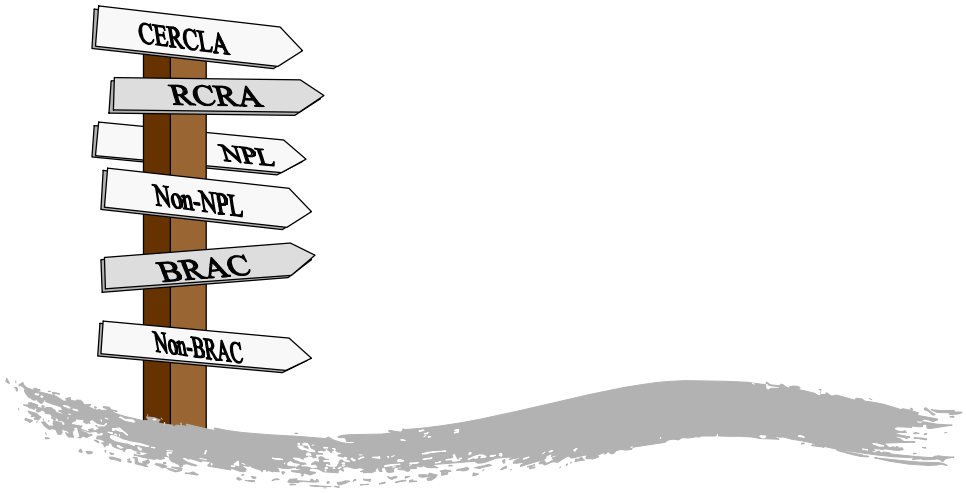
# THE ENVIRONMENTAL SITE CLOSEOUT PROCESS GUIDE

*Defining the process after cleanup decisions have been made*




**This guide consolidates the existing statutory and regulatory requirements affecting the closeout of sites under the Defense Environmental Restoration Program, and will be updated, as necessary, to reflect experience in its implementation.**

*SEPTEMBER 1999*

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# PREFACE

After nearly two decades of effort and an investment of billions of dollars, the Department of Defense's environmental cleanup program is moving toward site closeout at many of its installations. "Site Closeout" refers to the point at which the Department of Defense (DoD) will no longer engage in active management or monitoring at an environmental restoration site, and no additional environmental funds will be expended unless the need for additional remedial action is demonstrated.

The initial focus of the cleanup program was on finding sites with problems (site identification), determining how best to handle cleanup at these sites (remedy selection), determining which sites to clean up first (risk-based prioritization), and beginning the cleanup process (remediation design and construction). The "site closeout process" refers to the steps in the cleanup process after the cleanup decision has been made, from initiation to completion of remedial action.

Today the DoD's progress can be measured by the number of installations with Remedies in Place (RIPs) and the number of sites categorized as Response Complete (RC), meaning that DoD is reaching the last milestones in the lengthy cleanup process.

This guide was developed by a working group with representation from the Office of the Secretary of Defense, the DoD Components, the Environmental Protection Agency (EPA), state officials, and the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Federal Facilities Base Closure Working Group. Participants met monthly to: discuss and evaluate existing environmental site closeout requirements; represent their organizational interests; arrive at a common understanding of terms, milestones, and phases; and define an overall site closeout process that builds on cleanup efforts to date. This guide also received valuable input from individual site remedial project teams, such as BRAC Cleanup Teams, who will be the personnel utilizing the information within.

Since its initial conception, this Guide, and the overall Environmental Site Closeout Process it describes, has been briefed to a variety of organizations and at various forums, including: ASTSWMO; the Deputy Assistant Secretaries of the Air Force for Installations (SAF/MII) and Environment, Safety, and Occupational Health (SAF/MIQ); the annual DoD-community base closure conference; the DoD Cleanup Committee; the Federal Facilities Leadership Council; the EPA Office of Emergency and Remedial Response (OERR); EPA Region 9 and the State of California; and all three 1998 BRAC Cleanup Team Workshops. These forums served to disseminate information about the concept and content of the Guide and the process, and solicited input and feedback from the diverse audiences.

# 1.0 INTRODUCTION

## 1.1 Purpose and Background

The purpose of this guide is to consolidate into one working document the existing statutory and regulatory requirements that affect the closeout of sites under the Department of Defense (DoD) environmental restoration program, and to raise the awareness of all stakeholders in the site closeout process. The process identified in this guide is not a new one, but rather a continuation and clarification of existing efforts. Existing requirements have been gathered and organized into an overall site closeout framework that accommodates multiple regulatory frameworks. Thus, this guide describes actions that should be taken during site closeout, although the level of effort necessary will vary based on site-specific conditions. Furthermore, it is important to note that each service and the United States Environmental Protection Agency (US EPA) are continuing to develop policies and guidance regarding their respective statutory and regulatory requirements, which has a direct impact on this guide.

The major guidance documents from which the environmental site closeout process was derived are listed in Section 9. In addition, related issues pertaining to base realignment and closure (BRAC) installations and community involvement are identified, and evolving site closeout issues (e.g., records management, institutional controls, optimization of long-term monitoring, and natural resource damages) are discussed. These evolving issues recognize that stakeholders' level of experience with the process is developing. It is expected that new policies will need to be developed and/or existing policies revised to address these evolving issues. Additional information concerning site closeout can be found on the Environmental Site Closeout Web Site, ***http://www.afbca.hq.af.mil/closeout***.

For the purposes of this guide, "Site Closeout" refers to the point at which the DoD will no longer engage in active management or monitoring at an environmental restoration site, and no additional environmental restoration funds will be expended unless the need for additional remedial action is demonstrated. The "Environmental Site Closeout Process" refers to the steps in the cleanup process after the cleanup decision has been made and the remedial action is scheduled to begin. From this point forward, the steps required to complete and closeout the remedial actions are