1.1 Purpose of the Record of Decision**

The ROD documents the remedial action plan for a site or operable unit. It is prepared by the lead agency in consultation with the support agency(ies). The ROD has the following three purposes:

- First, the ROD serves a legal function in that it certifies that the remedy selection process was carried

out in accordance with the requirements of CERCLA and, to the extent practicable, the NCP;<sup>1</sup>

- Second, the ROD is a **technical** document that outlines the engineering components and remediation goals of the selected remedy; and
- Third, the ROD is **informational**, providing the public with a consolidated source of information about the history, characteristics, and risks posed by the conditions at the site, as well as a summary of the cleanup alternatives considered, their evaluation, and the rationale behind the selected remedy.

### **6.1.2 Statutory Requirements to Issue the Record of Decision**

Sections 113 and 117 of CERCLA, as amended, require that the Agency issue a final remedial action plan. The Superfund program commonly refers to this plan as the Record of Decision (ROD). Section 113(k)(2)(B)(v) of CERCLA, as amended, calls for "a statement of basis and purpose for the selected remedy at a site." In addition, section 117(b) requires that:

notice of the final remedial action plan [ROD] adopted shall be published and the plan shall be made available to the public before commencement of any remedial action. Such final plan shall be accompanied by a discussion of any significant changes (and the reasons for such changes) in the proposed plan and a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations [Responsiveness Summary].

### **6.1.3 Major Components of the Record of Decision**

The ROD consists of three basic components: a Declaration, a Decision Summary, and a Responsiveness Summary (see Exhibit 6-1).

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<sup>1</sup> Section 121(a) of CERCLA, as amended, provides that remedial actions should be carried out in accordance with section 121 "and, to the extent practicable, the National Contingency Plan."

- The **Declaration** functions as an abstract for the key information contained in the ROD and is the section of the ROD signed by the EPA Regional Administrator or Assistant Administrator;
- The **Decision Summary** provides an overview of the site characteristics, the alternatives evaluated, and the analysis of those options. The Decision Summary also identifies the selected remedy and explains how the remedy fulfills statutory requirements; and
- The **Responsiveness Summary** addresses public comments received on the Proposed Plan, RI/FS report, and other information in the administrative record.

The key elements of each of these three components are described in the following sections.

## **6.2 KEY ELEMENTS OF THE DECLARATION**

The Declaration functions as an abstract for the information contained in the ROD. It provides a brief description of the selected remedy for the site and a formal statement explaining that the selected remedy complies with CERCLA and is consistent, to the extent practicable, with the NCP. The Declaration is the section of the ROD signed by the EPA Regional Administrator or Assistant Administrator. The State Director or Federal facility representative should co-sign the ROD when the State or other Federal Agency is designated as the lead agency for preparing the ROD. Exhibit 6-2 is a sample of the Declaration.

**EXHIBIT 6-1****Outline for the Record of Decision**

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**Declaration**

- Site Name and Location
- Statement of Basis and Purpose
- Assessment of the Site
- Description of the Selected Remedy
- Statutory Determinations
- Signature and Support Agency Acceptance of the Remedy

**Decision Summary**

- Site Name and Location
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit
- Site Characteristics
- Summary of Site Risks
- Description of Alternatives
- Summary of Comparative Analysis of Alternatives
- Selected Remedy
- Statutory Determinations

**Responsiveness Summary**

- Community Preferences
- Integration of Comments

**EXHIBIT 6-2****Sample Declaration for the Record of Decision****Statutory Preference for Treatment as a  
Principal Element is Met  
and Five-Year Site Review is not Required****SITE NAME AND LOCATION**

Super Kleen Company Site  
Dustbowl, AZ

**STATEMENT OF BASIS AND PURPOSE**

This decision document presents the selected remedial action for the Super Kleen Company site, in Dustbowl, Arizona, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. This decision is based on the administrative record file for this site.

The State of Arizona concurs on the selected remedy.

**ASSESSMENT OF THE SITE**

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

**DESCRIPTION OF THE REMEDY**

This operable unit is the final action of three operable units for the site. The first operable unit at this site involved remediation of a municipal well. The second operable unit involved remediation of the ground water. This final operable unit addresses the source of the soil and ground-water contamination. This action addresses the principal threat remaining at the site by treating the most highly contaminated soils and waste material. Treatment residuals and soils contaminated at low levels will be disposed of off-site, such that the site will not require any long-term management.

The major components of the selected remedy include:

- Excavation and treatment, via on-site thermal destruction, of approximately 10,000 cubic yards of contaminated soils and waste materials from the former lagoon area; and
- Disposal of treatment residuals and 2,000 cubic yards of contaminated soils at an off-site RCRA Subtitle C disposal facility.

**STATUTORY DETERMINATIONS**

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Because this remedy will not result in hazardous substances remaining on-site above health-based levels, the five-year review will not apply to this action.

\_\_\_\_\_  
Signature (Assistant Administrator/Regional Administrator)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature (State Director)

### **6.2.1 Site Name and Location**

The proper site name (as listed on the National Priorities List) and location (citing the town or county and State in which the site is located) should be included in the Declaration.

### **6.2.2 Statement of Basis and Purpose**

Section 113(k)(2)(B)(v) of CERCLA requires that "a statement of basis and purpose of the selected remedy" be prepared. To comply with this requirement, EPA must provide an explanation of the factual and legal basis upon which the decision to select a particular remedy was made. The ROD serves as this statement of basis and purpose, and the Declaration should make a statement to that effect. In addition, another statement in this section of the Declaration should say that the information supporting the lead and support agencies' decisions on the selected remedy is contained in the administrative record. [Note: The administrative record index need not be attached to the ROD but should be placed in the administrative record file.]

### **6.2.3 Assessment of the Site**

The Declaration should include a statement of the existence of an imminent and substantial endangerment to public health, welfare, or the environment. The following language should be added to all RODs (except where the clean-up decision is to take "no further action"):

**Required Language for Assessment of the Site:**

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present a current or potential threat to public health, welfare, or the environment.

#### **6.2.4 Description of the Selected Remedy**

The selected remedy should be identified and described briefly. This description should be presented in bullet form and should specify the treatment technologies and/or engineering controls that will be used, as well as any institutional controls, such as deed or access restrictions. This description should include the following elements:

- A brief explanation of how this response action fits into the overall site clean-up strategy, if the action is an operable unit (e.g., "this is the second of three operable units"); and
- A statement as to how the selected response action does or does not address the principal threat(s) posed by the site.

#### **6.2.5 Statutory Determinations**

Finally, the ROD Declaration should conclude with the finding that the selected remedy satisfies the statutory requirements of CERCLA section 121. For the Declaration, this can be accomplished by making confirmatory statements that the selected remedy attained the four statutory mandates (see below) and the statutory preference for treatment.

The four mandates of CERCLA section 121 require that all remedial actions taken pursuant to sections 104 or 106 must:

- Be protective of human health and the environment;
- Comply with ARARs (or justify a waiver);
- Be cost-effective; and
- Utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable.

In addition, the statutory preference for treatment in CERCLA section 121 should be addressed in all RODs including those documenting a selected remedy



that do not meet the statutory preference for treatment. Section 121 requires that the lead agency provide an explanation whenever a remedy is chosen that does not employ treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as its principal element.

Finally, the applicability of the five-year review required by CERCLA section 121 should be addressed in this part of the Declaration. This review is conducted to evaluate whether a remedy continues to provide adequate protection of human health and the environment, and it should be conducted at every site where the remedial action results in hazardous substances remaining on-site above health-based levels.

#### **6.2.5.1 Sample Boilerplate Language for Making Statutory Determinations**

Sample boilerplate language that addresses the aforementioned statutory determinations is provided in Exhibits 6-2 and 6-3. The language in this section of the Declaration will vary depending upon whether the statutory preference for treatment is satisfied and whether the five-year review is applicable. The sample Declaration in Exhibit 6-2 provides guidance for a remedy that meets the statutory preference for treatment as a principal element, with no required five-year review. The sample Declaration in Exhibit 6-3 provides guidance for a remedy that does not meet the statutory preference for treatment and for which a five-year review is required.

If the remedy does not meet the statutory preference for treatment, then the Statutory Determinations section of the Declaration should state this and summarize the rationale for choosing a remedy that does not contain treatment as a principal element. This rationale could be based on the specific factors used to determine that the treatment is impracticable, such as technical infeasibility, inadequate short-term protection of human health and the environment, or unavailability of necessary capacity, equipment, or specialists. In addition, a brief statement that past or future operable units have met or will meet the statutory preference for treatment should be included, when appropriate.

**EXHIBIT 6-3****Sample Declaration for the Record of Decision****Statutory Preference for Treatment as a  
Principal Element is not Met  
and Five-Year Site Review is Required****SITE NAME AND LOCATION**

Municipal Landfill Site  
Nowhere, NY

**STATEMENT OF BASIS AND PURPOSE**

This decision document presents the selected remedial action for the Municipal Landfill site, in Nowhere, New York, developed in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. This decision is based on the administrative record for this site.

The State of New York concurs on the selected remedy.

**ASSESSMENT OF THE SITE**

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

**DESCRIPTION OF THE REMEDY**

This operable unit is the first of two that are planned for the site. The first operable unit addresses the source of the contamination by containing the on-site wastes and contaminated soils. The function of this operable unit is to seal off the Municipal Landfill site as a source of ground-water contamination and to reduce the risks associated with exposure to the contaminated materials. While the remedy does address one of the principal threats at the site, the second operable unit will involve continued study and possible remediation of the downgradient contaminant plume.

The major components of the selected remedy include:

- Installing a security fence around the landfill site;
- Capping the 65-acre landfill in accordance with Resource Conservation and Recovery Act Subtitle D requirements;
- Installing surface water controls to accommodate seasonal precipitation;
- Conducting environmental monitoring to ensure the effectiveness of the remedial action; and
- Preparing a supplemental remedial investigation and feasibility study to identify the extent of ground-water contamination and to develop and evaluate appropriate remedial alternatives.

**DECLARATION**

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The size of the landfill and the fact that there are no on-site hot spots that represent the major sources of contamination preclude a remedy in which contaminants could be excavated and treated effectively.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

\_\_\_\_\_  
Signature (Assistant Administrator/Regional Administrator)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature (State Director)

### **6.2.6 Signature and Support Agency Acceptance of the Remedy**

All ROD Declarations are signed and dated by the Assistant Administrator of OSWER or the Regional Administrator. When the State is the lead agency for developing the ROD, the State Director should sign the ROD. When the State is the support agency, the State's signature on the ROD is optional (i.e., the SMOA, CA, or SSC may or may not provide for such signature). At a minimum, a letter specifying concurrence or nonconcurrence from the State should always be included in the administrative record. In situations where a Federal agency other than EPA is the lead agency, that agency should co-sign the ROD with EPA.

Although the goal of the interactions between the lead and support agencies is to reach mutual agreement on the ROD, there may be limited instances in which this is not achieved. In such an event, the procedures for selecting and implementing the remedy are dependent upon whom has the lead responsibility for the ROD. If EPA has the lead, and the State nonconcurs on the selected remedy, then EPA has the discretionary authority to sign the ROD and continue through the remedial design stage. EPA cannot proceed beyond the remedial design stage, however, without the State's cost-share.

In the event that the State is the lead and EPA does not concur on the selected remedy, EPA can assume the lead for the ROD and proceed through the design stage. In either case, all information pertaining to the disagreement should be included in the administrative record.

## **6.3 KEY ELEMENTS OF THE DECISION SUMMARY**

The Decision Summary, the second and main component of the ROD, should provide an overview of the site-specific factors and analysis that led to selection of the remedy for the operable unit or site. In general, this section of the ROD should describe the following:

- The history of and contamination at the site;
- The alternatives evaluated;
- The analysis leading to the final remedy selection; and

- How the selected remedy satisfies the statutory requirements.

Although some of the information presented in the Decision Summary is similar to that presented in the Declaration, this section discusses the topics in greater detail and provides the rationale for those "declarations."

The Decision Summary, to a great extent, should summarize information that is already in the administrative record for a site, particularly the RI/FS report. However, when information is either not available or is not satisfactorily addressed in the administrative record, then the discussion in the ROD Summary may need to be more thorough. The one completely original section of the Decision Summary is the final section which identifies the selected remedy and explains how the statutory requirements are satisfied by that remedy.

### **6.3.1 Site Name, Location, and Description**

This section should be a brief description of basic information about the site location and the actual or potential threat from the site. The site description should include the following information:

- Location and address at which the response action is occurring, including the town or county, the State in which the site is located, and the site's distance from significant locations, such as an intersection or geographical boundary; and
- A general overview of the site, summarizing geographical and topographical information such as natural resource use, adjacent land use, distance to nearby populations, location in a floodplain, general surface-water and ground-water resources, and surface and subsurface features (e.g., number and volume of tanks, lagoons, structures, and drums at the site).

Inclusion of maps and charts in this section is encouraged.

### **6.3.2 Site History and Enforcement Activities**

This section should provide background information on the site's history and enforcement actions taken to date. Factors that should be addressed include the following:

- The history of activities at the site that have led to the current problems, such as manufacturing activities or disposal of hazardous substances (e.g., a key piece of information may be whether a site operated prior to or after the effective date(s) of the Resource Conservation and Recovery Act, i.e., November 19, 1980, or July 26, 1982; and
- The history of site investigations or remedial actions conducted to date under CERCLA, as well as under other environmental authorities, such as RCRA, the Clean Water Act (CWA), the Clean Air Act (CAA), or State authorities.
- The history of CERCLA enforcement activities at the site, such as whether a special notice has been issued to PRPs or whether a law suit has been filed regarding cleanup of the site.

### **6.3.3 Highlights of Community Participation**

CERCLA establishes a number of public participation activities that the lead agency must conduct during a remedial action. This section should briefly note how the public participation requirements in CERCLA section 113(k)(2)(B)(i-v) were met. These requirements are established to provide:

- Notice to potentially affected persons and the public, which shall be accompanied by a brief analysis of the plan and alternative plans that were considered [in the RI/FS report and Proposed Plan];
- A reasonable opportunity to comment and provide information regarding the [proposed] plan [and RI/FS report] (i.e., public comment period);
- An opportunity for a public meeting held in the affected area, in accordance with section 117(a)(2) (relating to public participation);

- A response to the significant comments, criticisms, and new data that were submitted in either written or oral presentations; and
- A statement of the basis and purpose of the selected action (e.g., the ROD).

Although this description should be brief, the lead agency may also include a description of any other major public participation activities.

Community response to the selected remedy should not be included in this section; the community's response to the selected remedy should be addressed under the community acceptance criterion in the comparative analysis section of the ROD and specific comments responded to in the Responsiveness Summary. The following is an example of the length and type of information that should be included in this section.

**Sample Language for Community Participation Activities:**

The RI/FS and Proposed Plan for the EIO Industrial site were released to the public in September 1988. These two documents were made available to the public in both the administrative record and an information repository maintained at the EPA Docket Room in Region 4 and at the Nameless Public Library. The notice of availability for these two documents was published in the Nameless Advocate on September 28, 1988. A public comment period was held from October 3, 1988 through November 5, 1988. In addition, a public meeting was held on October 17, 1988. At this meeting, representatives from EPA and the Tennessee Pollution Control Board answered questions about problems at the site and the remedial alternatives under consideration. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision. This decision document presents the selected remedial action for the EIO Company Site, in Nameless, Tennessee, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. The decision for this site is based on the administrative record.

#### **6.3.4 Scope and Role of Operable Unit or Response Action**

This section should discuss how the operable unit or response action addressed by the ROD fits into the overall site strategy (e.g., "This ROD addresses the second of three planned activities at the site: the first addressed alternative water supply; this one addresses contaminated ground water; and a third will deal with contaminated soils"). This section should focus on how the response action fits into the overall strategy for addressing the principal threat(s) posed by the conditions at the site. The following

provides sample language for describing the scope and role of an operable unit or response action.

**Sample Language for Operable Unit:**

As with many Superfund sites, the problems at the EIO Company Site are complex. As a result, EPA organized the work into three operable units (OUs). These are:

- OU One: Contamination in the municipal well.
- OU Two: Contamination of the ground-water aquifer.
- OU Three: Contamination in the soils.

EPA has already selected remedies for OUs One and Two (the municipal well and the contaminated ground water). The contaminated ground water is a principal threat at this site because of the direct ingestion of drinking water from wells that contain contaminants above health-based levels. Both of these actions are in the remedial design stage. Actual construction is planned to begin in March 1990.

The third OU authorized by this ROD addresses the contaminated soils in the lagoon and tank farm area. This area of the site poses the principal threat to human health and the environment because of the risks from possible ingestion or dermal contact with the soils. Also, there is the threat of contaminant migration from the soil into the underlying ground water that is a source of drinking water for the local residents. The purpose of this response is to prevent current or future exposure to the contaminated soils and to reduce contaminant migration into the ground water. This third operable unit will be the final response action for this site.

### **6.3.5 Summary of Site Characteristics**

This section should provide an overview of site contamination and the actual and potential routes of exposure posed by the conditions at the site. This can be accomplished by describing the assessments made during the RI that characterized the site, its environment, and the extent of contamination. Site characteristics should include general information about the contaminants at the site, potential routes of contaminant migration and routes of exposure, population and environmental areas that could be affected by the contaminants at the site, and any site-specific factors (e.g., fractured bedrock) that may affect the remedial actions at the site. The following factors should be highlighted in this section:

- All known or suspected sources of contamination;

- Types of contamination and affected media (including description of the quantity, types, and concentration of hazardous substances present and their mobility, carcinogenicity or noncarcinogenicity, and volume; the lateral and vertical extent of contamination, and potential surface and subsurface pathways of migration); and
- All known current risks and potential routes of human and environmental exposure.

The discussion in this section should present a brief, comprehensive overview of the site. The use of maps illustrating the location of contaminant sources and tables listing the types of contaminants and concentrations in various media are recommended.

### **6.3.6 Summary of Site Risks**

The summary of the baseline risk assessment in the ROD should provide an indication of the risks to human health and the environment that are or may be posed by the conditions at the site. The information necessary to write this summary should be available in the risk assessment chapter of the RI/FS report. Appropriate summary paragraphs or tables in the RI/FS report may be used directly to serve as the basis for the ROD discussion of the baseline risk assessment. The RI/FS chapter describing the risk assessment (or the risk assessment document, if presented separately) should be referenced.

The information presented in the summary of site risks should support the decision to take remedial action when there is an actual or potential threat of release. Alternatively, when no action will be taken, the data and narrative discussion should support that decision. (See Chapter 9 for writing no action RODs.) The baseline risk assessment should also describe the exposure pathways and risks, so that the ROD clearly specifies how risk reductions resulting from the remedial alternatives are related directly to the exposure pathways and baseline risks (see section 6.3.8, "Summary of the Comparative Analysis of Alternatives").

#### **6.3.6.1 Human Health Risks**

Only a brief summary of the information developed in the risk assessment should be presented in the ROD. Information should be presented in such a manner that individuals who are not familiar with the site can understand the



basis for undertaking remedial action. A mixture of (1) text format (e.g., for describing the exposure pathways and the risks), (2) table format (e.g., for presenting lists of chemicals and risk numbers), and (3) graphics (e.g., for illustrating changes in risks over time) may be used in the summary. Further guidance on the summary and presentation of carcinogenic risk and the potential for noncarcinogenic effects is currently being developed in the revisions to the Superfund Public Health Evaluation Manual, which is scheduled for publication in the fall of 1989.

The discussion of risks in the ROD should parallel the major areas that are discussed in the sections of the risk assessment: contaminant identification, exposure assessment, toxicity assessment, and risk characterization. The primary focus should be on those exposure pathways and contaminants found to pose actual or potential threats to human health and the environment.

Contaminant identification information should include brief descriptions of the following :

- The media of concern (e.g., soils, ground water);
- The contaminants of concern in each medium; and
- The concentrations of the chemicals of concern on which the risk assessment was based (e.g., mean, maximum, and minimum).

Exposure assessment information should include brief discussions of the following:

- The exposure pathways (e.g., ingestion of contaminated ground water, inhalation of volatiles);
- The potentially exposed population(s) (e.g., adults living on-site, children playing on-site);
- The monitoring or modeling data and assumptions used to characterize exposure point concentrations; and

- The major assumptions about exposure frequency and duration that were included in the exposure assessment (e.g., 180 days/year, 70 years).

In many cases, the exposure assessment in the RI/FS report includes reasonable maximum estimates for both current and future exposure scenarios. When this information is available, descriptions of current and future exposures should be included in the ROD.

**Toxicity assessment information** should include the following:

- The cancer potency factors for contaminants of concern that are carcinogens;
- The reference doses for the contaminants of concern that have noncarcinogenic effects; and
- A brief explanation of the toxicity information.

The sample language in this guidance should be included in the ROD to explain the derivation and use of the cancer potency factors and reference doses.

**Risk characterization information** should include the following for each land-use scenario (e.g., current and future land use):

- The quantified carcinogenic risks of each containment of concern in each exposure medium for each exposure pathway;
- The combined carcinogenic risks reflecting all contaminants and pathways reasonably expected to affect a given population (e.g., children playing at a residence who may be exposed through soil ingestion and through drinking local ground water);
- The potential for noncarcinogenic effects as identified by the hazard quotient for each contaminant of concern in each exposure medium for each exposure pathway;

**Sample Language for Toxicity Assessment Summary:**

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of  $(\text{mg/kg-day})^{-1}$ , are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

- The combined potential for noncarcinogenic effects, as expressed by hazard indices (HI), reflect reasonable contaminant and exposure pathway combinations for specific population groups;
- A brief explanation of the meaning of both the risk characterization number and qualitative statements;
- A discussion of significant sources of uncertainty inherent in this risk assessment; and
- Risk assessment conclusions, based on data presented and any other facts that the decisionmaker should be made aware of that may affect risk to human health and the environment at sites (e.g., the presence of B2 carcinogens without quantitative toxicity numbers for risk characterization).

The following language should be included in the ROD to explain how cancer and noncancer risks are characterized in the baseline risk assessment.

**Sample Language for Risk Characterization Summary:**

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g.,  $1 \times 10^{-6}$  or 1E-6). An excess lifetime cancer risk of  $1 \times 10^{-6}$  indicates that, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

As discussed previously, a combination of textual, tabular, and graphic presentations of risk information is encouraged.

**6.3.6.2 Environmental Risks**

In addition to human health risks, the risks to the environment that were considered in the RI/FS should also be addressed in the ROD. Procedures for addressing environmental risks are not as standardized as they are for human health risk assessment. Consequently, the appropriate level of detail to describe the environmental evaluation in the ROD is also less standardized. In summary, the level of detail of the environmental evaluation should be the guide for the amount of information that should be included in the ROD. The rule of thumb is to include only the information from the environmental evaluation that is necessary to help the decisionmaker address environmental concerns at the site. At the very least, the following points should be addressed:

- Are any critical habitats affected by site contamination?
- Are any endangered species or habitats of endangered species affected by site contaminants?

The Risk Assessment Guidance for Superfund Environmental Evaluation Manual (OSWER Directive 9285.7-01, March 1989) provides additional information about the environmental evaluation.

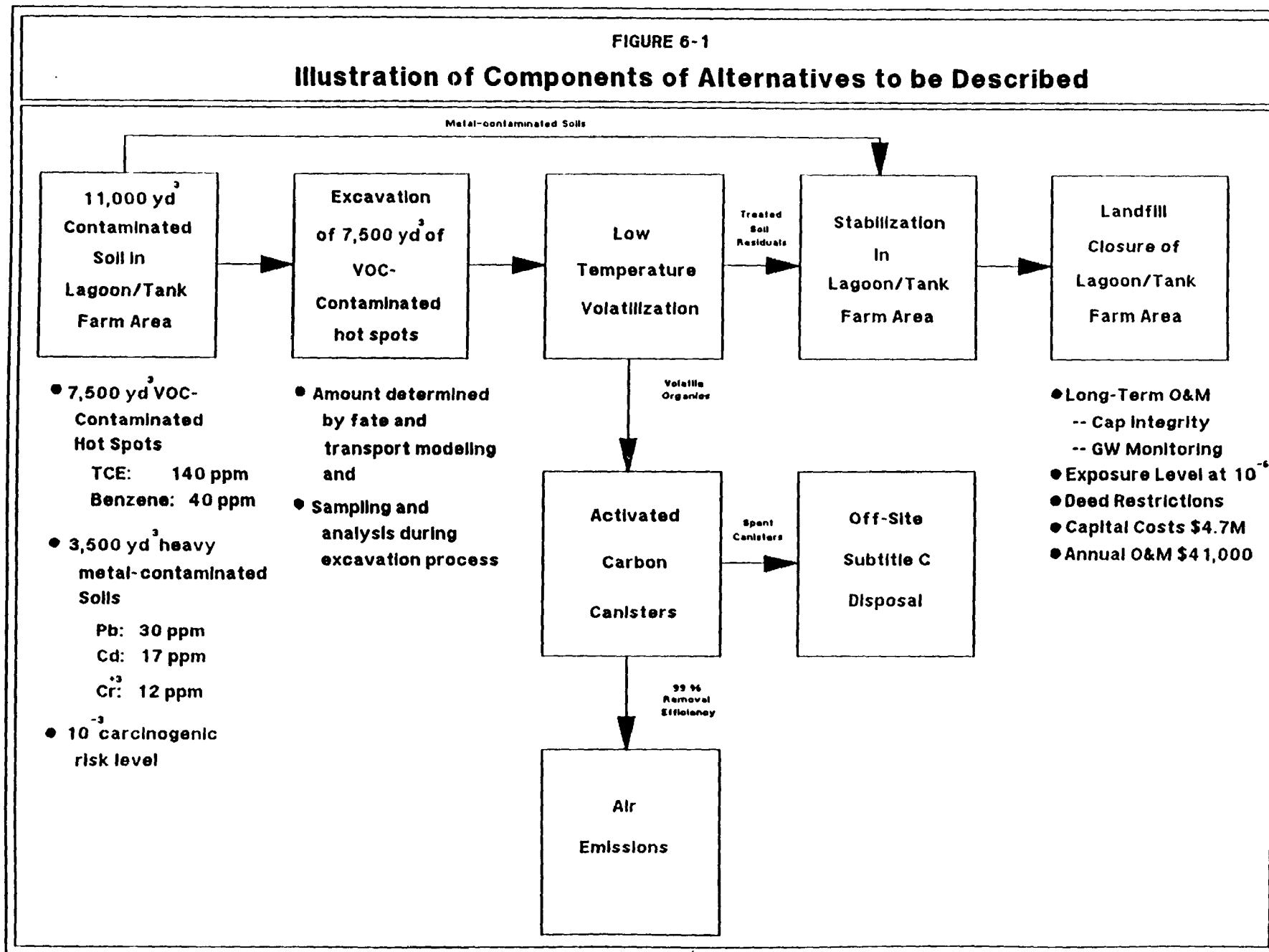
In addition, for all RODs except those selecting "no action," the "Summary of Site Risks" section of the Decision Summary should conclude with the same statement contained in the "Assessment of the Site" section of the Declaration, which states the following:

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or, the environment.

### **6.3.7 Description of Alternatives**

This section provides a concise description of how each alternative would address the contamination at the site or operable unit from the beginning of the remedy to the completion of site activities. This description should explain the treatment and/or engineering (e.g., containment) components of each alternative as they logically occur in the proposed remediation process. When describing a particular treatment or containment alternative, the general treatment family or containment objectives could be described. Specific process options within those categories should be described if there is confidence that the options will be used. For example, an alternative should be described as employing thermal destruction rather than rotary kiln incineration or infrared incineration. In the same way, a containment option that employs a RCRA Subtitle C cap should specify the objectives of the cap (e.g., reducing the permeability by covering the site with an impermeable layer), rather than the specific type of liner that could achieve that objective (e.g., synthetic liner, PVC).

The flow chart in Figure 6-1 provides an illustration of the details outlined in Section 6.3.8 that should be included in these descriptions, and Exhibit 6-4 lists the details that should be described for each remedy. Appendix C contains a sample write-up of a remedial alternative that



**EXHIBIT 6-4****Description of Details for Each Remedy**

- Treatment components. Describe the following, as appropriate:
  - contaminated media addressed;
  - treatment technologies (e.g., thermal destruction) that will be used;
  - type and volume of waste treated;
  - process sizing; and
  - primary treatment levels (e.g., BDAT, percentage or order of magnitude of reductions expected).
- Containment or storage components. Describe the following, as appropriate:
  - type of storage (e.g., landfill, tank, surface impoundment, containers);
  - type of closure that will be implemented (RCRA Subtitle C clean closure, landfill closure, Subtitle D solid waste closure);
  - type and quantity of waste to be treated or stored; and
  - quantity of untreated waste and treatment residuals to be left in place and degree of risk posed by such waste (prior to and following containment).
- Ground-water component. Describe the following, as appropriate:
  - ground-water classification (e.g., Class I, II, or III);
  - cleanup levels;
  - area of attainment; and
  - restoration timeframe.
- General components. Describe the following, as appropriate, for each of the three previous components:
  - contaminated media addressed (and physical location at the site);
  - initial risk;
  - risk reduction;
  - whether treatability testing has been or will be conducted;
  - implementation requirements;
  - institutional controls;
  - residual levels (e.g., delisting, BDAT); and
  - assumptions, limitations, uncertainties.
- The major ARARs, risk-based levels, and other "to be considereds" (TBCs) being met/utilized for the specific components of the waste management process.\*
  - The description should summarize how the specific components of the waste management approach will comply with the major ARARs, as well as briefly describe why the standard is applicable or relevant and appropriate (e.g., placing a RCRA characteristic waste, thus RCRA closure is applicable).

\* TBCs are non-promulgated advisories, criteria, or guidance issued by Federal or State governments that are not legally enforceable standards. TBCs may also include proposed regulations. Before the lead agency proposes to utilize a TBC, it should obtain the support agency's agreement on the appropriateness of the TBC(s).

illustrates the level of detail appropriate for this section.<sup>2</sup> In particular, it should be noted that the description should incorporate the major ARARs associated with a remedial alternative in laying out exactly how the waste will be handled. Exhibit 6-5 lists the major Federal ARARs that typically may apply to Superfund remedies and may need to be discussed in describing alternatives.

By providing a comprehensive description of the alternatives in this section, the comparative analysis of alternatives (which is the next section of the ROD) can focus on highlighting the differences or similarities among alternatives with respect to the nine evaluation criteria (see Section 6.3.8, "Summary of Comparative Analysis of Alternatives"). In addition, this initial description of the selected remedy should provide engineering details that will support the remedial design phase.

The description also should outline the performance parameters of each alternative, such as the concentration levels of contaminants that will remain on site without management, the types of long-term management controls that will be used (e.g., permeable cap), and the MCLs or other levels to be attained in remediated ground water.

### **6.3.8 Summary of the Comparative Analysis of Alternatives**

This section should provide the basis for determining which alternative provides the "best balance" of tradeoffs with respect to the following nine evaluation criteria:

#### **Threshold Criteria**

- 1) Overall protection of human health and the environment; and
- 2) Compliance with applicable or relevant and appropriate requirements.

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<sup>2</sup> A ROD will often contain descriptions of separate remedies for addressing the contaminated ground water and the source of contamination at the site. An effective way of presenting the alternatives for each of these pathways would be to discuss the ground-water alternatives separately from the source-control alternatives. By organizing the description of alternatives in this manner, a more comprehensive understanding can be gained of the options analyzed for remediating each of these pathways. Where there are components of the ground-water alternatives that are interrelated with a specific source-control alternative, these should be noted.



**EXHIBIT 6-5****Federal ARARs that May Apply  
to Superfund Remedial Actions**

- Safe Drinking Water Act (SDWA)
  - Maximum Containment Levels (MCLs)
  - MCL Goals (MCLGs)
- Resource Conservation and Recovery Act (RCRA) Subtitle C (Hazardous Waste Requirements)
  - Closure (i.e., landfill or clean closure)
  - Subpart F Ground-Water Monitoring (including post-closure care)
  - Location Standards
  - Minimum Technology
  - Subpart O Incineration
  - Land Disposal Restrictions
  - Unit-Specific Design and Operating Standards (e.g., for tanks, containers)
- RCRA Subtitle D (Solid Waste Requirements)
- Clean Water Act
  - Federal Water Quality Criteria (FWQC)
  - Publicly-Owned Treatment Works (POTW) standards
  - Effluent Limitations and Guidelines
  - Requirements for Dredge and Fill Activities
- Toxic Substances Control Act (TSCA)
  - Polychlorinated biphenyls (PCB) standards
- Clean Air Act (CAA)
  - National Ambient Air Quality Standards (NAAQs)
  - State Implementation Plan (SIP)
- State ARARs.

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- |                                   |  |
|-----------------------------------|--|
| <b>Primary Balancing Criteria</b> | 3) Long-term effectiveness and permanence;<br>4) Reduction of toxicity, mobility, or volume through treatment;<br>5) Short-term effectiveness;<br>6) Implementability; and<br>7) Cost. |
| <b>Modifying Criteria</b>         | 8) State/support agency acceptance; and<br>9) Community acceptance.  |

This analysis should summarize the comparative analysis of alternatives presented in the detailed analysis section of the RI/FS report. The RI/FS guidance contains additional information on the subfactors included in each of the nine criteria. (These subfactors are also reflected in Exhibit 2-2 in this guidance and in Appendix B.) These factors should be addressed, when appropriate, in describing and evaluating alternatives. The comparative analysis provides the basis for explaining how the selected remedy satisfies the statutory requirements described in section 6.3.10 (specifically, the cost-effectiveness and utilization of permanent solutions and treatment to the maximum extent practicable ["MEP"] findings).

The major objective of this section of the ROD is to evaluate the relative performance of the alternatives with respect to the criteria so that the advantages and disadvantages associated with each cleanup option are clearly understood. The most effective way of organizing this analysis is to present a series of paragraphs headed by each criterion. Under each criterion, the alternative that performs best in that category is discussed first, with the other options discussed in sequence from most to least advantageous.<sup>3</sup> The worksheets in Appendix B may be used to assist in preparing the comparative analysis summary.

### **6.3.9 The Selected Remedy**

The remainder of the Decision Summary focuses on the selected remedy. This section of the ROD should identify and summarize the major treatment components of the selected remedy, as well as any engineering controls (e.g.,

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<sup>3</sup> A symbolic ranking method without an accompanying narrative, such as a "+" for the "best" alternative and a "-" for the lower ranking alternative, is discouraged. Although this could be used in a table, the symbols are not substitutes for the narrative comparison.

containment) or institutional controls that will be part of the remedy. In addition, this section of the ROD should briefly discuss the following:

- The remediation goals and corresponding risk level(s) to be attained at the conclusion of the response action and the points of compliance for the media being addressed (e.g., ground water); and
- The lead agency's basis for the remediation goals (e.g., ARARs, risk calculation).

Where remediation goals specify carcinogenic risk levels (e.g.,  $1 \times 10^{-6}$ ), the basis for the selection of that level (e.g., technical, uncertainty, or exposure factors) should be explained briefly. If more than one area at the site is being addressed (e.g., treatment and landfilling of residuals), this section of the ROD should identify the remediation goals for each area. A table may be included in this section of the ROD to summarize the remediation goals for each area or medium.

The discussion of the selected remedy in this section of the ROD should expand upon the details of the remedy from the Description of Alternatives discussed in section 6.3.7 of this guidance. One aspect of the selected remedy that should be described in detail is the estimated costs of the remedial action. The capital costs of each major treatment and containment component of the selected remedy should be identified, along with an indication of the volume of material that each component will address and the estimated unit costs. Contingencies should also be listed. Operation and maintenance cost should be stated in terms of annual costs, and the total net present value should be presented. Exhibit 6-6 illustrates the type of cost information to be included for the remedy outlined in Figure 6-1. This section of the ROD should mention that some changes may be made to the remedy as a result of the remedial design and construction processes. The ROD should include a clear statement that such changes, in general, reflect modifications resulting from the engineering design process.

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**EXHIBIT 6-6****Example Cost Summary for the Selected Remedy****Estimated Costs of  
Selected Remedy****Capital Costs:**

<u>Treatment Component</u>	<u>Cubic Yards</u>	<u>Cost per CY</u>	<u>Estimated Cost</u>
1. Low temperature volatilization/ stabilization	7,500	\$360	\$2,700,000
2. Treatment/disposal of off-gases	11,500	\$ 60	660,000

**Containment Component**

1. Landfill closure of residuals	11,000	\$ 50	<u>550,000</u>
			\$3,910,000
- Contingencies @ 20%			<u>790,000</u>
			\$4,700,000

**Operation and Maintenance Cost:**

	<u>Annual Cost</u>
1. Landfill maintenance and ground water monitoring around unit	\$41,000

**TOTAL COSTS**

(Net Present Value calculated using a 5% discount value)	\$5,320,780
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In addition to the elements recommended in the Description of Alternatives section, the following elements of the selected remedy should be addressed, as appropriate, for ground-water remedies: expected pumping and flow rates; number of extraction wells; treatment processes; methods of control for cross-media impacts; gradient control system; and performance evaluations and schedule.

### **6.3.10 Statutory Determinations**

Once the selected remedy has been identified, the ROD Decision Summary should conclude with a description of how the selected remedy meets the statutory requirements of CERCLA section 121. The remedy selected by the lead agency, in consultation with the support agency, must:

- Be protective of human health and the environment;
- Comply with ARARs (or justify an ARAR waiver);
- Be cost-effective;
- Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
- Satisfy the preference for treatment that reduces toxicity, mobility, or volume as a principal element, **OR** provide an explanation as to why this preference is not satisfied.

A brief, site-specific description of how the selected remedy satisfies each of the statutory requirements should be provided in this section of the ROD. The statutory requirements and the key information that should be summarized for each finding are highlighted in Appendix D of this guidance.

**Protection of Human Health and the Environment:** This section of the ROD should describe how the selected remedy will provide adequate protection of human health and the environment through treatment, engineering controls, and/or institutional controls. Specifically, the remedy should be described in terms of how the existing or potential risks posed by the site or operable unit through each pathway will be eliminated, reduced, or controlled by the response action. This discussion should also indicate that exposure levels

will be reduced to within the  $10^{-4}$  to  $10^{-7}$  range within which EPA manages carcinogenic risk and that the Hazard Indices for non-carcinogens will be less than one. Finally, this discussion should reflect that the implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts.

**Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):**<sup>4</sup> This section of the ROD should:

- State whether the selected remedy will comply with all Federal and any more stringent State ARARs or whether any ARAR waiver will be used. If a waiver is invoked, it should be identified and a justification provided;
- List and briefly describe the ARARs that will be attained by the selected remedy. This list should be organized according to chemical-specific, location-specific, and action-specific ARARs. Also, applicable requirements should be distinguished from the relevant and appropriate requirements for the RCRA land disposal restrictions and closure requirements, SDWA MCLs, and other requirements, as necessary; and
- List and briefly describe the TBCs (e.g., advisories, criteria, and guidances) being utilized and the reason for their use.<sup>5</sup>

Exhibit 6-7 illustrates the level of detail in which Federal and State ARARs should be described for documentation of the selected remedy.

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<sup>4</sup> Other available information that does not constitute an ARAR (e.g., advisories, criteria, and guidance) may be considered in the analysis if it helps to ensure protectiveness or is otherwise appropriate for use in a specific alternative. These To-Be-Considered materials should be included in the description if the lead and support agencies agree that their inclusion is appropriate.

<sup>5</sup> CERCLA Compliance With Other Laws Manual (OSWER Directive 9234.1-01, August 1988).

**EXHIBIT 6-7****Examples of Federal and State ARAR Descriptions**

- Safe Drinking Water Act (SDWA)
  - SDWA MCL for benzene ( $5.0 \times 10^{-3}$  mg/l) in the ground-water aquifer.
- Resource Conservation and Recovery Act (RCRA)
  - 40 CFR 264.111 Subpart G (Closure Performance Standards) for closure with no post-closure care (i.e., clean closure).
  - 40 CFR 264.91 - 100 Subpart F, which specifies ground-water monitoring requirements for closure of a unit with waste in place.
  - 40 CFR 264.18(b), which specifies that hazardous waste treatment, storage, or disposal facilities constructed within the 100-year floodplain must be designed, constructed, operated, and maintained to avoid washout.
  - RCRA design and operating requirements in Subpart N 40 CFR 264.301, which specify minimum technology for construction of a new unit, including a double liner and leachate collection system.
  - RCRA Subpart O requirements for incineration of hazardous waste in 40 CFR 264.340 through 264.34 and 264.35.
  - RCRA Land Disposal Restrictions in 40 CFR 268 are applicable and will be achieved by using BDAT (rotary kiln incineration and stabilization), which is specified in the requirements for nonwastewaters containing K001 waste. Treatment levels specified for the constituents pyrene and toluene will be achieved.
- Clean Water Act (CWA)
  - CWA Ambient Water Quality Criteria for Protection of Human Health with Water and Fish Ingestion of 3.5 mg/l for phenol in the receiving stream.
  - Sound County Sanitary Authority Pretreatment Standard of .005 ppb for xylene in the discharge to the sanitary sewer system.
  - CWA requirement for Best Available Technology will be achieved using hydroxide precipitation and sedimentation for treatment of metal waste. Discharge limits will be established using BPJ during remedial design.
  - CWA 404 requirements for discharge of dredged material, which specify minimization of adverse impacts.

The following is an example of how TBCs can be summarized.<sup>6</sup>

**Sample Language for TBCs:**

In implementing the selected remedy, EPA and the State have agreed to consider a number of procedures that are not legally binding. These include the guidance on designing RCRA caps (Draft RCRA Guidance Document, Landfill Design, Liner Systems and Final Cover, issued June 1982) and posting of a deed notice at the site after the remedial action has been completed. The guidance on designing RCRA caps includes specifications to be followed in constructing and maintaining a RCRA cap. Deed restrictions are institutional controls that will be enforced by the local government to ensure that the RCRA cap is not disturbed.

For some remedies, more lengthy discussion of a statute or regulation is necessary. For example, the selected remedy could be one that complies with the relevant and appropriate requirements of both clean closure and landfill closure under RCRA to fashion an "alternate" closure or a remedy for which land disposal restrictions are applicable and a treatability variance is being obtained.

**Cost-Effectiveness:** In this section, the lead agency should verify that the selected remedy affords overall effectiveness proportional to its costs. This section should state briefly how the selected remedy appears to be cost-effective, when the overall relationship between cost and effectiveness is compared to the cost/effectiveness relationship among the other alternatives.

**Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable (MEP):** This section describes the rationale for the remedy selected, explaining how the remedy provides the best balance of tradeoffs among the alternatives with respect to the evaluation criteria, particularly the five primary balancing criteria. The summary worksheets for conducting the comparative analysis, included in Appendix B of this guidance, could be used in discussing this determination.

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<sup>6</sup> Key TBC's (those fundamental to the selected remedy) should be justified in the ROD. If the validity of TBCs is challenged, the justification for use of the TBC should also be provided in the Responsiveness Summary (see Section 6.4).



The final remedy is selected among the protective, ARAR-compliant (or waiver-worthy) alternatives. The selection is based on a determination of which option best balances the tradeoffs among the alternatives as they relate primarily to: long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. Those criteria that distinguish the alternatives will be the major tradeoffs to be balanced in the selection decision. To the extent that alternatives are comparable with respect to a particular criterion (e.g., all options provide similar degrees of long-term effectiveness), that criterion is not a decisive factor in the selection process. The degree to which each alternative has State/support agency and community acceptance also is a factor considered in the decision, along with the primary tradeoffs.

This section of the ROD should discuss **why** the selected remedy is believed to best meet the evaluation criteria, compared to the other alternatives, and why it is the most appropriate solution for the site. In identifying the alternative that provides the best balance of tradeoffs, the decisionmaker also is judging the alternative to be the one that utilizes permanent solutions and treatment technologies to the maximum extent practicable for that site.

The discussion in this section should be organized as follows:

- Provide a general statement that the selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable;
- Highlight tradeoffs among alternatives related to the five primary balancing criteria, which should be discussed in this order:
  - long-term effectiveness and permanence,
  - reduction of toxicity, mobility, or volume through treatment,
  - short-term effectiveness,
  - implementability, and
  - cost;
- Discuss which of the five criteria were the most decisive factors in the selection decision; and

- Describe how State and community acceptance were factored into the decision making process.

The ROD should always make the affirmative finding that the selected remedy meets the statutory requirement to utilize permanent solutions and treatment technologies to the maximum extent practicable, even if it is a containment remedy. In this situation, the extent of treatment found to be practicable is no treatment at all. Therefore, where the selected remedy does not employ any treatment or resource recovery technologies, the explanation of the rationale used in the decision should include the reasons for finding treatment to be impracticable.

**Preference for Treatment as a Principal Element:** In addition to the four statutory mandates discussed previously, the statutory preference for treatment as a principal element also should be addressed. In writing the ROD, the manner in which the preference is addressed will depend upon whether the selected remedy uses treatment to address the principal threat(s) posed by the site. A discussion of whether the selected remedy satisfies the statutory preference should be included. This summary should describe the principal threats posed by the site (e.g., hot spots in a landfill or a contaminated ground-water plume) and the treatment methods that will be used to address these.

If the remedy selected does not satisfy the statutory preference, the ROD should explain why it does not do so. In some cases, this explanation will involve a statement of why treatment of the principal threat(s) is not practicable. In the case of operable units of very limited scope (e.g., control of plume migration), the discussion should include a statement that the operable unit will not definitively address any of the principal threats posed by the site and demonstrate how past actions did, or future actions will, address those threats.

### **6.3.11 Documentation of Significant Changes**

To fulfill the requirements of CERCLA section 117(b), the ROD should document and discuss the reasons for any significant changes made to the selected remedy from the time the Proposed Plan and RI/FS report were released for public comment to the final selection of the remedy (see Chapter 5 for a complete discussion on pre-ROD significant changes).

The documentation of significant changes can be organized in the ROD in one of two ways, depending upon the nature of the changes. Where the significant change affects a feature of the preferred alternative (the selected remedy in the ROD), the documentation should appear at the end of the ROD. Where the significant change entails changing from the preferred alternative to another alternative discussed in the Proposed Plan, this should be documented prior to the description of alternatives.

This section of the ROD should identify the preferred alternative from the Proposed Plan and should indicate whether any significant changes were made. If significant changes were made, the reasons for those changes should be explained. If a significant change was made that required the issuance of a revised Proposed Plan and the announcement of a new public comment period, the activities performed in compliance with these requirements should be summarized as well.

Exhibit 6-8 includes examples of the three different types of discussions that generally could be included in this section of the ROD. These examples were developed from information presented in the sample Proposed Plan in Appendix A of this guidance. The first example is a case in which no significant changes are made. The second is a case in which a significant change is made that is a logical outgrowth of the information originally presented in the Proposed Plan and the RI/FS report. In this second case, the only procedural requirement is to discuss the change in this section of the ROD. The final example is a case in which a significant change is made that is not a logical outgrowth of the information in the RI/FS and the Proposed Plan. This third example describes the additional public participation activities that should be conducted after the first Proposed Plan has been released for public comment.

## **6.4 THE RESPONSIVENESS SUMMARY**

The Responsiveness Summary is the third component of the ROD, and it serves several purposes. First, it provides the lead agency decisionmakers with information about community preferences regarding both the remedial alternatives and general concerns about the site. Second, it demonstrates how public comments were integrated into the decision-making process. Third, it allows EPA to respond to comments "on the record." This means that a court reviewing the remedy will look to see whether EPA has provided a reasonable response to comments in the record, and will not allow new presentation of

**EXHIBIT 6-8****Three Examples of Documentation  
of Significant Changes****Example One: No Significant Changes**

The Proposed Plan for the EIO site was released for public comment in September 1988. The Proposed Plan identified Alternative 4, excavation and on-site volatilization of VOCs, as the preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

**Example Two: Significant Change Requiring Only Documentation in the ROD**

The Proposed Plan was released for public comment in September 1988. The Proposed Plan identified Alternative 4, excavation and on-site volatilization of VOCs, as the preferred alternative. One of the other alternatives (Alternative 6) presented in the Proposed Plan and the RI/FS involved on-site incineration and solidification of wastes. The original preference for Alternative 4 was based in part on the fact that a mobile incinerator was not readily available to implement Alternative 6. During the public comment period, however, a mobile incinerator became available. As a result, EPA, in consultation with the Tennessee Pollution Control Board, decided to select the on-site incineration remedy. On-site incineration is a more comprehensive, reliable treatment-based remedy for the particular waste at the EIO site than is the volatilization remedy originally preferred.

**Example Three: Significant Change Requiring a New Public Comment Period**

A Proposed Plan for the EIO site was released for public comment in June 1988. The Plan identified Alternative 4, excavation and on-site volatilization of VOCs, as the preferred alternative. During the public comment period, the results of remedial activities at another site with contamination problems similar to those at the EIO site indicated that an alternative treatment technology, in-situ vitrification, could be used successfully on contaminants similar to those at the EIO site. Further analysis of the vitrification alternative indicated that fewer short-term risks would be associated with it than with the volatilization alternative, and that the long-term effectiveness of vitrification would be greater, as the solidified matrix is expected to have a longer effective life than a RCRA landfill. The information supporting this determination is available in the administrative record file.

As a result of this new information, EPA decided to select in-situ vitrification as the new preferred alternative for cleaning up the EIO site. The Tennessee Pollution Control Board concurred with this decision. In compliance with statutory requirements for ensuring the public has the opportunity to comment on major remedy selection decisions, a new Proposed Plan was prepared presenting in-situ vitrification as the preferred alternative. The second Plan was made available to the public in September 1988. No significant comments were received during the second public comment period, and no significant changes have been made to the selected remedy.

evidence on those issues. An adequate responsiveness summary is **essential** in defending RODs in judicial proceedings.

To serve these purposes, the Responsiveness Summary should be a concise and complete summary of significant comments received from the public, including PRPs, during the public comment period that is required by CERCLA section 117. The summary should be accompanied by the lead agency's responses to these comments. Responses should be clear, accurate, and carefully written by the OSC or RPM, and/or by any other persons, as necessary, to ensure the best response. For example, if the validity of a key TBC is challenged during public comment, EPA Headquarters should be consulted to aid in preparing the justification for use of the TBC in the Responsiveness Summary.

When general policy matters are discussed in the Responsiveness Summary, it is recommended that they be brought to management's attention prior to the release of the ROD. If the lead agency determines that a point-by-point response to a set of comments is warranted, the comment response document should be prepared as a separate document. In this situation, a summary of these comments with the lead agency's response should be included in the Responsiveness Summary as well.

Guidance on preparing Responsiveness Summaries is available in "Community Relations in Superfund: A Handbook," (OSWER Directive 9230.0-3B, June 1988). This Handbook details the process of preparing the Summary and includes a sample Responsiveness Summary.

## **6.5 SUBMITTING RODS TO EPA HEADQUARTERS**

It is important that all signed RODs be sent to Headquarters as soon as possible after they are signed. A completely assembled, clear, legible copy of the ROD with a signed signature page should be forward by the RPM, or other designated individual to:

Chief, Remedial Planning and Response Branch  
Hazardous Site Control Division (OS-220)  
Office of Emergency and Remedial Response, OSWER  
U.S. EPA  
401 M Street, S.W.  
Washington, D.C. 20460

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This process may be more efficient if one individual coordinates this effort in the Regional office (e.g., the administrative record coordinator). Appendix E describes the process of submitting RODs and other decision documents to Headquarters.

## **CHAPTER 7**

### **THE PROCESS FOR DEVELOPING THE RECORD OF DECISION**

This chapter describes the roles and responsibilities of the lead and support agencies in developing the ROD. In this chapter procedures to facilitate timely preparation, review, and final approval of the ROD are presented, as well as dispute resolution procedures and the role of other Federal agencies in cleanup activities at Federal facilities.

#### **7.1 OVERVIEW**

As with the Proposed Plan, the lead agency has the responsibility for preparing the ROD and coordinating with the support agency(ies) and other lead agency program offices to attain concurrence on the selected remedy. Typically, the lead agency that prepares the RI/FS report and the Proposed Plan will prepare the ROD, although this may vary from site to site. In many cases, EPA is the lead agency and prepares the ROD; however, the State can prepare the ROD either when the State is designated the lead agency in the SMOA, CA, or SSC or when there is a State-lead enforcement action at an NPL site. Federal agencies should prepare RODs for Federal facilities under their jurisdiction, consistent with the terms of their IAGs.

Although the roles of EPA, the State, and other Federal agencies may vary from site to site, EPA retains the final authority for selecting all response actions pursuant to CERCLA sections 104, 106, 120, and 122.

##### **7.1.1 State Preparation of the ROD**

The State should recommend a remedy for EPA concurrence and adoption for cases in which EPA and the State designate that State as the lead agency in the SMOA. Through the annual planning process, EPA and the State should designate those sites for which the State should prepare the ROD for EPA concurrence and adoption.

As indicated in the proposed revisions to the NCP, EPA intends to implement selectively the process of State preparation of RODs, giving the State the lead when both of the following conditions are met:

- The circumstances at a particular site warrant less EPA and more State involvement; and
- The State has demonstrated its ability to conduct remedial actions in an effective and responsible manner.

When the State is the lead agency for developing the RI/FS at a Fund-financed site, if agreed to by EPA, the State should prepare the Proposed Plan, publish the notice of availability, prepare the Responsiveness Summary, and develop the ROD. When the State has the responsibility for preparing the ROD, the State should recommend a remedy to EPA. EPA and the State then sign the ROD. In cases such as this one, EPA retains final authority over remedy selection although the State prepared the ROD.

### **7.1.2 Remedy Selection for State-Lead Enforcement Actions**

Not every remedial activity taken at NPL sites are conducted under the authority of CERCLA sections 104, 106 or 122. The State may take action at an NPL site under its own remedial authority. This kind of action is commonly referred to as a State-lead enforcement action.

The degree of EPA involvement in the remedy selection process at these sites is discretionary and should be established between EPA and the State in the SMOA, CA, or SSC. EPA may choose to concur or nonconcur with a remedy selected for such a site only when the SMOA, CA, or SSC specified such a role for EPA. Further guidance on State-lead enforcement actions will be available in the forthcoming Interim Final Guidance Package on Funding CERCLA State Enforcement Actions at NPL Sites.

### **7.1.3 Roles and Responsibilities of Other Federal Agencies**

Executive Order 12580 delegates the authority for carrying out the requirements of CERCLA sections 117(a) and (c) to Federal agencies with Federal facilities under their jurisdiction. A Federal agency, therefore, can issue the Proposed Plan. The agreement among the Federal agency, EPA, and, in many cases, the State should establish the responsibilities of each party for preparation of the ROD.

For sites under its jurisdiction, a Federal agency has the lead responsibility for preparing the draft ROD in accordance with Chapters 6 and,



when appropriate, Chapter 9 of this guidance, and for carrying out the lead agency responsibilities specified in this chapter. The Federal agency should prepare the draft ROD, taking into consideration new information and comments received during the public comment period, and should submit the draft ROD to EPA (and, where designated in the IAG, the State) for EPA's written approval. The Regional or Assistant Administrators' signatures constitute final EPA "adoption" of the ROD.

The Federal agency should publish a notice of availability pursuant to CERCLA section 117(d) and make the ROD available to the public before beginning the response action. In a limited number of cases, the Federal agency, EPA, or the State involved in a remedial action will not be able to reach agreement on the remedial approach for a site. If the parties are unable to reach agreement on the draft ROD even after a dispute resolution process has been followed, EPA should select the remedial action.

## **7.2 ROLES AND RESPONSIBILITIES OF LEAD AGENCY AND SUPPORT AGENCY**

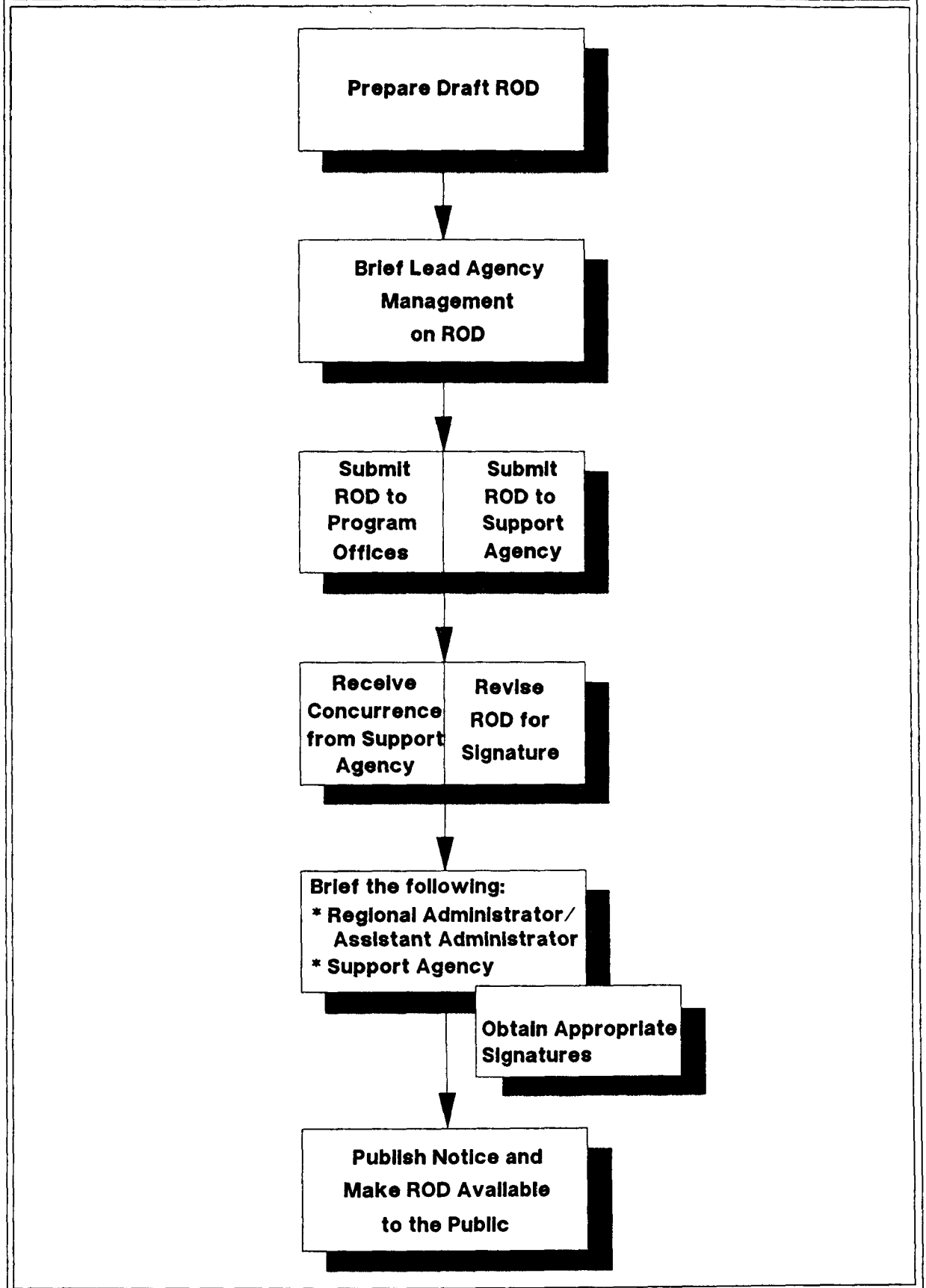
The responsibilities outlined below for the lead and support agency apply to EPA, the State, or another Federal agency except where specifically noted.

### **7.2.1 Lead Agency**

The lead agency's responsibilities in the ROD development process include the following (see Figure 7-1):

- Preparing the draft ROD;
- Briefing lead agency upper management on the ROD;
- Submitting the draft ROD to other lead agency program offices for their review;
- Submitting the ROD to the support agency to obtain that agency's formal concurrence on the selected remedy;
- Reviewing and addressing the support agency's comments and modifying the selected remedy, as appropriate;

**FIGURE 7-1**  
**Lead Agency Responsibility in ROD Development Process**



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- Revising the draft ROD for signature;
- Briefing the Regional Administrator and the Assistant Administrator of OSWER, as well as the designated personnel in the support agency;
- Submitting the ROD to the Regional Administrator and the Assistant Administrator of OSWER for signature (if a State or a Federal agency is the lead agency, that lead agency and EPA should sign the ROD); and
- Publishing the newspaper notice of availability of the ROD and making the ROD available to the public.

### **7.2.2 Support Agency**

The support agency's responsibilities in the ROD development process include:

- Reviewing and commenting on the draft ROD;
- Briefing support agency upper management on the ROD;
- Coordinating review of the ROD by other support agency offices;
- Providing EPA with a letter stating whether it concurs with the ROD (this letter becomes part of the administrative record file when the State is the support agency); and
- Participating in briefing the upper management of the lead agency, as necessary.

The support agency should have an adequate opportunity to review the draft ROD prior to its adoption. Unless otherwise specified in the SMOA, CA, or SSC, 10 working days is recommended as the average amount of time that should be established in the support agency's schedule for review of the draft ROD. For more complicated sites, a goal of 15 working days is the suggested guideline.

### **7.3 DISPUTE RESOLUTION**

Continuous interaction between the lead and support agencies throughout the remedy selection process should ensure that final agreement on the selected remedy is accomplished in a timely manner. There could be instances, however, where outstanding issues may arise between the lead and support agencies. The draft guidance on preparing SMOAs, Draft Guidance on Preparing a Superfund Memorandum of Agreement (SMOA) (OSWER Directive 9375.0-01, September 1988) specifies a dispute resolution process that could be utilized by EPA and the State if conflicts should arise. Chapter 3 of this guidance discusses the dispute resolution process presented in the proposed revisions to the NCP (Subpart F, "State Involvement in Hazardous Substance Response," 40 CFR Part 300). Those resolution procedures should be used if none are specified in the SMOA.

### **7.4 ROLE OF OTHER EPA AND STATE PROGRAM OFFICES**

Each agency should establish appropriate procedures and time frames for intra-agency review of RODs. An agency may need to coordinate with a number of program offices to ensure that technical and legal aspects of the ROD are defensible. Concurrence from EPA's Regional Counsel should be sought prior to presenting the ROD to the Regional Administrator or Assistant Administrator, unless outstanding issues exist that must be resolved by the Regional Administrator or Assistant Administrator. Regional and State legal counsel should be involved early in the remedy selection process to assist in the identification of ARARs, to ensure that all enforcement-sensitive issues are presented properly, and to ensure that the ROD is legally defensible.

### **7.5 ROLE OF POTENTIALLY RESPONSIBLE PARTIES**

When the PRP conducts the RI/FS, the lead agency, as designated by the SMOA, CA, or SSC, is responsible for writing the Proposed Plan and ROD. If the PRPs are not conducting the RI/FS, they should be kept informed of remedial activities just as any other member of the public, through the community relations process and the administrative record file.

The lead agency could conduct negotiations with the PRPs concerning RD/RA activities during the time the ROD is being written. These negotiations should be separate from any ROD-related activities. Generally, documents that

result from these negotiations are not part of the administrative record unless they are submitted by the PRP as information that the lead agency should consider in selecting the response action.

At Federal lead sites, after the ROD is signed, the consent decree for RD/RA is signed and then filed for a 30-day public comment period. After the comment period ends, a Responsiveness Summary is compiled by the Department of Justice, in consultation with the lead agency, which provides a discussion of the procedures to follow when changes contained in the consent decree differ from the remedy in the ROD.

## **7.6 ISSUING NOTICE OF AVAILABILITY OF THE ROD**

The ROD should be added to the administrative record files after it is signed. In addition, to comply with CERCLA, the lead agency should publish a notice of the availability of the ROD in a local newspaper. CERCLA section 117(b), states that:

Notice of the final remedial action plan adopted shall be published and the plan shall be made available to the public before commencement of any remedial action...

The public notice of availability of the ROD should be brief and factual. It need not be as extensive as the newspaper notification of availability of the RI/FS and Proposed Plan, which are described in Chapter 4 of this guidance. The notice should use a display advertisement format and should be published in a widely read section of the newspaper.

### **7.6.1 Elements of the ROD Public Notice**

The ROD newspaper notification should include the following elements:

- The site name and notice of availability of the ROD;
- The date on which the ROD was signed;
- A brief summary of the major elements of the selected remedy;

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- Details on the location and hours of availability of the administrative record file and/or the information repository; and
- The name and telephone number of the individual(s) to contact for further information about the site and the remedy selected.

The lead agency may find it appropriate to provide information in the newspaper notification about support agency concurrence or non-concurrence on the ROD. When preparing a ROD notice for a Federal facility, the announcement should specify that the ROD has been prepared by the relevant Federal agency and approved by EPA. Exhibit 7-1 is an example of a newspaper notification announcing the availability of the ROD for public review.

**EXHIBIT 7-1****Sample Newspaper Notification  
of Availability of the Record of Decision**

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**THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ANNOUNCES THE AVAILABILITY OF THE  
RECORD OF DECISION FOR THE  
EIO INDUSTRIAL SUPERFUND SITE  
IN NAMELESS, TENNESSEE**

On March 31, 1989, the U.S. Environmental Protection Agency (EPA) signed the Record of Decision (ROD) that formally selects the cleanup plan for the soil contamination at the EIO Industrial site. The ROD outlines EPA's decision for selecting the cleanup remedy for the site. The Tennessee Pollution Control Board concurs with the findings in the ROD.

EPA has decided to excavate contaminated soils, treat the organic compounds in the soils using a low-temperature volatilization loop, stabilize the remaining wastes, and dispose of the treated soils in an on-site landfill.

The administrative record file for the site, which includes the ROD and all documents that formed the basis for EPA's selection of the cleanup remedy, is available for public review at the locations listed below.

Nameless Public Library  
125 Elm Street  
Nameless, TN 00000  
(101) 999-1099  
Hours:  
Mon.-Sat.: 9 a.m. to 9 p.m.

U.S. EPA Docket Room, Region 4  
Federal Building, 10th Floor  
Atlanta, GA 00000  
(555) 555-1212  
Hours:  
Mon.-Fri.: 8:30 a.m. to 4:30 p.m.

Questions about EPA's decision or other activities at the EIO Industrial Superfund site should be directed to:

**Joshua Doe  
Community Relations Coordinator  
U.S. Environmental Protection Agency  
123 Peachtree Street  
Atlanta, GA 00000  
(555) 555-4640  
Toll-free: 1 (800) 333-1515  
between 8:30 a.m. and 4:30 p.m.**

## **CHAPTER 8**

### **POST-ROD SIGNIFICANT CHANGES**

#### **8.1 OVERVIEW**

After a ROD is signed, new information may be generated during the RD/RA process that could affect the remedy selected in the ROD. The lead agency should analyze this new information to determine if changes should be made to the selected remedy. Three types of changes could occur: (1) non-significant changes; (2) significant changes; and (3) fundamental changes. If non-significant or minor changes are made, they should be recorded in the post-decision document file; if significant changes are made to a component of the remedy in the ROD, these changes should be documented in an Explanation of Significant Differences (ESD); and if fundamental changes are made to the overall remedy, these changes should be documented in a ROD amendment. This chapter provides procedures to review and document changes when new information is provided by the public, PRPs, or the support agency, or when new information is generated by the lead agency that affects the selected remedy. Definitions of significant changes are presented and the documentation procedures associated with them are summarized. This chapter also provides an outline of an ESD, an amended ROD, and examples of documenting non-significant and significant differences.

#### **8.2 REQUIREMENTS TO ADDRESS SIGNIFICANT CHANGES**

The lead agency may determine that a significant change to the selected remedy, as described in the ROD, is necessary after the ROD is signed. CERCLA section 117(c) requires the lead agency to address post-ROD significant changes:

After adoption of a final remedial action plan (1) if any remedial action is taken [under sections 104 or 120], (2) if any enforcement action under section 106 is taken, or (3) if any settlement or consent decree under section 106 or section 122 is entered into, and if such action, settlement or decree differs in any significant respects from the final plan [ROD] the [lead agency] shall publish an explanation of the significant differences and the reasons such changes were made.



The statute's emphasis on "significant" differences indicates that not all differences between the remedy specified in the ROD and the remedial design, remedial or enforcement action, and settlement or consent decree are required to be addressed in an ESD. A review of the legislative history indicates that the significant differences provision in CERCLA section 117(c) was not intended to be unreasonably burdensome on the lead agency. As a result, a threshold for defining significant changes (or differences) has been established, which is intended to reduce the paperwork burden on the lead agency without compromising the public's right to be kept informed. Therefore, only changes that significantly alter the scope, performance, or cost of a component of the remedy as presented in the ROD should be addressed in an ESD.

The proposed revisions to the NCP incorporate this statutory requirement for the lead agency to address significant changes that arise after the ROD is signed. In addition, the proposed revisions to the NCP incorporate for the first time EPA's policy of amending a ROD (or other decision document) if a significant change is made to a remedy that fundamentally alters the hazardous waste management approach presented in the ROD.

### **8.2.1 Analyzing Information Received or Generated**

The information that provides the basis for making a significant change to a remedy could come from a number of sources including the public, PRPs, the support agency, or the lead agency itself. The proposed revisions to the NCP specify criteria for the lead agency to follow in determining the extent to which it should formally "consider" (i.e., formally respond to) new information submitted by the public, PRPs, and the support agency after the ROD is signed. These procedures are presented in Section 8.3. The procedures that the lead agency should follow in evaluating information it develops during the RD/RA process and the subsequent effects of that information on the selected remedy are presented in Section 8.4. Section 8.5 defines three categories of post-ROD changes and the documentation procedures that should be followed for each.

### **8.3 CONSIDERATION OF INFORMATION SUBMITTED BY THE PUBLIC, PRPS, AND THE SUPPORT AGENCY**

EPA and the States have general procedures for responding to comments or information received throughout the remedial process. CERCLA ensures that the public, PRPs, and the support agency have the opportunity to participate in the remedy selection process prior to adoption of the ROD. Once the lead agency has selected the response action, however, its obligation to respond to comments on the remedy is limited to special circumstances (see Section 8.4, below) so that implementation of the selected remedy can be expedited.

The support agency's role in the RD/RA process after the ROD is signed is different from the public's role because the support agency has a **uniquely defined** role in the RD/RA process (see CERCLA section 121(f) for the role of the State). In general, the support agency has an opportunity to be involved in reviewing the engineering design and other reports relating to implementation of the remedy. The support agency is also notified of negotiations with PRPs and given the opportunity to participate in those negotiations. Given these specific roles, information submitted by the support agency during RD/RA will typically be in the form of comments it has received. In most instances, it is expected that these comments could be addressed through the normal communications process between the lead and support agencies. The comments and any lead agency responses should be documented in the post-decision document file.

The public, including PRPs, may submit information to the lead agency after the ROD is signed that serves as the basis for their request that a component of the remedy be changed (e.g., increase the boundaries of the site). Similarly, there may be instances in which the support agency submits new information or makes a significant comment on the RD/RA that falls outside the standard review and comment process in which the support agency participates throughout the entire remedial process. For example, the support agency may request that the lead agency incorporate into the remedy a newly-passed State regulation or an advisory that it determines is necessary to achieve adequate protection of human health and the environment.

When information is received from the public or support agency after the ROD is signed, the information should be analyzed to determine if it should be "considered" by the lead agency. Consideration refers to the lead agency's obligation to respond formally, in writing, to information received and to

document this response in the administrative record. The types of information typically received from the public and support agency are described in the next section, along with the lead agency's obligation to respond to this information.

#### **8.4 STANDARDS FOR CONSIDERATION OF INFORMATION SUBMITTED BY THE PUBLIC, PRPs, OR SUPPORT AGENCY**

EPA recommends a four-part standard for determining which comments submitted by the public or support agency after the ROD is signed warrant formal consideration.<sup>1</sup> Formal consideration, as specified in the proposed revisions to the NCP and depicted in Figure 8-1, requires a written response to the comments and the inclusion of the comments in the administrative record file. Comments received from the support agency or public should be considered by the lead agency when each of the following criteria are met:

- The comments contain significant information;
- The information is not contained elsewhere in the administrative record file;
- The information could not have been submitted during the public comment period; and
- The information substantially supports the need to significantly alter the response action.

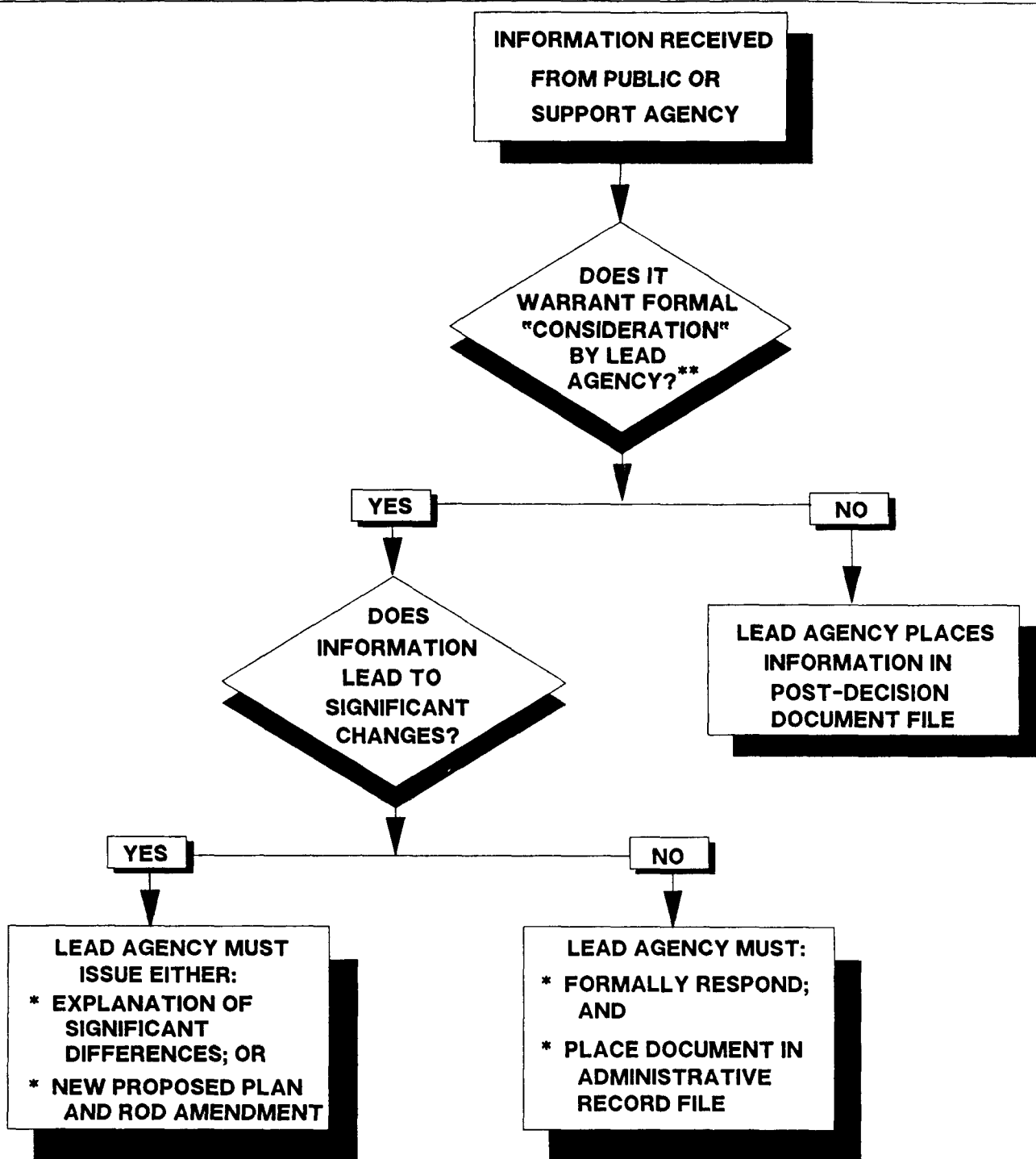
In most cases (particularly in light of the fourth criterion), information that meets this four-part standard warrants a significant change to the remedy. Depending upon how significant the change is, the lead agency should prepare either an ESD or a ROD amendment following the guidance in Section 8.5 below. The ESD or amended ROD represent the lead agency's formal written response to the information submitted.

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<sup>1</sup> The basis for establishing the "consideration" standard relates back to the public's and support agency's statutory opportunity to participate in the remedy selection process prior to adoption of the ROD. Once the lead agency has selected the response action, the obligation to respond to comments on the remedy is limited. Additionally, it is in the best interest of the public for the lead agency to proceed with the implementation of the selected remedy in an expeditious manner. The lead agency's ability to accomplish this would be compromised if it were under the obligation to formally respond to every comment submitted after the ROD is signed.

FIGURE 8-1

# Process to Address Post-ROD Significant Changes



## \*\* NOTE:

- \* DO THE COMMENTS CONTAIN SIGNIFICANT INFORMATION?
- \* IS THE INFORMATION NOT AVAILABLE IN THE ADMINISTRATIVE RECORD?
- \* COULD THE COMMENTS HAVE BEEN SUBMITTED DURING THE COMMENT PERIOD?
- \* DOES THE INFORMATION SUBSTANTIALLY SUPPORT THE NEED TO ALTER THE RESPONSE ACTION?

There may be limited situations in which the information submitted by the support agency or the public meets the four-part standard for formal consideration, but the significant change to the remedy cannot be undertaken. For example, information that supports the use of in-situ vitrification at a site may be submitted to the lead agency when 90 percent of the construction of the previously selected thermal destruction remedy already has been completed. In this case, the lead agency may determine that implementation of in-situ vitrification is not practicable or cost-effective, even though the new information supports the use of that remedy. Because no change is made to the remedy, the lead agency would not prepare an ESD or amended ROD. Instead, the lead agency would prepare a written explanation of why a significant change to the remedy will not be made and include this in the administrative record file. This process is shown in Figure 8-1.

## **8.5 CONSIDERATION OF INFORMATION GENERATED BY THE LEAD AGENCY**

During the RD/RA process, the lead agency itself could generate information that supports making a significant change to the remedy selected in the ROD. This information could be developed through additional investigations at the site. The lead agency may determine, for example, that a pilot-scale test is necessary on a particular technology to further define the design specifications of a particular treatment technology.

Alternatively, the lead agency may take additional samples during remedial design to define more accurately the volume and type of waste to be treated. This new information will typically support the implementation of the remedy presented in the ROD. There will be instances, however, in which such information results in the lead agency initiating a significant change to the remedy.

Additional information and changes can also occur during RD/RA through the process of value engineering. The remedy described in the ROD may be subject to modifications and changes in the design and construction process intended to enhance the cost-effectiveness of the remedy. The Superfund program routinely uses value engineering to analyze remedies with respect to equipment, facilities, services, and supplies associated with the system. This analysis is conducted with the specific intent of designing and constructing the lowest-cost remedy consistent with the performance, scope, and reliability of the remedy selected in the ROD. The goal of this process

is to lead to decisions during design and construction that optimize the cost-effectiveness and performance of the remedy. There will be instances, therefore, in which these value engineering decisions result in significant changes to the remedy.

Unlike the public, PRPs, and the support agency, who are subject to the consideration standard discussed in Section 8.3, the lead agency has the discretion to make decisions regarding the post-ROD information it generates. As previously mentioned, the intent of the consideration standard is to determine what public or support agency information the lead agency should respond to and document in the administrative record file. The intent of this standard does not apply to information the lead agency generates itself, since there is no need to respond to that information.

The lead agency's initial analysis should focus on whether the new information generated during RD/RA prompts the lead agency to initiate a change to the remedy. The change may be either a non-significant or a significant change to the ROD. If the lead agency determines a significant change is warranted, then the lead agency should consult with the support agency to determine the appropriate procedures for documenting that significant change (e.g., an ESD or ROD amendment). The procedures for evaluating the magnitude of the changes made to a remedy and, therefore, the documentation procedures that should be followed, are presented in the next section.

## **8.6 CATEGORIES OF POST-ROD CHANGES**

Once the lead agency determines that a change to the remedy is warranted based on the information submitted by the public, PRPs, the support agency, or simply generated through the RD/RA process, the change should be evaluated to determine whether it is one of the following:

- A non-significant or minor change;
- A significant change to a component of the remedy; or
- A fundamental change to the overall remedy.

The lead agency's categorization of a change is a site-specific determination. In making this determination, the lead agency should consider the effect the change has on the scope, performance, or cost of the remedy as described in the ROD. The lead agency should consider the following factors:

- Does the change significantly alter the scope of the remedy (i.e., the physical area of the response, remediation goals, type and volume of wastes)?
- Would the change alter the performance (e.g., treatment levels to be attained) and thus raise concerns about the protectiveness or long-term effectiveness of the remedy that could not have been anticipated based on information in the ROD?
- Are the changes in costs of such a nature that they could not have been anticipated based on the estimates in the ROD and the recognized uncertainties associated with the hazardous waste engineering process selected?

Based on this evaluation, the lead agency determines that the change is non-significant, significant, or fundamental in nature. Each category is discussed below along with the associated documentation procedures.

### **8.6.1 Non-Significant Changes**

Non-significant (i.e., minor) changes fall within the normal scope of changes occurring during the RD/RA engineering process. These minor changes typically are the result of value engineering conducted during remedial design and construction. Through the value engineering process, modifications are made to functional specifications of the remedy to optimize performance and minimize costs. This may result in minor or non-significant changes to the type and/or cost of materials, equipment, facilities, services, and supplies used to implement the remedy. When such changes do not significantly affect the scope, performance, or cost of a remedy, they should be considered minor or non-significant. Exhibit 8-1 presents examples of non-significant changes.

The lead agency need not prepare an ESD for minor changes. However, minor changes should be documented in the post-decision document file, which is equivalent to the RD/RA case file for a remedial action. The documentation

## EXHIBIT 8-1

### Examples of a Non-Significant Difference

Specific examples of a non-significant difference have been developed using the following hypothetical remedy. The major components of the remedy include:

- Excavation of 11,000 cubic yards of contaminated soil; treatment by thermal destruction; disposal in an on-site landfill;
- Restoration of ground water through air stripping/reinjection;
- Provision of an alternate water supply;
- Capital cost: \$42,463,300;
- Annual O&M: \$26,200; Present worth: \$42,708,780; and
- Implementation time: 12 to 15 months.

**Example 1:**<sup>\*</sup> In conducting engineering design and costing procedures, the lead agency refines the original cost and time estimates for the selected remedy in the ROD. The actual cost of implementing the remedy rises from \$4.7 million to \$5.3 million, and the implementation time increases six months. Such refining of the time and cost estimates of remedies occurs through the usual course of remedial design at most sites. These changes are not significant differences; the lead agency is not required to prepare an ESD. Such changes should be documented in a post-decision document file and may be summarized in the RD/RA fact sheet.

**Example 2:** The lead agency determines that the contaminant plume has migrated 1,500 feet outside the original boundaries of the site. As a result of the migration, the boundaries of the site are enlarged to incorporate the plume. This is a non-significant difference. Explanation of the boundary change should be included in the post-decision document file and may be summarized in the RD/RA fact sheet.

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\* All of the examples in the exhibits in Chapter 8 are hypothetical; the numbers do not represent Agency standards.



of non-significant differences should not be part of the administrative record file for the ROD. If the lead agency chooses, non-significant changes can be documented for the public in an optional Remedial Design Fact Sheet. These fact sheets generally are used to inform citizens of the lead agency's schedule for public participation activities as well as progress being made in the design and implementation of the remedy. These fact sheets also can be used to notify the public of any minor changes made to the remedy.

### **8.6.2 Significant Changes to a Component of a Remedy**

As a result of information submitted by the public, PRPs, the support agency, or generated by the lead agency through its own activities during the RD/RA process, the lead agency may make a significant change to a component of a remedy. Significant changes to a component of a remedy generally are incremental changes to the hazardous waste approach selected for the site (i.e., a change in timing, cost, or implementability). These changes do not fundamentally alter the overall approach intended by a remedy. Significant changes to a component of a remedy also may result from an enforcement action taken pursuant to CERCLA section 106 or a settlement or consent decree entered into pursuant to sections 106 and 122 after adoption of the ROD. When significant changes are made to a component of a remedy, an ESD should be prepared. Exhibit 8-2 presents examples of changes that warrant an ESD.

When the settlement or consent decree proposes to make a significant change to a component of the remedy, the ESD should be prepared and issued concurrently with the consent decree. Where the negotiations result in a fundamental change being proposed to the overall remedy in the ROD (e.g., from incineration to bioremediation) and not just a component of the remedy, the lead agency should initiate the process for amending the ROD (see section 8.6.3 for more information on amending RODs). The consent decree should reflect, to the extent possible, the remedy described in the ROD.

During the period when the ESD is being prepared and then made available to the public, the lead agency should proceed with the pre-design, design, construction, or operation activities associated with the remedy. The remedy can continue to be implemented in this case because the ESD represents only a notice of a change, and is not a formal opportunity for public comment since the Agency is not reconsidering the overall remedy. The flow charts in Figures 8-2 and 8-3 illustrate the remedial and enforcement processes that could lead to issuance of an ESD.

**EXHIBIT 8-2****Examples of a Significant Difference  
to a Component of a Remedy**

Specific examples of a significant difference have been developed using the following hypothetical remedy which calls for:

- Excavation of 11,000 cubic yards of contaminated soil; treatment by thermal destruction; disposal in an on-site landfill;
- Restoration of ground water through air stripping/reinjection;
- Provision of an alternate water supply;
- Capital cost: \$42,463,300;
- Annual O&M: \$26,200; Present worth: \$42,708,780; and
- Implementation time: 12 to 15 months.

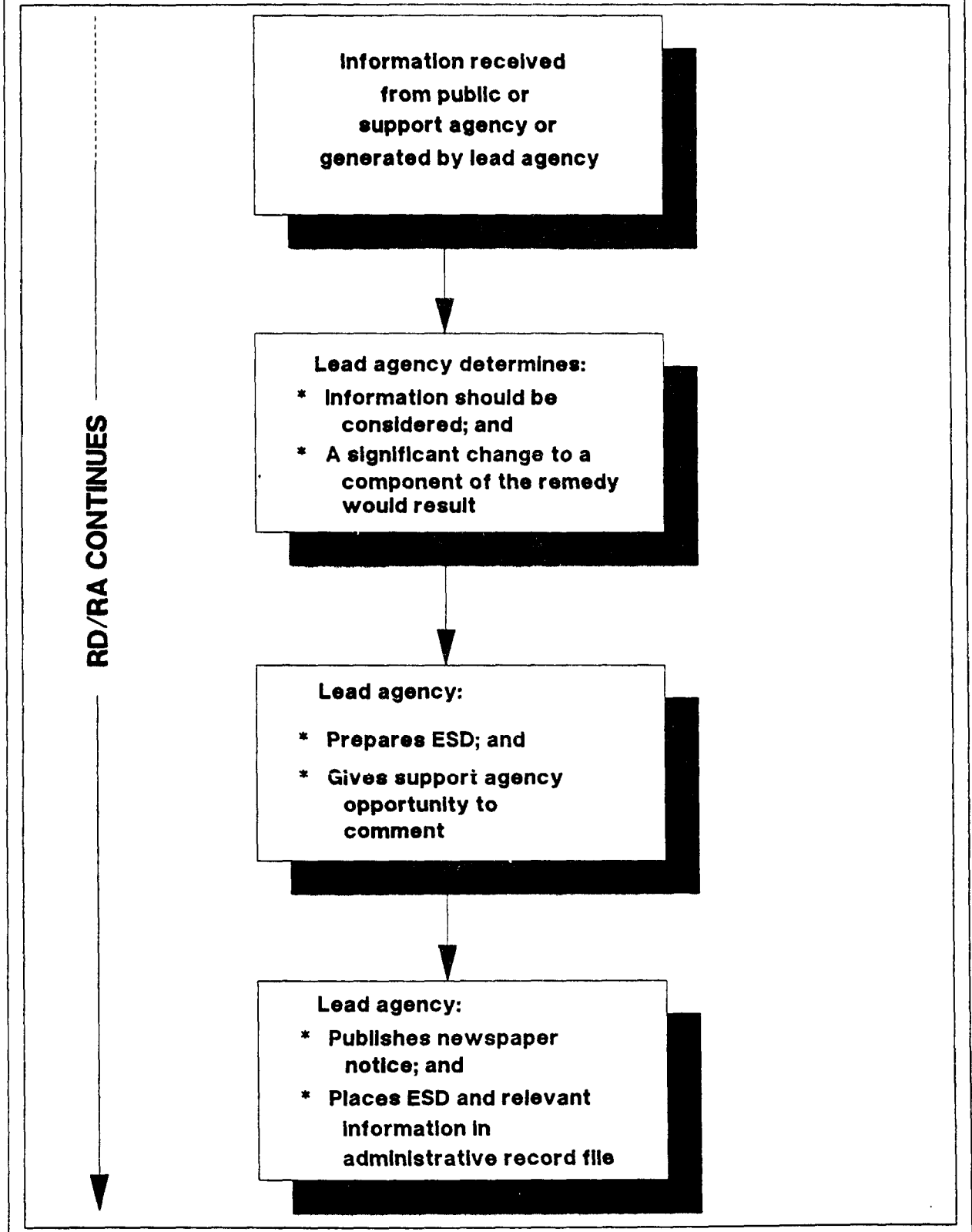
**Example 1:** In the process of implementing the remedy, the lead agency conducts additional sampling and determines that the volume of soil to be incinerated is 50 percent greater than the volume estimated in the ROD. As a result, a proportional increase in capital costs of the remedy is realized. The capital cost increases from \$4.6 to \$7 million, and the amount of time necessary to incinerate the additional soils adds three years to the implementation time frame estimated in the ROD.

Because the scope and cost of the remedy have changed substantially from the specifications of the remedy in the ROD, an ESD is prepared to inform the public of the changes. Remedial design continues, because the lead agency determines the public already has had an adequate opportunity to comment on the overall approach the remedy represents (i.e., incineration and disposal in an on-site landfill). No public comment period is necessary.

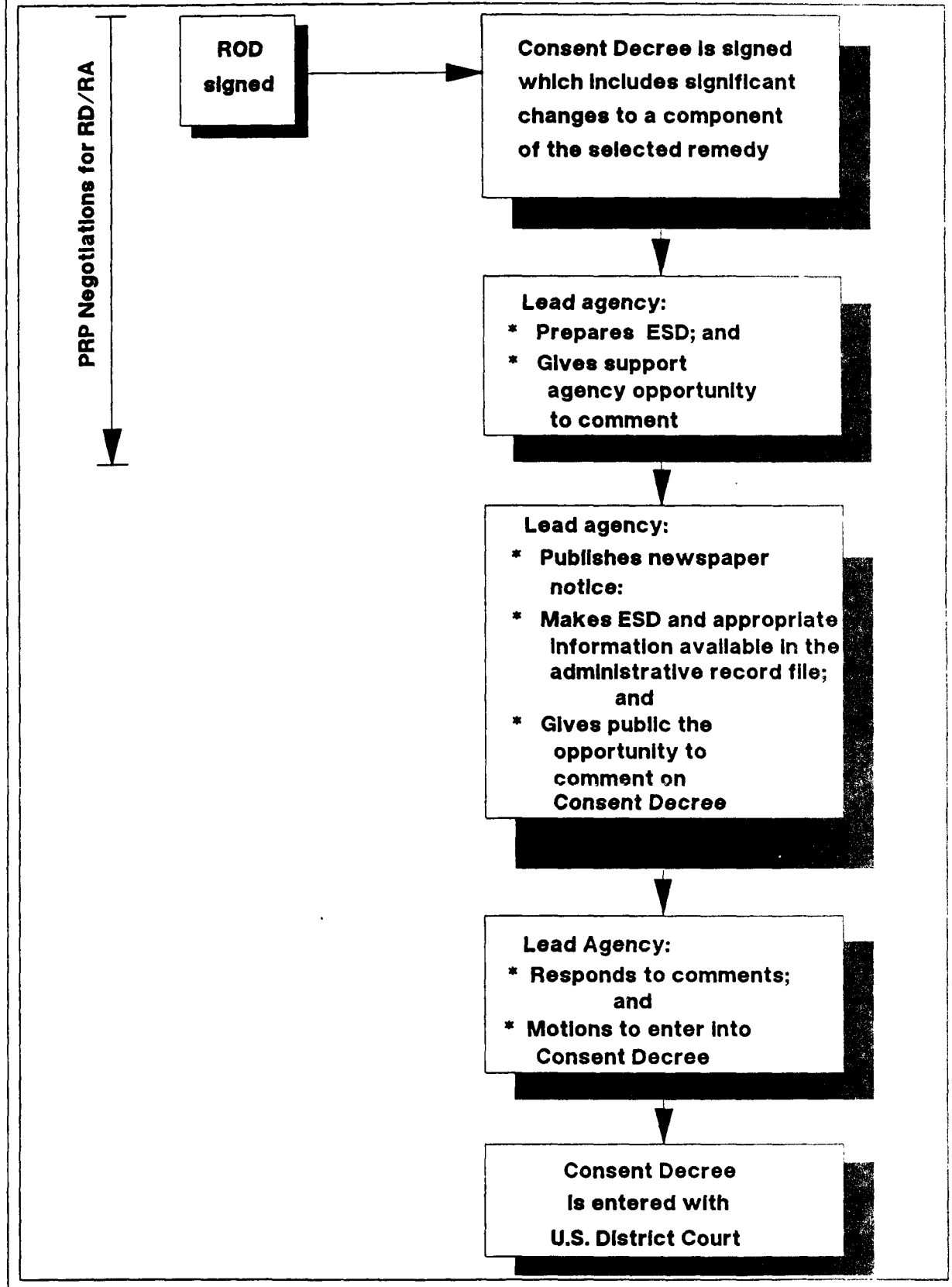
**Example 2:** The lead agency reaches a settlement with the PRPs for a site, who agree to implement the remedy selected in the ROD but delay the ground-water restoration procedures for three years. The lead agency determines that this is a significant difference that alters the performance (i.e., short-term effectiveness) of the remedy. The lead agency prepares an ESD documenting the significant difference from the ROD and the specific reasons for the change. The Consent Decree is issued for public review and comment. The ESD is issued at the same time for public review.

**Example 3:** The lead agency decides to use carbon adsorption rather than air stripping to conduct the ground-water restoration activities. Because further investigation revealed that the volatile organics in the waste stream at the site are of low solubility and polarity, carbon adsorption will provide better removal efficiency on this waste stream than would air stripping. The basic pump and treat remedy remains unaltered, and the performance level specified in the ROD will still be met by the new technology. The lead agency prepares an ESD to notify the public that the new technology is to be used. No amendment to the ROD is necessary, and remedial design can continue.

**FIGURE 8-2**  
**Process That Results in the Issuance**  
**of an Explanation of Significant Differences:**  
**General Procedures**



**FIGURE 8-3**  
**Process That Results in the Issuance of an Explanation**  
**of Significant Differences:**  
**Changes Resulting From Enforcement Activities**



### **8.6.2.1 Preparing the ESD**

The ESD can be prepared using one of two formats: a fact sheet format or a more general and expanded decision document format. The complexity of the changes undertaken should be considered when deciding which format to use. In either format, the ESD should include the information presented in Exhibit 8-3.

The lead agency should conduct the following activities when issuing an ESD:

- Provide the support agency with a reasonable opportunity to comment on the ESD prior to publication (a maximum of 15 working days is recommended, unless otherwise specified in the SMOA, CA, or SSC);
- Summarize the support agency's comments in the ESD;
- Publish a notice of availability and brief description of the ESD in a local newspaper of general circulation, as required by CERCLA section 117(c);
- Make the ESD available to the public by placing it in the administrative record file and information repository; and
- Place the information supporting the change in the administrative record file, as well as the lead agency's response to any comments. A Responsiveness Summary is not required.

Although the lead agency may choose to conduct these activities, a formal public comment period, public meeting, and Responsiveness Summary are not required when issuing an ESD.

**Role of the Support Agency.** Although the lead agency has the discretion to determine if a change should be undertaken, the support agency should be given the opportunity to comment on the proposed significant change. The interaction and flow of information between the lead and support agencies during RD/RA is fundamental to ensuring that the remedial process proceeds in a timely manner. Therefore, the support agency should be given the

**EXHIBIT 8-3****Outline for the Explanation  
of Significant Differences****• Introduction**

- Site name and location.
- Identification of lead and support agencies.
- Citation of CERCLA section 117(c) that requires the ESD.
- Summary of the circumstances that gave rise to the need for an ESD.
- Statement that the ESD will become part of the administrative record file.
- Address of location where the file is available and hours of availability of the file.

**• Summary of Site History, Contamination Problems, and Selected Remedy**

- Summary of contamination problems and site history, including the date the ROD was signed.
- Summary of the remedy as originally described in the ROD.

**• Description of Significant Differences and the Basis for those Differences**

- Summary of the information that gave rise to significant differences from the selected remedy as it was originally specified. This summary information could include the results of treatability studies or other information developed or provided to the lead agency during the remedial design process. In this discussion, reference should be made to any information in the administrative record file that supports the need for the change.
- Description of the significant differences between the remedy as presented in the ROD and the action now proposed. As appropriate, this description should summarize the differences in scope, performance (e.g., technology, ARARs, and timing), or cost between the original and modified remedy.

**• Support Agency Comments**

- Summary of support agency comments on proposed ESD.

**• Affirmation of the Statutory Determinations**

- Affirmation that the modified remedy continues to satisfy statutory requirements. The ESD should include a statement such as: "Considering the new information that has been developed and the changes that have been made to the selected remedy, the [lead and support agencies] believe that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site."

**• Public Participation Activities**

- Notice that administrative record is available for comment.
- Date of any planned public information meeting.  
(NOTE: EPA is not required to hold public meetings on ESDs but may choose to if warranted by public interest.)

opportunity to comment on the ESD prior to the lead agency making the ESD available to the public. These time frames should be specified in the SMOA, CA, or SSC. It is recommended that 15 working days be the maximum review period, unless otherwise specified in the SMOA, CA, or SSC.

The lead and support agencies generally will reach agreement on the proposed significant change. However, there may be situations in which outstanding issues cannot be resolved by the respective staffs of the lead and support agencies. In this event, the dispute resolution process discussed in Chapter 3 of this guidance can be utilized. In the event that a mutually acceptable resolution cannot be reached, the support agency's comments should be summarized in the ESD and placed in the administrative record file along with the lead agency's response to those comments. EPA must concur on the ESD in the case of Fund-financed RODs.

### **8.6.3 Fundamental Changes to the ROD**

In a few cases, new information submitted by the public, PRPs, the support agency, or developed by the lead agency during RD/RA may cause the lead agency to reconsider the hazardous waste management approach selected in the ROD. For example, the lead agency may determine that the innovative technology originally selected in the ROD did not perform satisfactorily during the pilot scale testing conducted during design. Based on this information, the lead agency could decide to switch to thermal destruction, rather than use the innovative technology, a move that would represent a fundamental change to the remedy. Alternatively, the lead agency, as a result of negotiations with PRPs, may choose to change the remedy in the ROD from thermal destruction to a biological treatment process -- also a fundamental change. When such fundamental changes are made to a remedy, the lead agency should repeat the ROD process in accordance with the requirements of CERCLA section 117 by issuing a revised Proposed Plan and an amended ROD.<sup>2</sup> Additional examples of cases in which a ROD amendment would be necessary are presented in Exhibit 8-4.

**Procedures for Issuing the ROD Amendment.** When there are fundamental changes proposed to the ROD, the lead agency should conduct the public participation and documentation procedures specified in CERCLA section 117

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<sup>2</sup> If the lead agency is amending a pre-SARA ROD (i.e., a decision document signed prior to October 17, 1986), the amended remedy will have to satisfy the requirements of section 121 of CERCLA.

**EXHIBIT 8-4****Significant Change  
That Fundamentally Alters the Remedy  
Requiring Amendment of the ROD**

Specific examples of significant differences that fundamentally alter a remedy requiring amendment of the ROD have been developed using the following hypothetical remedy. The major components of the remedy include:

- Excavation of 11,000 cubic yards of contaminated soil; treatment by thermal destruction; disposal in an on-site landfill;
- Restoration of ground water through air stripping/reinjection;
- Provision of an alternate water supply;
- Capital cost: \$42,463,300;
- Annual O&M: \$26,200; Present worth: \$42,708,780; and
- Implementation time: 12 to 15 months.

**Example 1:** The lead agency determines that incineration capacity cannot be secured in the time period necessary for remediating the site. The lead agency proposes to use bioremediation rather than the thermal destruction originally selected to address the contaminated soil. This new remedy is fundamentally different from the remedy selected in the ROD, and an amended ROD must be prepared. Remedial design for the source control remedy is halted because the thermal destruction remedy is no longer implementable. Data collection to support the design of the bioremediation option and RD/RA on the ground-water remedy may proceed.

**Example 2:** The lead agency negotiates a consent decree with the PRPs that proposes to implement a remedy other than the one selected in the ROD. The PRPs propose in-situ vitrification rather than thermal destruction, which was the selected remedy in the ROD. Because the public has not had an opportunity to comment on the proposed remedy in the consent decree, a Proposed Plan is prepared proposing the ROD amendment. Remedial design cannot commence until the consent decree and amended ROD are legally enforceable. The comment periods for the Proposed Plan and consent decree are held concurrently. An amended ROD and Responsiveness Summary are prepared. The Proposed Plan, consent decree, and amended ROD are included in the administrative record file.



which are outlined in Chapters 3 and 7 of this guidance. When a fundamental change is proposed as a result of negotiations with a PRP, the Proposed Plan for the ROD amendment should be released for public comment concurrently with the consent decree. If the proposed amended ROD addresses the entire response action for the site or a series of operable units (e.g., soil, surface water, and ground water), only that portion of the remedy being changed (e.g., ground water) requires an amendment. RD/RA activities in the other operable units not proposed for changes may continue during the amendment process. Figures 8-4 and 8-5 summarize the processes that could lead to an amended ROD.

**Key Elements of the ROD Amendment.** When issuing a ROD amendment (preceded by a revised Proposed Plan), the amount of information to include in these documents will be a function of the type of change made to the remedy and the rationale for that change. In general, the introductory sections of the Proposed Plan and ROD (e.g., site history, community relations, and site risks) do not need to be readdressed in these amended documents. The focus should be on documenting the reasons for the ROD amendment, evaluating the existing and proposed remedies in terms of the nine criteria, and providing assurances that the proposed remedy satisfies the statutory requirements.

## **CHAPTER 9**

### **DOCUMENTING NO ACTION, INTERIM ACTION, AND CONTINGENCY REMEDY DECISIONS**

This chapter presents guidance on preparing the Proposed Plan and ROD for three unique types of remedial actions:

- No action;
- Interim action; and
- Contingency remedies.

This chapter defines these decisions and outlines the modifications that should be made to the standard Proposed Plan and ROD formats described in Chapters 2 and 6, respectively, when preparing the decision documents in support of these special types of decisions.

#### **9.1 DOCUMENTING A "NO ACTION" DECISION**

EPA may determine that "no action" is warranted for a site or operable unit within a site under three general circumstances:

- A site or operable unit is already in a protective state (i.e., the site or operable unit poses no current or potential threat to human health or the environment);
- CERCLA does not provide the appropriate authority to take any or complete remedial action; or
- No effective action can be taken using currently available technology.

These three circumstances are described below, along with the special documentation procedures that should be followed for both the Proposed Plan and ROD.

### **9.1.1 No Action is Necessary to Achieve Protection of Human Health and the Environment**

In limited situations, the baseline risk assessment conducted during the RI provides the basis for concluding that the conditions at a site or a portion of a site pose no current or potential threat to human health or the environment. The lead agency, therefore, may determine that its authority under CERCLA sections 104 or 106 to undertake a remedial action to ensure adequate protection need not be invoked. Under such circumstances, the statutory cleanup standards of CERCLA section 121 (e.g., compliance with ARARs, cost-effectiveness) are not triggered and these requirements need not be addressed in documenting the determination that a "no action" decision is appropriate for a site or a portion of the site.

Examples of sites at which a "no action" decision could be made include: (1) a site where a previous removal action mitigated the threat; and (2) a site at which the threat no longer exists because of natural environmental processes (e.g., natural attenuation of a ground-water contaminant plume). While no action decisions may authorize monitoring to verify that no unacceptable exposures occur, such response decisions should not include any additional measures to eliminate, reduce, or control threats beyond the mitigative measures previously taken. Therefore, a remedy including any treatment controls, engineering controls (e.g., containment), or institutional controls would not be considered a "no action" remedy.

The finding that "no action" is necessary to ensure adequate protection of human health and the environment should be supported by the baseline risk assessment or other information in the administrative record file. The finding should take into account both the current and reasonable maximum exposure scenarios using appropriate health and environmental criteria and standards that relate directly to the media and hazardous substances being addressed. Sites or site areas at which EPA has determined that no action is necessary should allow for unrestricted use of, or unlimited access to, the area or have in place appropriate exposure controls from a previous action to ensure that no unacceptable exposures will occur (i.e., exposures greater than  $10^{-4}$  for carcinogens). If EPA has determined that no action is necessary for an entire site, that site is eligible for deletion from the NPL once the no

action decision is codified in a ROD. Exhibits 9-1 and 9-2 present outlines of the Proposed Plan and ROD for documenting "no action" decisions.<sup>1</sup>

### **9.1.2 No CERCLA Authority to Take Action**

There are a few circumstances in which the results of the RI and/or FS indicate that CERCLA does not provide the appropriate legal authority to undertake a remedial action at a site. One possible example is off-site contamination that is not attributable to an NPL site. In this case, EPA would not have the authority to respond using Superfund resources until the release is traced and its source is listed on the NPL. Alternatively, the results of the RI may show that the contaminants of concern at the site are exempt from remedial action under CERCLA section 101. For example, releases involving only petroleum wastes are excluded from CERCLA remedial action. In preparing the Proposed Plan and ROD for this type of "no action" decision, the documentation should support this determination. Exhibits 9-3 and 9-4 present outlines for the Proposed Plan and ROD, respectively, for this category of a "no action" decision.

### **9.1.3 No Effective Action**

The Agency may determine that no effective remedial action is possible at a site or operable unit due to the site conditions or the nature of the contamination at the site. For example, it is possible that the process of remediating a wetland would result in greater environmental harm than if the contamination were left in place. Another possible example is where the removal of the contamination, such as white phosphorus submerged in an estuary, would be technologically infeasible, due to the risks to the workers, community, and environment that would result from the use of current technology. The Proposed Plan and ROD should indicate that the five-year review will be performed for sites in such instances where "no action" is possible. Exhibits 9-5 and 9-6 present outlines of the Proposed Plan and ROD, respectively, for documenting this type of a "no action" decision.

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<sup>1</sup> All of the Exhibits in Chapter 9 are based upon either the Outline for the Proposed Plan (Chapter 2) or the Outline for the ROD (Chapter 6). A line through the text indicates a deletion and bold text indicates a change to the existing section or a "new" section.

**EXHIBIT 9-1****Documenting a No Action Decision:  
Action Not Necessary for Protection****OUTLINE FOR THE PROPOSED PLAN**

A Proposed Plan to document the decision that no action is necessary to achieve protection of human health and the environment at a site or operable unit should follow the guidance in Chapter 2 with the special modifications outlined below.

1. Introduction
2. Site Description
3. Scope and Role of Operable Unit - Specify in this section any relationship this "no action" decision has to other past and future site activities, particularly any removal or interim actions under which exposure controls may have been implemented.
4. Summary of Site Risks - The information presented in this section will provide the primary basis for the "no action" decision. The discussion should support the determination that remedial action is not necessary to ensure protection of human health and the environment. This can be accomplished by demonstrating how the current and reasonable maximum exposure scenarios considered under the baseline risk assessment indicate that unacceptable exposures will not occur. Any exposure controls implemented as part of previous actions that contribute to protection of human health and the environment should be discussed.
5. ~~Summary of Alternatives~~
6. ~~Evaluation of Alternatives and the Preferred Alternative~~
5. Description of the "No Action" Preferred Alternative - In a Proposed Plan for a decision where no action is necessary to ensure protection, this section is a substitute for the standard "Summary of Alternatives" or "Evaluation of Alternatives" section. If alternatives were developed in the FS, the RI/FS should be cited in the Proposed Plan, but the descriptions and analyses of these alternatives need not be included in the Proposed Plan.
6. Community Participation - This section should provide standard information concerning public participation in the remedy selection process. This section should not solicit public comment on all the alternatives because only one option is being proposed.

## EXHIBIT 9-2

### Documenting a No Action Decision: Action Not Necessary for Protection

#### OUTLINE FOR THE ROD

The preparation of a ROD to document a decision that no action is necessary to ensure protection of human health and the environment should follow the guidance presented in Chapter 6 with the special modifications noted below.

1. Declaration

- Site Name and Location
- Statement of Basis and Purpose
- ~~Assessment of the Site~~
- Description of the Selected Remedy: No Action
- ~~Statutory Determinations~~
- Declaration Statement - None of the Section 121 statutory determinations are necessary in this section. Instead, a brief statement should be made noting that no remedial action is necessary to ensure protection of human health and the environment. It should also be noted whether a five-year review is required. A five-year review will be necessary under a "no action" ROD when previous removal or remedial actions at the site result in the implementation of engineering or institutional controls to prevent unacceptable exposures from hazardous substances and when these controls will remain over the long-term.
- Signature and Support Agency Acceptance of the Remedy

2. Decision Summary

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Summary of Site Risks - The information presented in this section provides the primary basis for the "no action" decision. The discussion should support the determination that no remedial action is necessary to ensure protection of human health and the environment. This can be accomplished by demonstrating how the current and reasonable maximum exposure scenarios considered under the baseline risk assessment indicate that unacceptable exposures will not occur. Any exposure controls implemented as part of previous actions that contribute to protection of human health and the environment should be discussed.

**EXHIBIT 9-2 (continued)****Documenting a No Action Decision:  
Action Not Necessary for Protection****OUTLINE FOR THE ROD****2. Decision Summary (continued)**

- ~~Description of Alternatives~~
- ~~Summary of Comparative Analysis of Alternatives~~
- ~~Selected Remedy~~
- ~~Statutory Determinations~~
- Description of the "No Action" Alternative
- Explanation of Significant Changes

**Note:** The ROD should not include the "Description of Alternatives" or "Summary of the Comparative Analysis of Alternatives" sections. If alternatives were developed in the FS, the RI/FS report should be referenced.

**3. Responsiveness Summary**

**EXHIBIT 9-3****Documenting a No Action Decision:  
No CERCLA Authority to Take Action****OUTLINE FOR THE PROPOSED PLAN**

The preparation of a Proposed Plan for this category of "no action" decision should follow the guidance in Chapter 2 with the special modifications noted below.

1. Introduction
2. Site Description
3. Scope and Role of Operable Unit or Response Action
4. Summary of Site Risks
5. ~~Summary of Alternatives~~
6. ~~Evaluation of Alternatives and the Preferred Alternative~~
5. Statutory Authority Finding - This section should explain that the EPA does not have authority under CERCLA section 104 to address the site or operable unit. The statement also should note that the "no action" decision does not constitute a finding by the Agency that adequate protection has been achieved at the site. Rather, the statement should identify the statutory or regulatory authority that does have or potentially could have jurisdiction over the problem. If the site has been referred to the proper authorities, this should be explained in the Proposed Plan.
6. Community Participation - This section should provide standard information about how the public can participate in the remedy selection process. It will not, however, solicit comment on all alternatives, since only one option is being proposed.



**EXHIBIT 9-4****Documenting a No Action Decision:  
No CERCLA Authority to Take Action****OUTLINE FOR THE ROD**

The ROD to document a "no action" decision based on the lack of statutory authority under CERCLA should be prepared following the guidance presented in Chapter 6 with the special modifications outlined below.

**1. Declaration**

- Site Name and Location
- Statement of Basis and Purpose
- ~~Assessment of the Site~~
- Description of the Selected Remedy: No Action
- ~~Statutory Determinations~~
- Declaration Statement - No Section 121 statutory determinations are necessary in this section. This section should explain that EPA does not have authority under CERCLA section 104 to address the site or operable unit. The statement should note that the "no action" decision does not constitute a finding by the Agency that adequate protection has been achieved at the site. Rather, the statement should identify who has or who potentially has the statutory or regulatory authority over the site. If the site has been referred to other authorities, this should be explained.
- Signature and Support Agency Acceptance of the Remedy

**2. Decision Summary**

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Summary of Site Risks
- ~~Description of Alternatives~~
- ~~Summary of Comparative Analysis of Alternatives~~
- ~~Selected Remedy~~
- Statutory Authority Finding - The concluding statement about the absence of authority should be the same as in the Declaration.
- Explanation of Significant Changes

**3. Responsiveness Summary**

**EXHIBIT 9-5****Documenting a No Action Decision:  
No Effective Action Possible****OUTLINE FOR THE PROPOSED PLAN**

The preparation of a Proposed Plan for a "no action" decision based on a determination that remedial action would not be feasible or would cause adverse environmental impacts should follow the guidance in Chapter 2 with the special modifications noted below.

1. Introduction
2. Site Description
3. Scope and Role of Operable Unit or Response Action
4. Summary of Site Risks
5. ~~Summary of Alternatives~~
6. ~~Evaluation of Alternatives and the Preferred Alternative~~
5. Summary Rationale for No Action Decision - This section should explain the basis for the "no action" decision. The basis will be related to the fact that greater adverse impacts would result from undertaking remedial action than from leaving the waste in place or that the problem is technically infeasible to remediate. The remedial alternatives that were considered, and the impact associated with them or their infeasibility, should be summarized in this discussion as necessary. A detailed comparative analysis need not be included. A statement also should be included to the effect that this "no action" decision does not constitute a finding that the remedy ensures adequate protection of human health or the environment. The need for a five-year review should be noted.
6. Community Participation

**EXHIBIT 9-6****Documenting a No Action Decision:  
No Effective Action Possible****OUTLINE FOR THE ROD**

The preparation of a ROD to document this category of "no action" decision should follow the guidance in Chapter 6 with the special modifications noted below.

**1. Declaration**

- Site Name and Location
- Statement of Basis and Purpose
- ~~Assessment of the Site~~
- ~~Description of the Selected Remedy~~
- ~~Statutory Determinations~~
- Declaration Statement - This declaration should state that it has been determined that no effective remedial action is possible at the site. The declaration should also explain that the "no action" decision does not constitute a finding that the remedy ensures adequate protection of human health or the environment. A statement that a five-year review will be conducted should be included.
- Signature and Support Agency Acceptance of the Remedy

**2. Decision Summary**

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Summary of Site Risks
- ~~Description of Alternatives~~
- ~~Summary of Comparative Analysis of Alternatives~~
- ~~Selected Remedy~~
- ~~Statutory Determinations~~
- Summary of Basis for "No Action" Decision - The rationale for the "no action" decision should be provided. The remedial alternatives that were considered, and the impact associated with them or their feasibility, should be summarized in this discussion. A detailed comparative analysis using the nine evaluation criteria need not be included. A statement also should be included to the effect that this "no action" decision does not constitute a finding that adequate protection of human health and the environment has been achieved at the site.
- Explanation of Significant Changes

**3. Responsiveness Summary**

## 9.2 DOCUMENTING INTERIM ACTION DECISIONS

During scoping or at other points in the RI/FS process, the lead agency may determine that it is appropriate to implement an interim action at a site. Interim actions, which may be removal or remedial actions, can be taken to respond to an immediate site threat or to take advantage of an opportunity to significantly reduce risk quickly. Interim actions are limited in scope and are followed by other operable units that complete the steps to provide definitive protection of human health and the environment for the long-term. Examples of interim actions include: constructing a fence to restrict access to the site, pumping a ground-water aquifer to restrict migration of a contaminant plume, providing an alternative source of drinking water, providing bottled water, or constructing a temporary cap.

Proposed Plans and RODs prepared to support interim remedial action decisions are generally more streamlined than decision documents for more comprehensive response actions. **The documentation of interim action decisions should be tailored to the limited scope and purpose of the interim action.** In particular, the "Summary of Site Risks" discussion may be very brief, providing information to support the need to take action but usually not specifying final acceptable exposure levels for the site; the complete findings of the baseline risk assessment should be included in the decision documents for future, final operable units. The number of alternatives considered for interim actions should generally be limited to three or fewer options, and the nine-criteria evaluation limited to addressing factors pertinent to the scope and purpose of the interim action. Likewise, the section 121 statutory determinations should not be made definitively for the site as a whole; rather, the ROD should discuss how the interim action fulfills those requirements within its limited scope. Further details on preparing Proposed Plans and RODs for interim action decisions are presented in Exhibits 9-7 and 9-8.

## 9.3 DECISION DOCUMENTS WITH CONTINGENCY REMEDIES

In general, the lead agency identifies a preferred alternative in the Proposed Plan and selects a single remedy in the ROD. When selecting a treatment technology to address the source of contamination, this typically involves selection of a **treatment class or family**, such as thermal destruction, rather than a specific technology process option, such as a

**EXHIBIT 9-7****Documenting Interim Action Decisions****OUTLINE FOR THE PROPOSED PLAN**

The Proposed Plan should include all of the sections outlined in Chapter 2, with the following modifications.

1. Introduction
2. Site Description - This section should focus on site characteristics addressed by the limited action.
3. Scope and Role of Operable Unit - This section of the document should specify how the interim response action fits into the overall site strategy. The point should be made that, to the extent possible, the interim action will be consistent with any planned future actions.
4. Summary of Site Risks - This section should provide the rationale for taking a limited action. This should be supported by facts that indicate the action is necessary to stabilize the site, prevent further degradation, or that the action can accomplish significant risk reduction quickly. The information should relate only to the limited scope of the action. Qualitative risk information may be presented if quantitative details are not yet available, which will often be the case.
5. Summary of Alternatives - A very limited number of alternatives should be analyzed for interim actions; in some cases, only one plan of action will be appropriate to consider. The alternative descriptions should reflect the pertinent ARARs associated with the action. ARARs are important for the following aspects of an interim action: any portion of the remedy that is final, materials that are treated or managed off-site, and any release that will occur during implementation. Requirements are not applicable or relevant and appropriate if they are outside the scope of the interim action.
6. Evaluation of Alternatives and the Preferred Alternative - The comparative analysis should be conducted in relation to the limited role and scope of the remedy. Criteria that are not pertinent to the selection of interim actions (e.g., long-term effectiveness of a temporary cap) need not be addressed in detail. Rather, their irrelevance to the remedy decision should be noted.
7. Statutory Findings - The findings should be discussed in terms of the limited scope of the action.
8. Community Participation

**EXHIBIT 9-8****Documenting Interim Action Decisions****OUTLINE FOR THE ROD**

The guidance for preparing RODs in Chapter 6 should be followed for preparing a ROD documenting the selection of an interim action remedy, with the following modifications.

**1. The Declaration**

- Site Name and Location
- Statement of Basis and Purpose
- Assessment of the Site
- Description of Selected Remedy
- ~~Statutory Determinations~~
- Declaration - The declaration statement should read as follows:

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements directly associated with this action, and is cost-effective. This action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, given the limited scope of the action. Because this action does not constitute the final remedy for the [site/operable unit], the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element [will not be satisfied by this interim action (or) will be addressed at the time of the final response action]. Subsequent actions are planned to address fully the principal threats posed by this [site/operable unit].

- Signature and Support Agency Acceptance of the Remedy

**2. Decision Summary**

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit - This section provides the rationale for taking the limited action. To the extent that information is available, the section should detail how the response action fits into the overall site strategy. The point should be made that the interim action will be consistent with any planned future actions, to the extent possible.
- Site Characteristics - This section should focus on the description of site characteristics to be addressed by the interim remedy.

**EXHIBIT 9-8 (continued)****Documenting Interim Action Decisions****OUTLINE FOR THE ROD****2. Decision Summary (continued)**

- **Summary of Site Risks** - This section should focus on risks addressed by the interim action and should provide the rationale for the limited action. This could be supported by facts that indicate that action is necessary to stabilize the site, prevent further degradation, or achieve significant risk reduction quickly. Qualitative risk information may be presented if quantitative risk information is not yet available, which will often be the case.
- **Description of Alternatives** - This section should describe only the limited alternatives that were considered for the interim action. The ARARs discussion should be incorporated, as appropriate, given the limited nature of the action.
- **Summary of Comparative Analysis of Alternatives** - The comparative analysis should be presented in light of the limited scope of the action. Criteria not relevant to the evaluation of interim actions need not be addressed in detail. Rather, their irrelevance to the decision should be noted briefly.
- **Statutory Determinations** - The interim action should protect human health and the environment from the exposure pathway or threat it is addressing, any releases generated, or the waste material that is managed. The ARARs discussion should focus only on those ARARs specific to the interim action -- those related to any final disposition of waste, off-site treatment or disposal, or releases caused during implementation. An interim remedy waiver may be necessary in some situations. However, if an interim waiver is needed, the final remedy must comply with the requirement. The discussion of the use of treatment should indicate that the selected remedy represents the best balance of tradeoffs with respect to pertinent criteria, given the limited scope of the action. The discussion under the preference for treatment section should note that the preference will be addressed in the final decision document for the site or operable unit.
- **Explanation of Significant Changes**

**3. The Responsiveness Summary**

rotary kiln. Selection of a treatment class affords the lead agency flexibility during the remedial design to procure the most cost-effective process through competitive bidding.<sup>2</sup>

There are limited situations, however, in which additional flexibility may be required to ensure implementation of the most appropriate treatment remedy for a site. In such situations, the lead agency may determine that a decision document with a selected remedy accompanied by a contingency remedy is appropriate.

The Agency developed this option for two purposes. The first is to promote the use of innovative technologies. An innovative treatment technology may appear to be the most appropriate remedy for a site or operable unit during the RI/FS, but more testing is needed during remedial design to verify the technology's expected performance potential. If there are uncertainties about an innovative treatment technology, then the lead agency, in consultation with the support agency, may elect to include a proven technology as a contingency remedy in the Proposed Plan and ROD. The second situation that may be appropriate for contingency remedies is where two different technologies under consideration appear to offer comparable performance on the basis of the five primary balancing criteria such that both could be argued to provide the "best balance of tradeoffs." Under such circumstances, the Proposed Plan and ROD may identify one as the selected remedy and the other as a contingency remedy and specify the criteria whereby the contingency remedy would be implemented.

### **9.3.1 Innovative Technologies**

Treatability testing of a technology generally should be conducted during the RI/FS. However, it may not always be feasible to conduct sufficient treatability testing during the RI/FS to address all of the significant uncertainties associated with an innovative technology. Therefore, the analysis of alternatives in the FS, which typically examines specific differences between cleanup options with respect to the five primary balancing criteria, should be significantly less definitive for innovative technologies.

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<sup>2</sup> Similarly, when selecting containment technologies, the type of system should be described in terms of basic characteristics, such as permeable, impermeable, double or single liner, without specifying what materials will be used in the system (e.g., clay, synthetic).



The evaluation should focus instead on the expected performance potential and uncertainties associated with these less proven technologies. Based on performance potential, an innovative technology may appear to provide the best balance of tradeoffs from among the options considered, despite its uncertainties. Congress provided support for selecting innovative technologies in such instances in CERCLA section 121(b)(2), which states:

The President may select an alternative remedial action meeting the objectives of this subsection whether or not such action has been achieved in practice at any other facility or site that has similar characteristics. In making such a selection, the President may take into account the degree of support for such remedial action by parties interested in the site.

Parties "interested in the site" include the lead agency, support agency, local community, PRPs, and other members of the public.

Where an innovative technology is selected and its performance potential is to be verified through additional testing conducted during RD/RA, a proven treatment technology may be included in the Proposed Plan and ROD as a contingency remedy. In the event that test results indicate that the innovative technology will not fulfill its performance expectations at that site or operable unit, the contingency remedy could be implemented.

### **9.3.2     Comparable Technologies**

It is possible that two alternatives could emerge from the FS that appear to offer comparable performance with respect to the five primary balancing criteria such that either one could provide the "best balance of tradeoffs." This situation could only occur when two alternatives represent the same overall cleanup approach (i.e., they would treat and contain the same materials on the site) but vary in the particular type of treatment technology employed as the treatment component (e.g., bioremediation vs. soil washing). The alternatives could appear comparable either by offering identical performance with respect to each of the five balancing criteria or, more likely, the overall combination of tradeoffs they provide are very similar. In such cases, one of the alternatives may be the selected remedy and the other the contingency remedy that could be implemented after additional

testing, PRP negotiations, and the competitive bidding process indicate that the contingency remedy would be a more favorable option.

In the Proposed Plan, the alternative proposed for selection and the contingency alternative ideally should both be discussed in the Preferred Alternative section and discussed in relation to the evaluation criteria in the Evaluation of Alternatives section. Also, the criteria that would prompt implementation of the contingency remedy should be identified.

In the ROD, the Comparative Analysis of Alternatives section should discuss both alternatives in equal detail and the Selected Remedy section should establish the parameters of each and provide the criteria by which the contingency remedy would be implemented. The Statutory Determinations section should demonstrate how either remedy would meet CERCLA section 121 requirements.

### **9.3.3     Documenting Contingency Remedy Decisions**

In documenting selection decisions involving a contingency remedy, the Proposed Plan should and the ROD must identify the preferred alternative or selected remedy and the contingency remedy. Ideally, the Proposed Plan should identify the alternative proposed for selection and the contingency alternative in the Preferred Alternative section along with the criteria that would prompt implementation of the contingency alternative. Both options should also be featured in the Evaluation of Alternatives section and indicated as being able to fulfill the statutory requirements of CERCLA section 121. If a contingency remedy is not contemplated at the time of the Proposed Plan, it may still be possible to select a contingency remedy in the ROD provided that the contingency is a logical outgrowth of the information presented in the Proposed Plan (see Chapter 5 on Pre-ROD significant-changes). Whenever a contingency remedy is likely, the Proposed Plan should inform the public of that possibility.

In the ROD, the Comparative Analysis of Alternatives section should discuss both remedies in similar detail and the Selected Remedy section should establish the parameters of each and provide the criteria by which the contingency remedy would be implemented. The Statutory Determinations section should demonstrate how either remedy would fulfill section 121 requirements.

If the lead agency determines that the contingency remedy should be implemented, an "Explanation of Significant Differences" should be issued in accordance with Chapter 8 of this guidance. In addition, the appropriate Regional Coordinator at EPA Headquarters should be contacted if a contingency remedy is being contemplated. The outlines in Exhibits 9-9 and 9-10, respectively, should be followed to prepare the Proposed Plan and ROD to document selection of a contingency remedy.

**EXHIBIT 9-9****Documenting Contingency Remedy Decisions****OUTLINE FOR THE PROPOSED PLAN**

The preparation of a Proposed Plan to document the decision to select a contingency remedy should be based on the following outline. All of the sections listed in Chapter 2 should be included, with the following modifications:

1. Introduction
2. Site Description
3. Scope and Role of Operable Unit or Response Action
4. Summary of Site Risks
5. Summary of Alternatives - This section should identify any uncertainties that exist with the technologies being considered, and to what extent additional testing is needed.
6. Evaluation of Alternatives and the Preferred Alternative - All contingency options should be identified and analyzed fully with respect to the nine criteria. The discussion should address any uncertainties involved with innovative technologies. In the discussion of community (and support agency) acceptance, the support of the interested parties should be discussed in light of the CERCLA provisions supporting selection of innovative technologies in section 121(b)(2). If comparable alternatives exist, this section should support the finding that the contingency alternative provides similar tradeoffs with respect to the evaluation criteria. The preferred alternative and any contingency alternative should be described, and performance expectations and any uncertainties concerning use of the technology, identified. If comparable alternatives are selected, the contingency alternative should be described, focusing on how its performance is similar to that of the preferred alternative in terms of the combination of tradeoffs they offer with respect to the evaluation criteria.
7. Statutory Determinations - This section should assert that the preferred and contingency alternatives are both expected to meet the statutory requirements based on currently available information.
8. Community Participation

**EXHIBIT 9-10****Documenting Contingency Remedy Decisions****OUTLINE FOR THE ROD**

The preparation of a ROD for decisions involving any type of contingency remedy should be based on the following outline. The ROD should include all of the sections listed in Chapter 6, with the following modifications:

1. Declaration

- Site Name and Location
- Statement of Basis and Purpose
- Assessment of the Site
- Description of the Selected Remedy - Both the selected remedy and any contingency remedies should be described in bullet form.
- ~~Statutory Determinations~~
- Declaration - The Declaration should be modified to indicate that both the selected remedy and the contingency remedy will meet the statutory findings.
- Signature and Support Agency Acceptance of the Remedy

2. Decision Summary

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit or Response Action
- Site Characteristics
- Summary of Site Risks
- Description of Alternatives - This section should identify any uncertainties concerning use of the technologies being considered and to what extent additional testing is needed. The selected remedy and contingency remedy must be fully described.
- Summary of Comparative Analysis - The selected remedy and any contingency alternative should be evaluated fully against the nine criteria. The uncertainties should be noted, as well as the expectations for performance. In the discussion of community (and support agency) acceptance of an innovative technology, the support of the interested parties should be discussed in light of the CERCLA provisions in section 121(b)(2). Where alternatives are chosen because of their comparability, this analysis should provide support for that finding.

## **Exhibit 9-10 (continued)**

### **Documenting Contingency Remedy Decisions**

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#### **OUTLINE FOR THE ROD**

2. Decision Summary (continued)
  - **Selected Remedy** - The selected and contingency remedy should be identified. If an innovative technology is identified as the preferred alternative, this section should describe what will happen if further testing determines that the preferred alternative is not effective or implementable. If comparable alternatives are selected, all should be described in detail.
  - **Statutory Determinations** - The statutory determinations discussion should demonstrate that both remedies fulfill CERCLA section 121 requirements.
  - **Explanation of Significant Changes**
3. Responsiveness Summary

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**APPENDIX A**  
**SAMPLE PROPOSED PLAN**

# Superfund Program Proposed Plan



## EIO Industrial Site

Nameless, Tennessee

September 1988

### EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred option for cleaning up the contaminated soils at the EIO Industrial Site. In addition, the Plan includes summaries of other alternatives analyzed for this site. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the Tennessee Pollution Control Board (TPCB), the support agency for this response action. EPA, in consultation with the TPCB, will select a final remedy for the site only after the public comment period has ended and the information submitted during this time has been reviewed and considered.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This document summarizes information that can be found in greater detail in the Remedial Investigation and Feasibility Study (RI/FS) report and other documents contained in the administrative record file for this site. EPA and the State encourage the public to review these other documents in order to gain a more comprehensive understanding of the site and Superfund activities that have been conducted there. The administrative record

file, which contains the information upon which the selection of the response action will be based, is available at the following locations:

Nameless Public Library  
125 Elm Street,  
Nameless, TN 00000  
(101) 999-1099  
Hours: Mon-Sat, 9 a.m.-9 p.m.

and

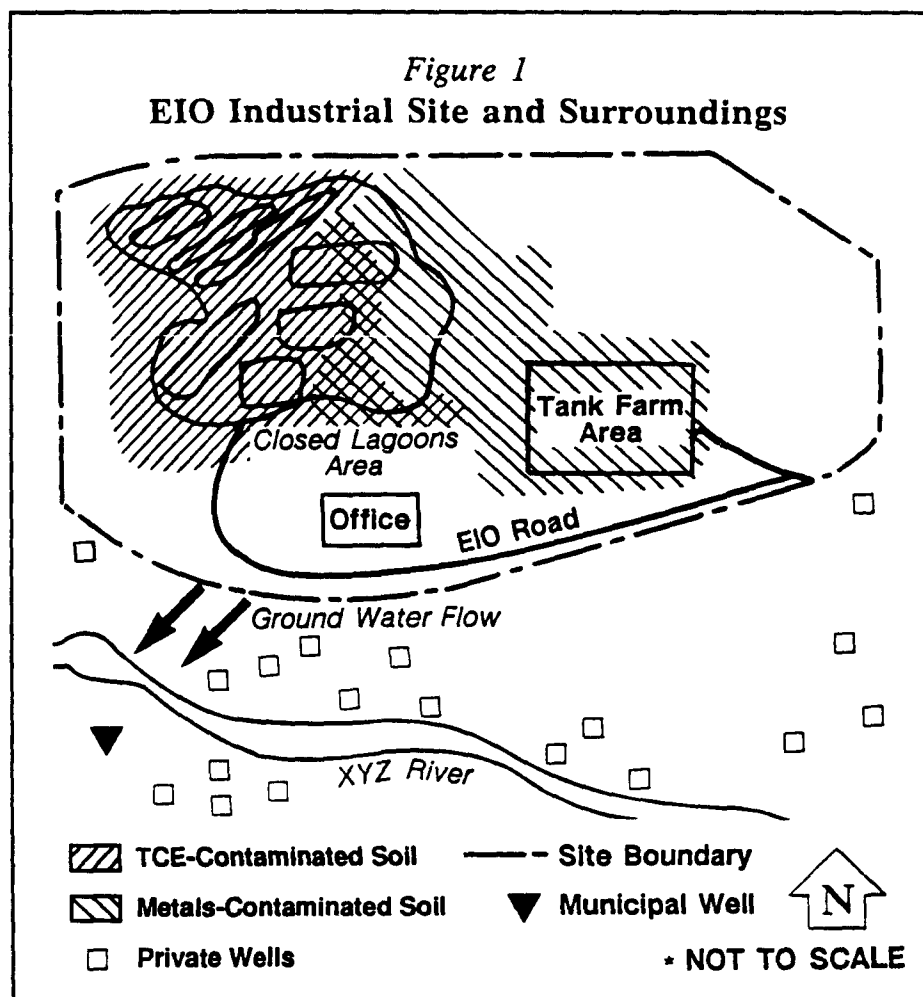
U.S. EPA Docket Room,  
Region IV  
Federal Building, 10th Floor,  
Atlanta, GA  
(555) 555-1212  
Hours: Mon-Fri, 8:30 a.m.-  
4:30 p.m.

EPA, in consultation with the TPCB, may modify the preferred alternative or select another response action presented in this Plan and the RI/FS Report based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives identified here.

Dates to remember:  
**MARK YOUR CALENDAR**

**October 3-24, 1988:**  
Public comment period on remedies to control contaminated soils.

**October 12, 1988:**  
Public meeting at Nameless Community Hall, 123 Market Road, Nameless, Tennessee at 7:30 p.m.





## SITE BACKGROUND

### A HISTORY OF SEPTIC WASTE DISPOSAL

In 1947, the EIO Industrial Company began disposing of septic waste at its plant located at 129 Franklin Street in Nameless, Tennessee. In the late 1960s, the company also began to accept shipments of hazardous waste. Wastes were stored in thirteen storage tanks at the site. The wastes subsequently were pumped to eight unlined lagoons. The site ceased operation in August of 1980, prior to enactment of the Resource Conservation and Recovery Act (RCRA).

During site operations, soils at the 5-acre tank farm area were contaminated by wastes spilled during pumping and from leaking tanks. Although the lagoons were emptied and backfilled with clean soil by the EIO Company in 1981, the subsurface soils in that 5-acre area were contaminated. In addition, both the municipal well, located a mile from the site, and several residential wells, located within a half-mile, have been contaminated by wastes from the site.

The site was placed on the National Priorities List (NPL) in 1982. Between 1984 and 1986, the EIO Industrial Company conducted an RI/FS under the guidance of the TPCB, with EPA's oversight. The RI/FS was conducted to identify the types, quantities, and locations of contaminants and to develop ways of addressing the contamination problems. The results of the RI/FS are as follows:

- On-site surface soils in the former lagoon and tank farm area are contaminated with varying levels of lead, chromium, and cadmium;
- On-site subsurface soils in the former lagoon and tank farm area are contaminated with trichloroethylene (TCE), other chlorinated aliphatic and polynuclear aromatic hydrocarbons, and lead;
- A nearby municipal well is contaminated; and
- A plume of contaminated ground water extends from the site to the XYZ River.

### SCOPE AND ROLE OF ACTION

The problems at the EIO site are complex. As a result, EPA has divided the work into three manageable components called "operable units (OUs)." These are as follows:

- OU One: Contamination in the municipal well.
- OU Two: Contamination of the ground-water aquifer.
- OU Three: Contamination in the soils.

EPA has already selected cleanup remedies for OUs One and Two (the municipal well and the contaminated ground water). The contaminated ground water is a principal threat at this site because of the potential for direct ingestion of contaminants through drinking water wells. Both of these actions are in the Remedial Design stage, which means that the engineers are developing specific plans for implementation of the remedy. Actual construction is planned for March 1990.

The third OU addresses the contaminated soils in the lagoon and tank farm area. This contiguous area was determined to be a principal threat at the site because of the potential threat of direct contact with the soils and the soil's impact on ground water. The cleanup objectives for this OU are to prevent current or future exposure to the contaminated soils through treatment and/or containment, and to reduce the migration of contaminants from the soil to groundwater.

### SUMMARY OF SITE RISKS

During the RI/FS, an analysis was conducted to estimate the health or environmental problems that could result if the soil contamination at the EIO site was not cleaned up. This analysis is commonly referred to as a baseline risk assessment. In conducting this assessment, the focus was on the health effects that could result from direct exposure to the contaminants as a result of the soil coming into contact with the skin, or from direct ingestion of the soil by a child

playing in the area. The analysis focused on the major contaminant of concern, TCE. TCE is a volatile organic compound that is known to cause cancer in laboratory animals and thus is classified as a carcinogen. TCE is a highly mobile contaminant that typically migrates through the soil into the ground-water.

EPA's sampling of the soil at the site found that the average concentration of TCE in the soils was 140 parts per million. This concentration level is associated with an excess lifetime cancer risk of  $10^{-3}$ . This means that if no cleanup action is taken by EPA, one additional person per one thousand has a chance of contracting cancer as a result of the exposure to TCE-contaminated soil. This estimate was developed by taking into account various conservative assumptions about the likelihood of a person being exposed to the soil and the toxicity of TCE.

EPA and the State have determined that in cleaning up the contaminated soil at the EIO site to a concentration of 13 ppm of TCE, the excess lifetime cancer risk posed by the site following remediation will be reduced to  $10^{-6}$ . This cleanup target would reduce the probability of contracting cancer as a result of exposure to the contaminants in the soil to one additional person in one million. Because there are no Federal or State cleanup standards for contamination in soil, this cleanup target was established for this site as part of the risk assessment conducted during the RI/FS. The cleanup target was established to reduce direct contact exposure to an acceptable level, as well as to ensure that the migration of the TCE into the ground water is minimized.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present an imminent and substantial endangerment to public health, welfare, or the environment.

## SUMMARY OF ALTERNATIVES

The alternatives analyzed for OU Three are presented below. These are numbered to correspond with the numbers in the RI/FS Report. The alternatives for the soil cleanup are the following:

- Alternative 1: No Action.
- Alternative 2: Capping.
- Alternative 3: Excavation and Disposal in an Off-site Landfill.
- Alternative 4: Excavation, Treatment of Volatile Organic Compounds in a Vaporization Loop, Lime Stabilization of Soils, and Disposal On-site
- Alternative 5: Excavation and Off-site Thermal Destruction.
- Alternative 6: Excavation, On-site Thermal Destruction, and Solidification.

**Common Elements.** Except for the "No Action" alternative, all of the alternatives now being considered for the site would include a number of common components. Alternatives 3 through 6 include removal and/or treatment of the storage tanks, 7,500 cubic yards (yd<sup>3</sup>) of VOC-contaminated soils and 3,500 yd<sup>3</sup> of metal-contaminated soils from the lagoon/tank farm area. Each alternative also includes long-term ground-water monitoring in compliance with requirements of RCRA Subpart F, 40 CFR § 264.100. These monitoring activities will be conducted to gauge the effectiveness of the selected remedy. In addition, the State will place a deed restriction on the site to prohibit soil excavation and construction of buildings at the site. It also should be noted that the wastes at the EIO site were found to be neither RCRA-listed wastes nor RCRA-characteristic wastes.

### Alternative 1: NO ACTION

**Capital Cost:** 0\*  
**Annual Operation and Maintenance (O&M) Costs:** 0\*  
**Present Worth (PW):** 0\*  
**Months to Implement:** None

The Superfund program requires that the "no action" alternative be evaluated at every site to establish a baseline for comparison. Under this alternative, EPA would take no further action at the site to prevent exposure to the soil contamination.

### Alternative 2: CAPPING

**Capital Cost:** \$740,485\*  
**Annual O&M Costs:** \$18,120\*  
**PW:** \$910,260\*  
**Months to Implement:** 5\*

The contaminated soil would be left in place and a 24-inch compacted cap would be installed over the entire 10 acres of contaminated surface soils in the tank farm and lagoon areas. The cap would be designed to meet the relevant and appropriate requirements of RCRA landfill closure in 40 CFR §264.310, which, among other things, specify that the permeability of the cap must be less than or equal to the permeability of the natural underlying soils at the site.

### Alternative 3: EXCAVATION AND DISPOSAL IN AN OFF-SITE LANDFILL

**Capital Cost:** \$18,188,000\*  
**Annual O&M Costs:** \$26,200\*  
**PW:** \$18,433,480\*  
**Months to Implement:** 7\*

All 11,000 yd<sup>3</sup> of contaminated soils from the 10-acre tank farm and lagoon area would be excavated and hauled to an off-site, permitted RCRA Subtitle C landfill, and the excavated area would be regraded and backfilled with clean soil. This process would be conducted in compliance with the RCRA requirements for clean closure of a landfill. Under these requirements, all contaminants would be excavated and the need for long-term

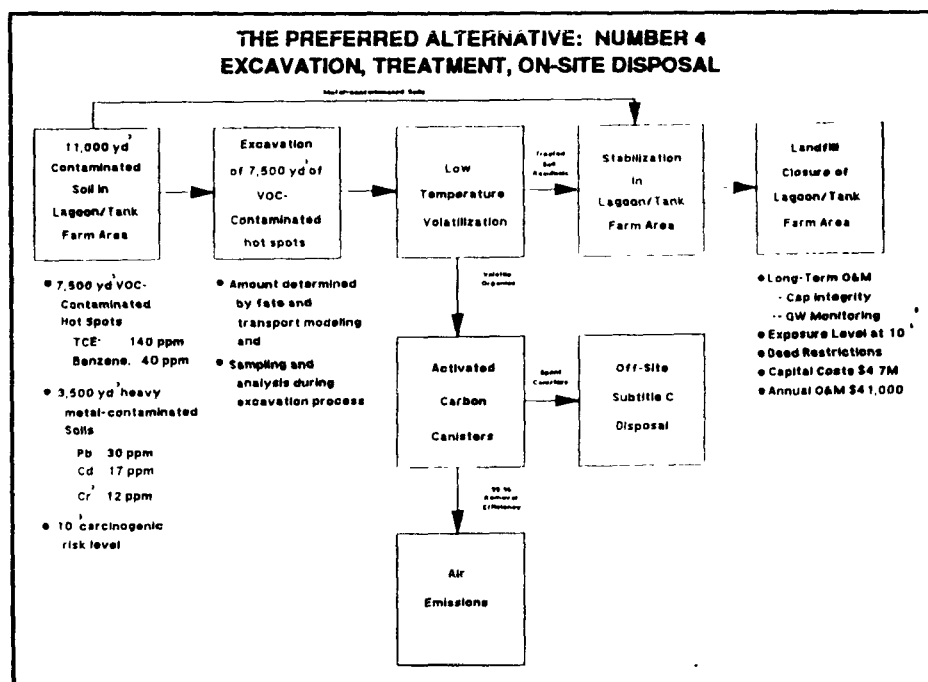
monitoring and maintenance of the tank farm and lagoon area would be eliminated.

### Alternative 4: EXCAVATION, VOLATILIZATION, STABILIZATION, AND DISPOSAL ON-SITE

**Capital Cost:** \$4,666,000\*  
**Annual O&M Costs:** \$41,000\*  
**PW:** \$5,050,150\*  
**Months to Implement:** 12-15\*

The 7,500 yd<sup>3</sup> of VOC-contaminated soils from the tank farm/lagoon area would be excavated. To remove the highly mobile VOCs, a low-temperature volatilization step would be inserted into the cleanup process between excavation and landfilling. Granular activated carbon (GAC) canisters would separate the volatile contaminants from the soils leaving only the less mobile organic and metal compounds in the soil to be landfilled on-site. Approximately 99 percent of the VOCs would be removed by this treatment process. The used carbon canisters would be shipped off-site to be regenerated.

The treated soils would then be returned to the lagoon/tank farm area and stabilized with the 3,500 yd<sup>3</sup> of metal-contaminated soils not excavated. The lagoon/tank farm area would be regraded and revegetated and capped in accordance with the relevant and appropriate requirements of RCRA landfill closure in 40 CFR §264.310.



\* All costs and implementation times are estimated.

## Alternative 5: EXCAVATION AND OFF-SITE THERMAL DESTRUCTION

*Capital Cost: \$39,056,421\**  
*Annual O&M Costs: \$26,200\**  
*PW: \$39,301,905\**  
*Months to Implement: 36 to 72\**

All 11,000 yd<sup>3</sup> of contaminated soils would be excavated, transported, and destroyed in an off-site thermal destruction unit. This thermal destruction process would address the VOCs in the soil; however, metals would remain in the ash and would require proper disposal. The excavation process would leave the site "clean," consistent with the relevant and appropriate requirements of RCRA closure, and requiring no long-term management controls. The off-site thermal

destruction unit would comply with technical standards for incinerators, which include having stack scrubbers and other recovery mechanisms to ensure that no untreated hazardous substances are released into the environment. The incinerator would destroy 99 percent of the VOCs in the contaminated soils. The resulting ash would be properly handled and disposed of by the operators of the thermal destruction unit. The RCRA facility must be in compliance with the Superfund off-site policy before waste could be transported there.

## Alternative 6: EXCAVATION, ON-SITE THERMAL DESTRUCTION, AND SOLIDIFICATION

*Capital Cost: \$42,463,300\**  
*Annual O&M Costs: \$26,200\**  
*PW: \$42,708,780\**  
*Months to Implement: 30\**

A mobile, thermal destruction unit would be brought to the site, and 11,000 yd<sup>3</sup> of contaminated soils would be excavated and destroyed on-site. This thermal destruction process would address the VOCs, but the metals in the soil would remain in the ash. The excavation and backfilling process would comply with the relevant and appropriate requirements of RCRA closure. The on-site thermal destruction unit would comply with technical standards for incinerators. Off-gases and scrubber wastes from the thermal destruction unit would be collected and disposed of. This incinerator would destroy 99 percent of the VOCs in the soil. Residual metals and ash would be solidified and disposed off-site in a RCRA Subtitle C facility.

*\*All costs and implementation times are estimated.*

## EVALUATION OF ALTERNATIVES

The preferred alternative for cleaning up the soils (the source control operable unit) at the EIO site is Alternative 4 – Excavation, Volatilization, Stabilization, and Disposal On-site. Based on current information, this alternative would appear to provide the best balance of trade-offs among the alterna-

tives with respect to nine criteria that EPA uses to evaluate alternatives. This section profiles the performance of the preferred alternative against the nine criteria, noting how it compares to the other options under consideration. A glossary of the evaluation criteria is noted below.

## Analysis

**Overall Protection.** All of the alternatives, with the exception of the "no action" alternative, would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment, engineering controls, or institutional controls. The preferred alternative would treat the volatile organic contaminants in the soils, stabilize the remaining wastes, and cap the remaining residuals to reduce the risks associated with direct contact, and minimize the migration of contamination from the ground water.

Because the "no action" alternative is not protective of human health and the environment, it is not considered further in this analysis as an option for this site.

**Compliance with ARARs.** All alternatives would meet their respective applicable or relevant and appropriate requirements of Federal and State environmental laws. Although the preferred alternative would involve the excavation and placement of waste, thus making the land disposal restrictions (LDR) potential ARARs, TCE-contaminated soil at this site is not a RCRA hazardous waste and therefore these requirements are not applicable. The U.S. EPA is undertaking an LDR rulemaking that will specifically apply to soil and debris. Until that rulemaking is completed, the CERCLA program will not consider the land disposal restrictions to be relevant and appropriate to soil and debris that does not contain RCRA-restricted wastes. All options would involve meeting the relevant and appropri-

## GLOSSARY OF EVALUATION CRITERIA

- **Overall Protection of Human Health and Environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment engineering controls or institutional controls.
- **Compliance with ARARs** addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.
- **Long-term effectiveness and permanence** refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.
- **Reduction of toxicity, mobility, or volume through treatment** is the anticipated performance of the treatment technologies that may be employed in a remedy.
- **Short-term effectiveness** refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.
- **Implementability** is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.
- **Cost** includes capital and operation and maintenance costs.
- **State Acceptance** indicates whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.
- **Community Acceptance** will be assessed in the Record of Decision following a review of the public comments received on the RI/FS report and the Proposed Plan.

ate RCRA closure requirements. No waiver from ARARs is necessary to implement any of the active cleanup options.

**Long-term effectiveness and permanence.** The preferred alternative would reduce the inherent hazards posed by the volatile organic compounds in the contaminated soils. The treated soils would still be contaminated with other organic and metal compounds; however, the long-term risks of exposure to the remaining contaminants in the soils would be reduced by stabilizing and sealing the soils in the capped area, which would prevent migration of the contaminants to ground water, surface water, air, and other soils. A ground-water monitoring system would be installed around the lagoon/tank farm area to assess the effectiveness of the treatment and disposal in the closed area.

Alternatives 5 and 6 would permanently destroy most of the organic soil contamination (TCE, PAHs). The ash generated by the thermal destruction units, however, would be contaminated by those metal compounds not destroyed by this process. Under Alternative 5, the ash would be disposed of in an off-site landfill to protect against risks of future human contact. Under Alternative 6, the contaminated ash would be solidified to prevent the possibility of human contact. The solidified waste would be stored in a newly constructed on-site RCRA Subtitle C landfill.

Alternative 6 would remove all waste to a permitted, off-site landfill, thereby eliminating the long-term risks of exposure at the EIO site. As with all landfills, the long-term effectiveness of the containment system may need to be retrofitted or replaced. While the off-site disposal option eliminates on-site risks, off-site disposal without treatment is the least preferred option under CERCLA.

The cap that would be implemented in Alternative 2 would provide long-term reductions in the amount of water that otherwise would pass through the contaminated soils. This would reduce the generation of contaminated leachate that could migrate to the groundwater. Because the highly-mobile VOCs will not be treated, the contaminated soils that constitute a principal threat would remain at the site and would pose potential long-term risks of exposure. The cap's effectiveness would be evaluated through long-term monitoring. The cap would require long-term maintenance, and portions of it might need to be replaced in the future.

**Reduction of Toxicity, Mobility, or Volume of the Contaminants Through Treatment.** Only three of the alternatives would treat the wastes to reduce the toxicity, mobility, or volume of the organics. Alternative 4 would involve treatment of the most mobile contaminants, the volatile organic compounds. The treated soils would still be contaminated with less-mobile organic and metal compounds. These soils would be stabilized with the metal-contaminated soils in the lagoon/tank farm area and the area would then be capped.

Alternatives 5 and 6 both would involve incineration processes that would permanently destroy the organic contaminants. The contaminated ash would be disposed of in a RCRA landfill. Alternatives 2 and 3 achieve no reduction in toxicity, mobility, or volume.

**Short-term effectiveness.** Alternative 4 would contain the treated soils and reduce the possibility of direct human contact with contaminants in the least amount of time, compared with the other alternatives, except Alternative 2 (i.e.,

capping). Under the preferred alternative, once the volatile organic compounds have been collected in canisters, there is some minor, short-term risk of exposure to the community during transportation of the canisters to a treatment facility. All of the alternatives that include excavation would pose some short-term risks of exposure to VOCs during the excavation process.

Because the capacity of on-site and off-site thermal destruction units is limited, under Alternatives 5 and 6, contaminated soils would be stockpiled for up to six years. Under these two alternatives, the risks of direct contact with stockpiled, contaminated soils would be increased until incineration has been completed because of dust. In addition, there are some risks of exposure to air emissions from the incinerators and the piles.

**Implementability.** Alternatives 2, 3, and 4 have few associated administrative difficulties that could delay implementation. The remedies have been used successfully to address similar contaminants at other Superfund sites, and the skilled workers needed to construct the remedies are readily available in the area. The long-term monitoring that would be required to establish the continued viability of the preferred alternative would be less extensive than would be necessary for Alternative 2. The activated carbon canisters that are part of the vaporization step used in the preferred alternative are available in the area. In contrast, there is uncertainty about the availability of adequate capacity at an off-site incinerator. This could lead to delays of up to six years in implementing Alternative 5. Because there is only one mobile incinerator that could be used at the site, the implementation of Alternative 6 may take over two years to complete.

## THE COMMUNITY'S ROLE IN THE SELECTION PROCESS

EPA solicits input from the community on the cleanup methods proposed for each Superfund response action. EPA has set a public comment period from October 3 through November 5, 1988, to encourage public participation in the selection process. The comment period includes two public meetings at which EPA, with the TPCB, will present the RI/FS Report and Proposed Plan, answer questions, and accept both oral and written comments.

A public meeting is scheduled for 7:30 p.m., October 2, 1988, and will be held at the Nameless Community Hall, 123 Market Road, in Nameless, TN.

Comments will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision (ROD). The ROD is the document that presents EPA's final selection for cleanup. To send written comments or obtain further information, contact:

Jane Doe  
Community Relations Coordinator,  
U.S. Environmental Protection Agency  
123 Peachtree Street, Atlanta, GA 00000  
(555) 555-4640. Toll-free 1 (800) 333-1515  
between 8:30 a.m. and 4:30 p.m. (Monday - Friday)

**Cost.** The present-worth cost of the preferred alternative is \$5,050,150. The lowest-cost alternative is Alternative 2 at \$910,260. The highest-cost alternative is Alternative 6 at \$42,708,780. Alternative 3 has a present-worth cost of \$18,433,480 and Alternative 5 has a cost of \$39,301,905.

**State acceptance.** The State of Tennessee supports the preferred alternative without comment.

**Community Acceptance.** Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision for the site.

## SUMMARY OF THE PREFERRED ALTERNATIVE

In summary, Alternative 4 would achieve substantial risk reduction through treatment of the principal threat remaining at the site (i.e., the mobile lagoon waste) and by providing for the safe management of other material that will remain at the site. Alternative 4 achieves this risk reduction more quickly and at substantially less cost than any of the other treatment options. Therefore, the preferred alternative is believed to provide the best balance of trade-offs among

alternatives with respect to the evaluation criteria. Based on the information available at this time, EPA and the State of Tennessee believe the preferred alternative would be protective of human health and the environment, would comply with ARARs, would be cost effective, and would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Because it would treat the VOC contaminants in the soil, the remedy also would meet the statutory preference for the use of a remedy that involves treatment as a principal element.

## THE WORD NOTEBOOK

Specialized terms used elsewhere in this Proposed Plan are defined below.

**activated carbon canisters (ACCs)** -- a treatment system in which contaminants are removed from air as it passes through canisters containing activated carbon.

**Applicable or Relevant and Appropriate Requirements (ARARs)** -- the Federal and State requirements that a selected remedy will attain. These requirements may vary among sites and alternatives.

**chlorinated aliphatic hydrocarbons (CAHs)** -- organic compounds composed of carbon, hydrogen, and chlorine that may vaporize easily. Those CAHs typically found at hazardous waste sites have been used as degreasers and solvents. Some CAHs can cause cancer, and some depress the central nervous system. Trichloroethylene (TCE) is a CAH.

**contaminant plume** -- A column of contamination with measurable horizontal and vertical dimensions that is suspended in and moves with ground water.

**ground water** -- underground water that fills pores in soils or openings in rocks to the point of saturation. Unlike surface water, ground water cannot clean itself by exposure to sun or filtration. Ground water is often used as a source of drinking water via municipal or domestic wells.

**leachate** -- a liquid that has passed through wastes and contains some components of the wastes.

**lead** -- an element that is used in the manufacture of batteries and pigments. It is also still added to some types of gasoline to improve octane ratings. Exposure to low levels of lead over long periods can cause brain, bone, and neurological damage. It also can cause learning disabilities in children.

**monitoring** -- ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action. Monitoring wells drilled at different levels at the EIO Industrial site would be used to detect any leaks in the landfill liners.

**organic compounds** -- carbon compounds, such as solvents, oils, and pesticides, none of which tend to dissolve readily in water. Some organic compounds can cause cancer.

**polynuclear aromatic hydrocarbons (PAHs)** -- organic chemical compounds that are composed of carbon and hydrogen, including materials such as oil, pesticides, and solvents. Some PAHs are carcinogenic.

**revegetate** -- to replace topsoil, seed, and mulch on prepared soil to prevent wind and water erosion.

**source control** -- a remedy that addresses contamination problems at their source, rather than at some other point along the chain of exposure. At the EIO Industrial site, for example, the source of potential ground-water and air contamination is lodged in the soils at the site.

**solidification** -- a process used to reduce the mobility of contaminants by mixing the waste with a material such as cement kiln dust. Solidification allows for improved handling of the waste and makes the contaminants less likely to leach.

**thermal destruction** -- high temperature burning of materials to destroy hazardous compounds.

**volatile organic compounds (VOCs)** -- organic compounds that vaporize easily. Some VOCs have been shown to cause leukemia; some are toxic to the kidney and liver; and some depress the central nervous system, causing drowsiness.

## MAILING LIST

If you did not receive this Proposed Plan in the mail and wish to be placed on the mailing list for future publications pertaining to this site, please fill out, detach, and mail this form to:

Jane Doe  
Community Relations Coordinator  
U.S. Environmental Protection Agency  
123 Peachtree Street  
Atlanta, GA 00000

Name \_\_\_\_\_

Address \_\_\_\_\_

Affiliation \_\_\_\_\_

Phone (     ) \_\_\_\_\_

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## APPENDIX B

### WORKSHEETS FOR THE SUMMARY COMPARATIVE ANALYSIS OF ALTERNATIVES

This appendix includes worksheets (Exhibit B-2) that could be used to assist in preparing the "Evaluation of Alternatives" section of the Proposed Plan and the "Comparative Analysis of Alternatives" section of the ROD. These worksheets are optional tools.\* Worksheets are included for each of the nine evaluation criteria. Separate formats have been developed for the two threshold criteria, the five balancing criteria, and the two modifying considerations.\*\* In general, each worksheet includes: the relevant questions that should be addressed under each criterion; space for listing each alternative; and additional space for notes. The first Exhibit B-1, is an example of a completed comparative analysis worksheet for the primary balancing criterion long-term effectiveness and permanence. The last exhibit in this appendix, B-3, presents a format for summarizing the results of the comparative analysis for the ROD.

In preparing the Proposed Plan, these worksheets could be used to outline how all alternatives compare to the preferred alternative. In preparing the ROD, the worksheets can assist in identifying the most significant advantages and disadvantages among alternatives. This will facilitate a logical presentation of the comparative analysis in which alternatives are discussed under each individual criterion, beginning with the alternative that performs best in that category and continuing through the other options in sequence. The individual notes and summary exhibit at the end of this Appendix may also prove a useful tool for briefing the Regional Administrator or the State Director on the findings in support of the Proposed Plan or the ROD.

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\* If they are used, the worksheets should not be included in the administrative record file.

\*\* The two threshold criteria are overall protection of human health and the environment and compliance with ARARs. The five balancing criteria are: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost. The two modifying considerations are state/support agency acceptance and community acceptance.

## EXHIBIT B-1 EXAMPLE OF A COMPLETED COMPARATIVE ANALYSIS WORKSHEET

CRITERION: Long-term Effectiveness and Permanence

Analysis Factor	Specific Factor Considerations
Magnitude of residual risks	<ul style="list-style-type: none"> <li>o What is the magnitude of the remaining risks?</li> <li>o What remaining sources of risk can be identified? How much is due to treatment residuals, and how much is due to untreated residual contamination?</li> <li>o Will a five-year review be required?</li> </ul>
Adequacy and reliability of controls	<ul style="list-style-type: none"> <li>o What is the likelihood that the technologies will meet required process efficiencies or performance specifications?</li> <li>o What type and degree of long-term management is required?</li> <li>o What are the requirements for long-term monitoring?</li> <li>o What operation and maintenance functions must be performed?</li> <li>o What difficulties and uncertainties may be associated with long-term operation and maintenance?</li> <li>o What is the potential need for replacement of technical components?</li> <li>o What is the magnitude of the threats or risks should the remedial action need replacement?</li> <li>o What is the degree of confidence that controls can adequately handle potential problems?</li> <li>o What are the uncertainties associated with land disposal of residuals and untreated wastes?</li> </ul>

ALTERNATIVE	NOTES
1. Incineration of TCE-contaminated Soil, Ground-Water Pump and Treat, In-situ Fixation of Lead-contaminated Soil, Cap	<ul style="list-style-type: none"> <li>- Risks of direct contact eliminated.</li> <li>- Current and future risks from ground-water ingestion reduced to <math>10^{-6}</math>.</li> <li>- If metals are present, ash will be disposed in RCRA landfill.</li> <li>- O&amp;M required for ground-water treatment and cap. Failure of cap would have little effect because soil would be fixed.</li> </ul>
2. In-situ Soil Vapor Extraction of TCE-contaminated Soil, In-situ Fixation of Lead-contaminated Soil, Cap, Ground-Water Pump and Treat	<ul style="list-style-type: none"> <li>- Current and future risk of direct contact eliminated. Current and future risk from ingestion of contaminated ground water reduced to <math>10^{-6}</math>.</li> <li>- May need additional controls if fixation process does not meet performance specifications.</li> <li>- O&amp;M needed for cap and ground-water controls. Failure of cap would have little effect on ground water because of soil fixation, although direct contact may be a concern.</li> </ul>



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## EXHIBIT B-1 (continued)

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**CRITERION:** Long-term Effectiveness and Permanence

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|---|--|
| 3. In-situ Soil Vapor Extraction of TCE-contaminated Soil, Cap of Lead-contaminated Soil, Ground-Water Pump and Treat | <ul style="list-style-type: none"><li>- Risk of direct contact with soil is controlled. Inherent hazards of of TCE-contaminated material reduced to health-based levels. Current and future risk of exposure to ground water reduced to <math>10^{-6}</math> cancer risk level.</li><li>- May need additional controls if metals are present in the TCE-contaminated area because vapor extraction would not remove metals. Such as yet unidentified metals could leach to ground water.</li><li>- O&amp;M required for ground-water treatment for 25-40 years. Long-term maintenance of cap required. Potential failure of cap would result in longer ground-water restoration timeframe.</li></ul> |
| 4. Cap of TCE- and Lead-contaminated Soils, Natural Attenuation of Ground Water                                       | <ul style="list-style-type: none"><li>- Risks of direct contact eliminated as long as cap maintained. However, inherent hazard of waste remains. There is a potential for cap to fail. Cap will need maintenance and replacement in future.</li><li>- Current risk of exposure from ground-water ingestion eliminated by providing alternative water supply. Institutional controls used to control future use of ground water.</li><li>- Potential failure of institutional controls may result in exposure to contaminated ground water during attenuation period.</li></ul>   |
| 5. No Action  | <ul style="list-style-type: none"><li>- Existing risk remains. Future risk greater as plume migrates to residents. Eventually natural attenuation may decrease risk.</li><li>- No controls over remaining contamination. No long-term management employed.</li></ul>   |

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**EXHIBIT B-2**  
**WORKSHEET FOR THE SUMMARY**  
**COMPARATIVE ANALYSIS OF ALTERNATIVES**

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**THRESHOLD CRITERION:** Overall Protection of Human Health and the Environment

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**QUESTIONS TO ADDRESS:**

- o How does the remedy eliminate, reduce or control risks posed through each pathway through treatment, engineering controls, or institutional controls?
- o Are there any unacceptable short-term or cross-media impacts associated with the remedy?
- o For carcinogens, will exposure levels be brought within the risk range?

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**ALTERNATIVE**

**NOTES**

**PROVIDES  
ADEQUATE  
PROTECTION?  
(Y/N)**

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## EXHIBIT B-2 (continued)

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**THRESHOLD CRITERION:** Overall Protection of Human Health and the Environment

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**ALTERNATIVE**

**NOTES**

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## EXHIBIT B-2 (continued)

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**THRESHOLD CRITERION:** Compliance with ARARs

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**QUESTIONS TO ADDRESS:**

- o Compiles with chemical-specific, location-specific, or action-specific ARARs?
- o If necessary, can a waiver be justified?
- o Compliance with other guidance, criteria, or advisories lead and support agencies have agreed are "to be considered" for the action.

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**ALTERNATIVE**

**NOTES**

**ATTAINS ARARs?  
(Y/N)**

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## EXHIBIT B-2 (continued)

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**THRESHOLD CRITERION:** Compliance with ARARs

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**ALTERNATIVE**

**NOTES**

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## EXHIBIT B-2 (continued)

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PRIMARY BALANCING CRITERION: Long-term Effectiveness and Permanence

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Analysis Factor	Specific Factor Considerations
Magnitude of residual risks	<ul style="list-style-type: none"><li>o What is the magnitude of the remaining risks?</li><li>o What remaining sources of risk can be identified? How much is due to treatment residuals, and how much is due to untreated residual contamination?</li><li>o Will a 5-year review be required?</li></ul>
Adequacy and reliability of controls	<ul style="list-style-type: none"><li>o What is the likelihood that the technologies will meet required process efficiencies or performance specifications?</li><li>o What type and degree of long-term management is required?</li><li>o What are the requirements for long-term monitoring?</li><li>o What operation and maintenance functions must be performed?</li><li>o What difficulties and uncertainties may be associated with long-term operation and maintenance?</li><li>o What is the potential need for replacement of technical components?</li><li>o What is the magnitude of the threats or risks should the remedial action need replacement?</li><li>o What is the degree of confidence that controls can adequately handle potential problems?</li><li>o What are the uncertainties associated with land disposal of residuals and untreated wastes?</li></ul>

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ALTERNATIVE

NOTES

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## EXHIBIT B-2 (continued)

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**PRIMARY BALANCING CRITERION:** Long-term Effectiveness and Permanence

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**ALTERNATIVE**

**NOTES**

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## EXHIBIT B-2 (continued)

**PRIMARY BALANCING CRITERION:** Reduction of Toxicity, Mobility, or Volume Through Treatment

Analysis Factor	Specific Factor Considerations	
Treatment process and remedy	o	Does the treatment process employed address the principal threats?
	o	Are there any special requirements for the treatment process?
Amount of hazardous material destroyed or treated	o	What portion (mass, volume) of contaminated material is destroyed?
	o	What portion (mass, volume) of contaminated material is treated?
Reduction in toxicity, mobility, or volume	o	To what extent is the total mass of toxic contaminants reduced?
	o	To what extent is the mobility of toxic contaminants reduced?
	o	To what extent is the volume of toxic contaminants reduced?
Irreversibility of the treatment	o	To what extent are the effects of treatment irreversible?
Type and quantity of treatment residual	o	What residuals remain?
	o	What are their quantities and characteristics?
	o	What risks do treatment residuals pose?
Statutory preference for treatment as a principal element	o	Are principal threats within the scope of the action?
	o	Is treatment used to reduce inherent hazards posed by principal threats at the site?

ALTERNATIVE

NOTES



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## EXHIBIT B-2 (continued)

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**PRIMARY BALANCING CRITERION:** Reduction of Toxicity, Mobility, or Volume Through Treatment

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**ALTERNATIVE**

**NOTES**

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## EXHIBIT B-2 (continued)

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PRIMARY BALANCING CRITERION: Short-term Effectiveness

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Analysis Factor	Specific Factor Considerations
Protection of community during remedial actions	<ul style="list-style-type: none"><li>o What are the risks to the community that must be addressed?</li><li>o How will the risks to the community be addressed and mitigated?</li><li>o What risks remain to the community that cannot be readily controlled?</li></ul>
Protection of workers during remedial actions	<ul style="list-style-type: none"><li>o What are the risks to the workers that must be addressed?</li><li>o What risks remain to the workers that cannot be readily controlled?</li><li>o How will the risks to the workers be addressed and mitigated?</li></ul>
Environmental impacts	<ul style="list-style-type: none"><li>o What environmental impacts are expected with the construction and implementation of the alternative?</li><li>o What are the available mitigation measures to be used and what is their reliability to minimize potential impacts?</li><li>o What are the impacts that cannot be avoided should the alternative be implemented?</li></ul>
Time until remedial response objectives are achieved	<ul style="list-style-type: none"><li>o How long until protection against the threats being addressed by the specific action is achieved?</li><li>o How long until any remaining site threats will be addressed?</li><li>o How long until remedial response objectives are achieved?</li></ul>

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ALTERNATIVE

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## EXHIBIT B-2 (continued)

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PRIMARY BALANCING CRITERION: Short-term Effectiveness

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ALTERNATIVE	NOTES
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## EXHIBIT B-2 (continued)

**PRIMARY BALANCING CRITERION:** Implementability - Technical Feasibility

Analysis Factor		Specific Factor Considerations
<b>Technical Feasibility</b>		
Ability to construct and operate technology	o	What difficulties may be associated with construction?
	o	What uncertainties are related to construction?
Reliability of technology	o	What is the likelihood that technical problems will lead to schedule delays?
Ease of undertaking additional remedial action, if necessary	o	What likely future remedial actions may be anticipated?
	o	How difficult would it be to implement the additional remedial actions, if required?
Monitoring considerations	o	Do migration or exposure pathways exist that cannot be monitored adequately?
	o	What risks of exposure exist should monitoring be insufficient to detect failure?

**ALTERNATIVE**

**NOTES**

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## EXHIBIT B-2 (continued)

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PRIMARY BALANCING CRITERION: Implementability - Administrative Feasibility

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Analysis Factor	Specific Factor Considerations
<u>Administrative Feasibility</u>	
Coordination with other agencies	o What steps are required to coordinate with other agencies?
	o What steps are required to set up long-term or future coordination among agencies?
	o Can permits for offsite activities be obtained if required?

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ALTERNATIVE

NOTES

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## EXHIBIT B-2 (continued)

**PRIMARY BALANCING CRITERION:** Implementability - Availability of Service and Materials

Analysis Factor	Specific Factor Considerations
<b>Availability of Services and Materials</b>	
Availability of treatment, storage capacity, and disposal services	o Are adequate treatment, storage capacity, and disposal services available?
	o How much additional capacity is necessary?
	o Does the lack of capacity prevent implementation?
	o What additional provisions are required to ensure the needed additional capacity?
Availability of necessary equipment and specialists	o Are the necessary equipment and specialists available?
	o What additional equipment and specialists are required?
	o Does the lack of equipment and specialists prevent implementation?
	o What additional provisions are required to ensure the needed equipment and specialists?
Availability of prospective technologies	o Are technologies under consideration generally available and sufficiently demonstrated for the specific application?
	o Will technologies require further development before they can be applied full-scale to the type of waste at the site?
	o When should the technology be available for full-scale use?
	o Will more than one vendor be available to provide a competitive bid?

**ALTERNATIVE**

**NOTES**

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**EXHIBIT B-2 (continued)**

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**PRIMARY BALANCING CRITERION:** Cost

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<p><b>QUESTIONS TO ADDRESS:</b></p> <ul style="list-style-type: none"><li>o What are the estimated capital and operation and maintenance costs?</li></ul>
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ALTERNATIVE	NOTES
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**EXHIBIT B-2 (continued)**

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PRIMARY BALANCING CRITERION: Cost

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ALTERNATIVE	NOTES
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## EXHIBIT B-2 (continued)

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**MODIFYING CRITERION:** State/Support Agency Acceptance

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**QUESTIONS TO ADDRESS:**

- c Does the State or Support Agency concur on the selected remedy?

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ALTERNATIVE	NOTES
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## EXHIBIT B-2 (continued)

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**MODIFYING CRITERION:** State/Support Agency Acceptance

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Alternative	Notes
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## EXHIBIT B-2 (continued)

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**MODIFYING CRITERION:** Community Acceptance

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<p><b>QUESTIONS TO ADDRESS:</b></p>
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| <ul style="list-style-type: none"><li>o Does the community accept the alternative?</li></ul> |
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ALTERNATIVE	NOTES
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**EXHIBIT B-2 (continued)**

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**MODIFYING CRITERION:** Community Acceptance

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ALTERNATIVE	NOTES
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# SUMMARY OF EVALUATION WORKSHEET

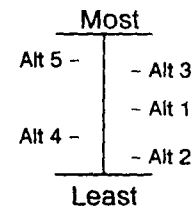
## CRITERION

## ALTERNATIVES

The exhibit below summarizes the relative ranking of the alternatives in terms of the primary balancing criteria. For purposes of clear, consistent presentation, the alternatives can be discussed in order of most to least in the "Comparative Analysis" section of the ROD.

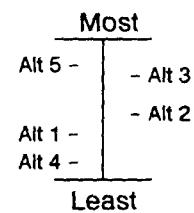
1) Long-term Effectiveness and Permanence

1)



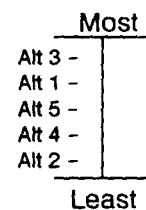
2) Reduction of Toxicity, Mobility, and Volume Through Treatment

2)



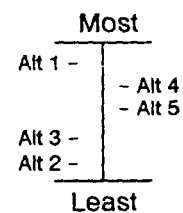
3) Implementability

3)



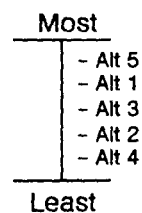
4) Short-term Effectiveness

4)



5) Cost

5)



## **APPENDIX C**

- **Sample Description of an Alternative**
- **Sample Summary of Site Risks  
Table**

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## APPENDIX C

### EXHIBIT C-1

#### SAMPLE DESCRIPTION OF A REMEDIAL ALTERNATIVE

The sample below describes a remedial alternative with approximately 11,000 cubic yards of contaminated soil in a former lagoon/tank farm area. Approximately 3,500 cubic yards of the soil are contaminated with heavy metals, with average concentrations of cadmium at 17 parts per million (ppm), chromium at 12 ppm, and lead at 30 ppm. Hot spots of volatile organic compounds (VOCs) also are present in approximately 7,500 cubic yards of the soils, including TCE at 140 ppm and benzene at 40 ppm. These levels in the soil pose a cumulative carcinogenic risk level of  $10^{-3}$ .

**Alternative 3: Excavation, Thermal Destruction of Contaminated Soils, Stabilization, and On-site Disposal of Residuals**

**Major Components of the Remedial Alternative.** The major features of this alternative include excavation of 7,500 cubic yards of VOC-contaminated soil from hot spots in the lagoon/tank farm area, on-site thermal destruction of the VOC-contaminated soil, stabilization of the treated residuals with metal-contaminated soils remaining in the lagoon/tank farm area, and landfill closure of the lagoon/tank farm area.

The amount of VOC-contaminated soil to be excavated in the lagoon/tank farm area was determined using fate and transport modeling to estimate the potential ground-water contamination that could result from the migration of soil contaminants remaining in the lagoon/tank farm area. The VOC-contaminated soils would be treated on-site in accordance with RCRA Subpart O standards using a thermal destruction unit. The specific type of process (e.g., rotary kiln) would be determined in the Remedial Design phase through engineering design and analysis and the competitive bidding process. The unit would be mobilized, operated, and closed according to the requirements of RCRA Subpart O, 40 CFR 264.340. These requirements, though not applicable because the hazardous substances to be treated are neither RCRA-listed nor RCRA-characteristic waste, have been determined to be relevant and appropriate. Specific operating practices necessary to meet the performance objectives, including a 99.99 percent destruction and removal efficiency (DRE) of stack emissions as required by Subpart O of RCRA, would be determined through a trial burn at the site after the installation of the thermal destruction unit. Although this alternative involves the excavation and placement of hazardous substances, those substances are not RCRA-regulated waste; therefore, the RCRA land disposal restrictions are not applicable requirements. EPA is undertaking a Land Disposal Restriction (LDR) rulemaking that will specifically apply to soil and debris. Until that rulemaking is completed, the CERCLA program will not consider LDRs to be relevant and appropriate to soil and debris that do not contain RCRA-regulated wastes.

**EXHIBIT C-1 (Continued)**

**Management of Residuals.** The thermal destruction unit would be equipped with an appropriate dry emission control system, which would eliminate the need for wastewater treatment. Any water from emission control and from decontamination procedures would be treated in an on-site ground-water treatment system, which is already operating as part of a previous operable unit at the site.

The residual ash and treated soils would be stabilized with the heavy metal contaminated soils in the lagoon/tank farm area. This 10-acre area would be capped and closed as a landfill in accordance with the requirements specified in 40 CFR 264.310 for landfill closure, which require a cap to have a permeability less than or equal to the permeability of the natural underlying soil. Because the facility ceased operation in August 1978 prior to the effective date of RCRA (November 19, 1980) and the remedy does not involve the disposal of RCRA-regulated waste, the RCRA Subtitle C closure standards are not applicable to the tank farm. However, the standards have been determined to be relevant and appropriate to the type of wastes being managed and the circumstances of the release. Closure of the area also will comply with the State's more stringent RCRA requirements.

The cap would be designed and constructed to promote drainage, minimize erosion of the cover, and provide long-term minimization of migration of liquids through the underlying contaminated soils. Consistent with the requirements of RCRA 264.117, long-term operation and maintenance (O&M) would be conducted to monitor the ground water around the landfill and to ensure the integrity of the cap. The RCRA minimum technology requirements are not ARARs because the stabilized soils would not be placed in a new RCRA unit, a lateral expansion of an existing unit, or a replacement unit.

At the completion of the remedial action, health risks posed by direct contact with soils would be no greater than  $1 \times 10^{-6}$ . Meeting this target cleanup level for TCE-contaminated soil would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is \$14,666,000, with annual O&M costs estimated to be \$14,400. The estimated time to implement this remedy and to meet the cleanup goals is approximately 34 months.



## APPENDIX C

### EXHIBIT C-2

SAMPLE SUMMARY OF SITE RISKS  
BASED ON CURRENT LAND-USE\*

Total Exposure Point	Exposure Pathway	Chemical of Concern	Chronic Daily Intake (CDI) (mg/kg-day)	Cancer		Noncancer	
				CPF (mg/kg-day) <sup>-1</sup>	Risk (CDI x CPF)	RfD (mg/kg-day)	Hazard Index (CDI/ RfD)
Nearby Residential Population	(1) Ground-water Ingestion (wells)	Benzene	0.00025	0.052	1 x 10 <sup>-5</sup>	0.002	0.1
		Lead	0.00015	-	-	0.00043	0.3
		Chlordane	0.00008	1.61	1 x 10 <sup>-4</sup>		
	PATHWAY TOTAL				1 x 10 <sup>-4</sup>		0.4
	(2) Home Grown Produce Ingestion	MEK	0.0009	-	-	0.008	0.1
		Lead	0.000035	-	-	0.00043	0.08
		Chlordane	0.00015	1.61	2 x 10 <sup>-4</sup>		
	PATHWAY TOTAL				2 x 10 <sup>-4</sup>		0.2
	TOTAL FOR NEARBY RESIDENTIAL POPULATION				3 x 10 <sup>-4</sup>		0.6
	Distant Public Water Supply Users	(1) Ground-water Ingestion	[Table should continue for each total exposure point, pathway of exposure, and chemical of concern.]				

\* Values for illustration only.

CPF = Cancer Potency Factor.

RfD = Reference Dose.

MEK = Methyl ethyl ketone.

## **APPENDIX D**

### **Sample Selected Remedy and Statutory Determinations Discussion for the ROD**

#### **THE SELECTED REMEDY**

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, both EPA and the State have determined that **Alternative 9: Excavation, Volatilization, Stabilization, and On-site Disposal** is the most appropriate remedy for the **EIO Industrial Site in Nameless, TN.**

Seventy-five hundred cubic yards of volatile organic compound (VOC)-contaminated soil hotspots will be excavated from the lagoon/tank farm area. The VOCs in the soil will be treated using a volatilization technology. Approximately 99 percent of the VOCs will be removed by this treatment process. The treated soils will be returned to the lagoon/tank farm area and stabilized with the estimated 3,500 cubic yards of metal-contaminated soils not excavated from that area. The lagoon/tank farm area will be regraded, revegetated, and capped in accordance with Federal and State requirements for RCRA landfill closure.

#### **Remediation Goals**

The purpose of this response action is to control risks posed by direct contact with soils and to minimize migration of VOCs to ground water. Existing conditions at the site have been determined to pose an excess lifetime cancer risk of  $10^{-3}$  from direct contact with contaminated soils and ingestions of contaminated ground water. This risk relates to the VOC concentrations (primarily TCE) in soil which average 140 mg/kg. This remedy will address all soils contaminated with VOCs in excess of 5 ppm. VOC contamination remaining in soils at 14 mg/kg corresponds to an excess lifetime cancer risk of  $10^{-6}$  through each route of exposure. Since no Federal or State ARARs exist for soil, the action level for the VOCs in soil was determined through a site-specific analysis. This analysis used fate and transport modeling to determine levels to which VOCs in soils should be reduced in order to ensure no leaching of contaminants to ground water above MCL levels

(5 mg/kg). Levels protective of ground water will also ensure protection from exposure through direct contact to soils above a  $10^{-5}$  excess cancer risk.

The excavated VOC-contaminated soils will be treated using low-temperature volatilization that will remove 99 percent of the VOCs from the soil. The granular activated carbon canisters used to capture the VOCs will be shipped offsite to be regenerated.

The treated soil, which will still contain less mobile organic compounds and metals, will be combined with the 3,500 cubic yards of metal-contaminated soils not excavated. This material will be stabilized and then covered with an impermeable cap.

## **STATUTORY DETERMINATIONS**

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

### **Protection of Human Health and the Environment**

The selected remedy protects human health and the environment through volatilization of VOC-contaminated soil, stabilization of the treated soil with the metal-contaminated soil, and capping the stabilized soils in the lagoon/tank farm area. The area will be capped and closed in accordance with RCRA landfill closure requirements to reduce the likelihood of contaminant migration.

Volatilization of the VOC-contaminated soil also will eliminate the threat of exposure to the most mobile contaminants from direct contact with or ingestion of contaminated soil. The current risks associated with these exposure pathways is  $3.5 \times 10^{-3}$ . By excavating the hotspots of contaminated soil and treating them in a volatilization unit, the cancer risks from exposure will be reduced to less than  $2.7 \times 10^{-6}$ . This level is within the range of acceptable exposure levels of between  $10^{-4}$  and  $10^{-7}$ . By stabilizing the residuals and the unexcavated metal-contaminated soils and closing the lagoon/tank farm area as a landfill, the risks of exposure through direct contact will be further reduced. There are no short-term threats associated with the selected remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the remedy.

### **Compliance With Applicable or Relevant and Appropriate Requirements**

The selected remedy of excavation, on-site thermal treatment, and stabilization will comply with all applicable or relevant and appropriate chemical-, action-, and location-specific requirements (ARARs). The ARARs are presented below.

#### **Action-specific ARARs:**

RCRA requirements for landfill closure in 40 CFR 264.111 Subpart G, which specify a cap with a permeability less than or equal to the permeability of any bottom liner or natural sub-soils present at the site.

40 CFR 264.117(a)(1) Subpart G Post-Closure and Monitoring requirements for thirty years or another period determined by the Regional Administrator.

Rules 4-2, 4-3, and 5-3 of the State Regulations for Control and Abatement of Air Pollution that affect actions that generate air emissions and odors.

#### **Chemical-specific ARARs:**

None

**Location-specific ARARs:**

None

**Other Criteria, Advisories or Guidance To Be Considered for This Remedial Action (TBCs)**

EPA and the State have agreed to incorporate a non-promulgated local deed restriction to prohibit excavation at the site after the remedial action is complete.

**Cost-Effectiveness**

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportional to its costs, the net present worth value being \$5,050,154. The estimated costs of the selected remedy are within an order of magnitude of (less than five times) the costs associated with on-site capping of the contaminated soils, and yet the selected remedy assures a much higher degree of certainty that the remedy will be effective in the long-term due to the significant reduction of the toxicity and mobility of the wastes achieved through volatilization of the VOCs and stabilization of the metal-contaminated soils prior to capping. While the selected remedy effectively reduces the hazards posed by all of the contaminants at the site, its costs are only 12 percent of the alternatives involving incineration.

**Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable**

EPA and the State of Tennessee have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final source control operable unit at the EIO site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA and the State have determined that this selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, cost, also considering the statutory preference for treatment as a principal element and considering State and community acceptance.

While the selected remedy does not offer as high a degree of long-term effectiveness and permanence as the incineration alternatives, it will significantly reduce the inherent hazards posed by the contaminated soils through volatilization of the VOCs and stabilization of the metals such that the residual material that remains to be managed can be contained with a high degree of certainty over the long term. Since the remaining material will be bound up, the impact on human health and the environment would be minimal if the containment system were to fail. Additionally, the incineration options, while resulting in fewer residuals requiring long-term management, would nonetheless involving capping of the metal-contaminated ash.

The selected remedy treats the principal threats posed by the soils, achieving significant VOCs reductions (99 percent) only slightly less effective than incineration. The selected remedy is more effective than all other treatment options in the short-term, requiring only 12-15 months to implement as compared to the six years potentially required for incineration. The implementability of the selected remedy is comparable to the nontreatment alternatives and significantly better than the incineration options. The selected remedy is also the least costly treatment option and also less expensive than off-site disposal.

The selection of treatment of the contaminated soil is consistent with program expectations that indicate that highly toxic and mobile waste are a priority for treatment and often necessary to ensure the long-term effectiveness of a remedy. Since all three treatment options are reasonably comparable with respect to long-term effectiveness and the toxicity and mobility reductions achieved, the major tradeoffs that provide the basis for this selection decision are short-term effectiveness, implementability, and cost. The selected remedy can be implemented more quickly, with less difficulty and at less cost than the other treatment alternatives and is therefore determined to be the most appropriate solution for the contaminated soils at the EIO site.

### **Preference for Treatment as a Principal Element**

By treating the VOC-contaminated soils in a thermal destruction unit and stabilizing the residuals with the metal-contaminated soils, the selected remedy addresses one of the principal threats posed by the site through the use of treatment technologies. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

document this response in the administrative record. The types of information typically received from the public and support agency are described in the next section, along with the lead agency's obligation to respond to this information.

#### **8.4 STANDARDS FOR CONSIDERATION OF INFORMATION SUBMITTED BY THE PUBLIC, PRPs, OR SUPPORT AGENCY**

EPA recommends a four-part standard for determining which comments submitted by the public or support agency after the ROD is signed warrant formal consideration.<sup>1</sup> Formal consideration, as specified in the proposed revisions to the NCP and depicted in Figure 8-1, requires a written response to the comments and the inclusion of the comments in the administrative record file. Comments received from the support agency or public should be considered by the lead agency when each of the following criteria are met:

- The comments contain significant information;
- The information is not contained elsewhere in the administrative record file;
- The information could not have been submitted during the public comment period; and
- The information substantially supports the need to significantly alter the response action.

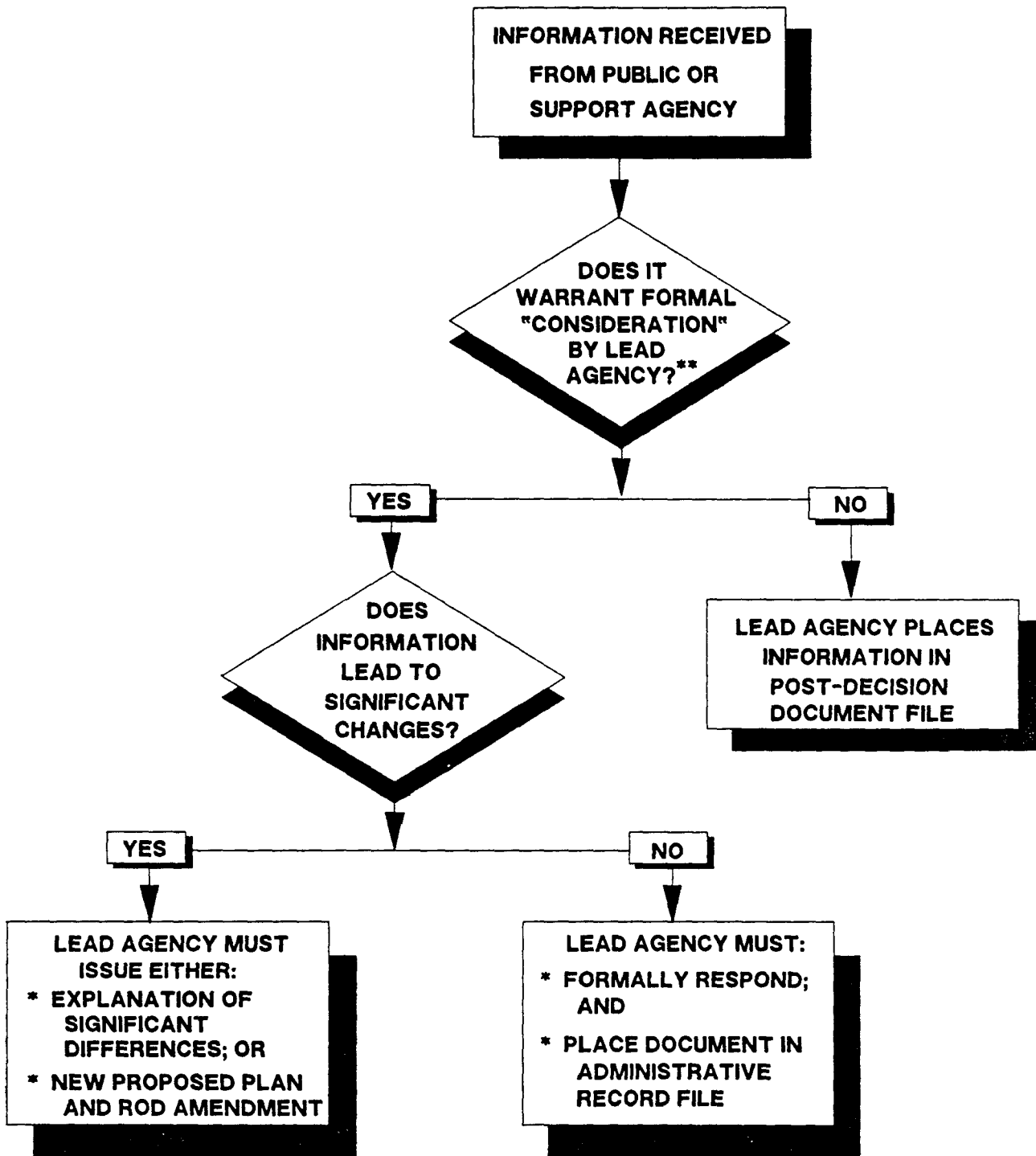
In most cases (particularly in light of the fourth criterion), information that meets this four-part standard warrants a significant change to the remedy. Depending upon how significant the change is, the lead agency should prepare either an ESD or a ROD amendment following the guidance in Section 8.5 below. The ESD or amended ROD represent the lead agency's formal written response to the information submitted.

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<sup>1</sup> The basis for establishing the "consideration" standard relates back to the public's and support agency's statutory opportunity to participate in the remedy selection process prior to adoption of the ROD. Once the lead agency has selected the response action, the obligation to respond to comments on the remedy is limited. Additionally, it is in the best interest of the public for the lead agency to proceed with the implementation of the selected remedy in an expeditious manner. The lead agency's ability to accomplish this would be compromised if it were under the obligation to formally respond to every comment submitted after the ROD is signed.

FIGURE 8-1

**Process to Address Post-ROD Significant Changes**

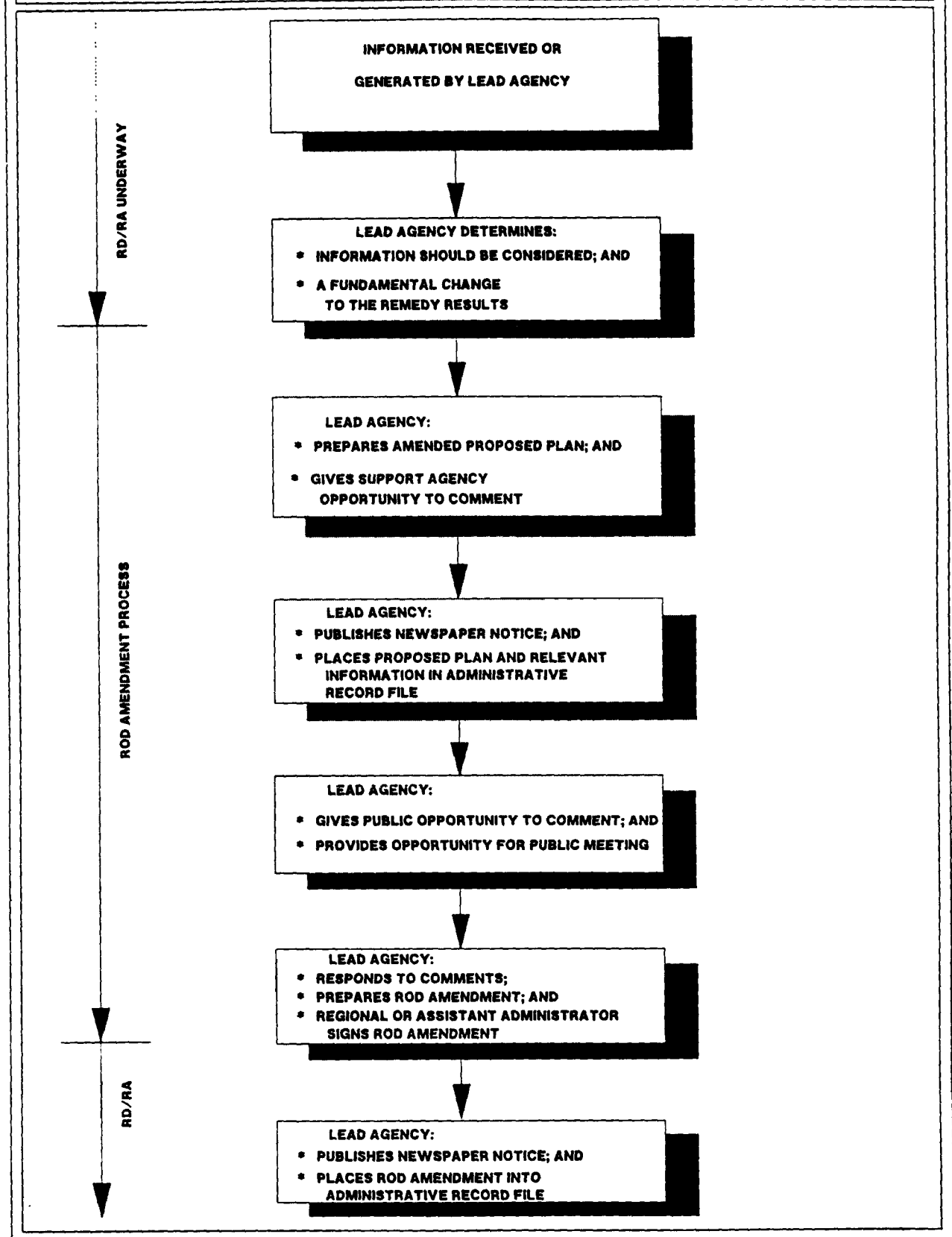


**\*\* NOTE:**

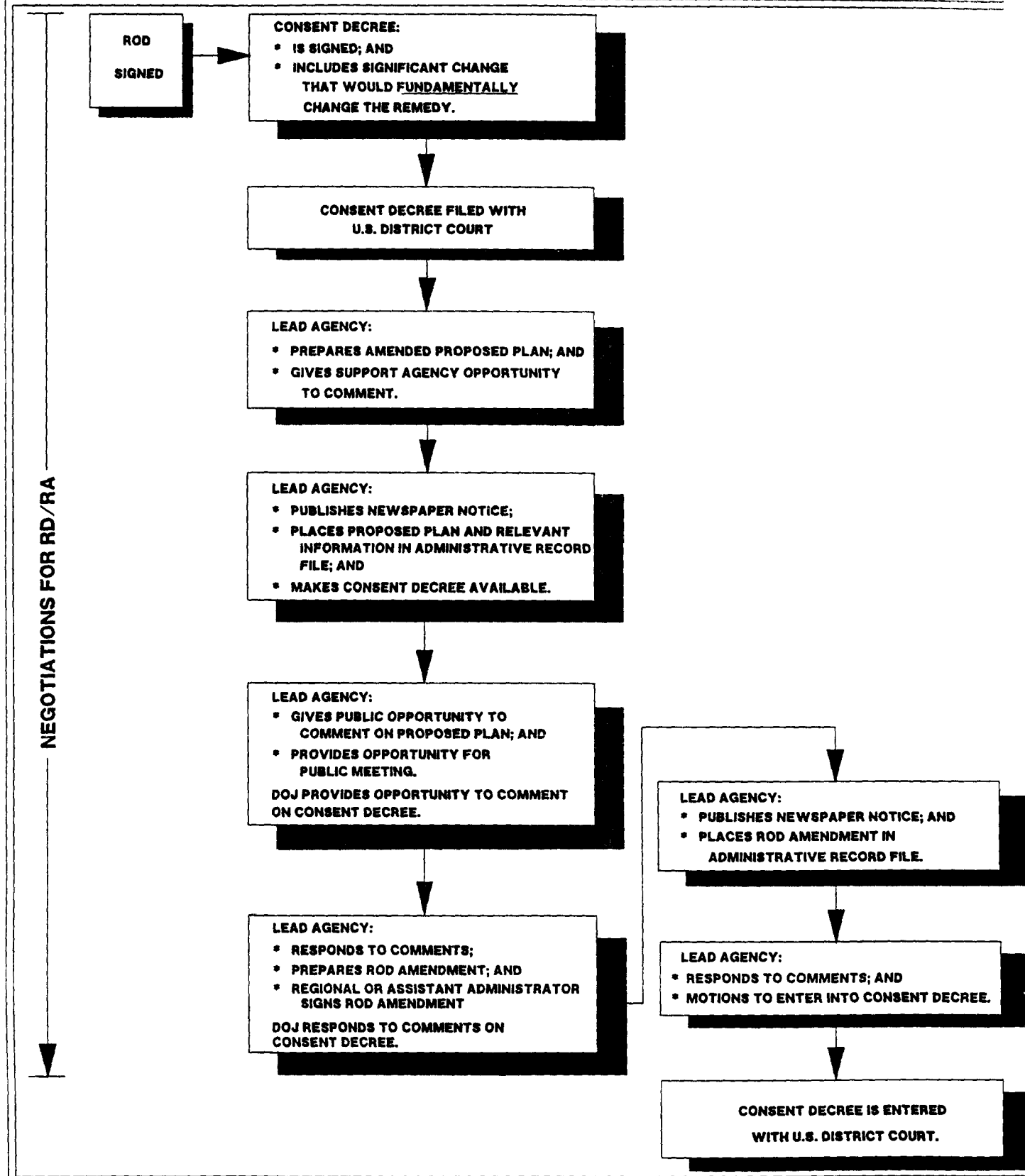
- \* DO THE COMMENTS CONTAIN SIGNIFICANT INFORMATION?
- \* IS THE INFORMATION NOT AVAILABLE IN THE ADMINISTRATIVE RECORD?
- \* COULD THE COMMENTS HAVE BEEN SUBMITTED DURING THE COMMENT PERIOD?
- \* DOES THE INFORMATION SUBSTANTIALLY SUPPORT THE NEED TO ALTER THE RESPONSE ACTION?



**FIGURE 8-4**  
**Process That Results in the Issuance of an Amended ROD:**  
**General Procedures**



**FIGURE 8-5**  
**Process That Results in the Issuance of an Amended ROD:**  
**Changes Resulting from Enforcement Activities**



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8-7

is to lead to decisions during design and construction that optimize the cost-effectiveness and performance of the remedy. There will be instances, therefore, in which these value engineering decisions result in significant changes to the remedy.

Unlike the public, PRPs, and the support agency, who are subject to the consideration standard discussed in Section 8.3, the lead agency has the discretion to make decisions regarding the post-ROD information it generates. As previously mentioned, the intent of the consideration standard is to determine what public or support agency information the lead agency should respond to and document in the administrative record file. The intent of this standard does not apply to information the lead agency generates itself, since there is no need to respond to that information.

The lead agency's initial analysis should focus on whether the new information generated during RD/RA prompts the lead agency to initiate a change to the remedy. The change may be either a non-significant or a significant change to the ROD. If the lead agency determines a significant change is warranted, then the lead agency should consult with the support agency to determine the appropriate procedures for documenting that significant change (e.g., an ESD or ROD amendment). The procedures for evaluating the magnitude of the changes made to a remedy and, therefore, the documentation procedures that should be followed, are presented in the next section.

## 8.6 CATEGORIES OF POST-ROD CHANGES

Once the lead agency determines that a change to the remedy is warranted based on the information submitted by the public, PRPs, the support agency, or simply generated through the RD/RA process, the change should be evaluated to determine whether it is one of the following:

- A non-significant or minor change;
- A significant change to a component of the remedy; or
- A fundamental change to the overall remedy.

## **APPENDIX E**

### **HELPFUL HINTS: HOW TO PREPARE AND SUBMIT DECISION DOCUMENTS TO HEADQUARTERS**

After a decision document -- Proposed Plan, Record of Decision (ROD), Explanation of Significant Differences (ESD), or ROD Amendment -- is issued, a copy should be sent as soon as possible to the following office in Headquarters:

Chief, Remedial Planning and Response Branch  
Hazardous Site Control Division (OS-220)  
Office of Emergency & Remedial Response  
U.S. EPA  
401 M Street, S.W.  
Washington, D.C. 20460

The following procedures should be followed in preparing and submitting decision documents to Headquarters.

#### **1. FORMAT**

- One clear, LEGIBLE copy of the document (Proposed Plan, ROD, ESD, or ROD Amendment) should be provided to Headquarters. In addition, a computer file of the ROD and/or ROD Amendment should be provided on a diskette.
- All documents should follow the format described in this guidance.
- All RODs and ROD Amendments should be single spaced.
- All documents should come to Headquarters completely assembled and legible. Do not send sections separately.
- For RODs and ROD Amendments, THE SIGNED AND DATED SIGNATURE PAGE SHOULD ALWAYS BE INCLUDED.

2. ATTACHMENTS, CHARTS, TABLES, MAPS, AND EXHIBITS

- All columns and text should be displayed completely.
- Computer printouts should be LEGIBLE, especially cost sheets. Dot matrix printouts do not copy well.
- Try to avoid including reduced documents (tables and texts), because these documents tend to be illegible.

3. COST TABLES

- All columns and figures in the cost tables should be LEGIBLE, especially those that apply to the selected alternative.
- Costs should be broken down into capital, operation and maintenance and present-worth costs.

4. ENFORCEMENT CONFIDENTIAL INSERTS

- Enforcement confidential pages should be labeled clearly and CONSPICUOUSLY.

## **APPENDIX F**

### **SOURCES OF INFORMATION**

The following is a list of additional guidance documents that may be useful in preparing Superfund decision documents or are pertinent to the remedial decisionmaking process.

10. State Participation in the Superfund Program Manual, Volume I, U.S. EPA, OSWER Directive 9375.1-04, March 1986.
11. State Participation in the Superfund Program, Volume II, U.S. EPA, OSWER Directive 9375.1-05, March 1986.
12. Interim Guidance on State Participation in Pre-Remedial and Remedial Response, U.S. EPA, OSWER Directive 9375.1-09, July 1987.

## APPENDIX F

### SOURCES OF INFORMATION

The following is a list of additional guidance documents that may be useful in preparing Superfund decision documents or are pertinent to the remedial decisionmaking process.

1. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (P.L. 96-510) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (P.L. 99-499).
2. National Oil and Hazardous Substances Pollution Contingency Plan, Proposed Rule (40 FR 51394), December 21, 1988.
3. Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (Interim Final), U.S. EPA, OSWER Directive 9355.3-01, October 1988.
4. CERCLA Compliance with Other Laws Manual, Draft, U.S. EPA, OSWER Directive 9234.1-01, August 1988.
5. Community Relations in Superfund: A Handbook, U.S. EPA, OSWER Directive 9230.0-3B, June 1988.
6. Superfund Remedial Design and Remedial Action (RD/RA) Guidance, U.S. EPA, OSWER Directive 9355.0-4A, June 1986.
7. Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (Interim Final), U.S. EPA, OSWER Directive 9283.1-2, December 1988.
8. Guidance on Administrative Records for Selection of CERCLA Response Actions (Interim), U.S. EPA, OSWER Directive 9833.3, March 1989.
9. Superfund State-Lead Remedial Project Management Handbook, U.S. EPA, OSWER Directive 9355.2-01, December 1986.



10. State Participation in the Superfund Program Manual, Volume I, U.S. EPA, OSWER Directive 9375.1-04, March 1986.
11. State Participation in the Superfund Program, Volume II, U.S. EPA, OSWER Directive 9375.1-05, March 1986.
12. Interim Guidance on State Participation in Pre-Remedial and Remedial Response, U.S. EPA, OSWER Directive 9375.1-09, July 1987.
13. Superfund Federal-Lead Remedial Project Management Handbook, U.S. EPA, OSWER Directive 9355.1-1, December 1986.
14. Guidance on Developing a Superfund Memorandum of Agreement, U.S. EPA, OSWER Directive 9375.0-01, Fall 1988.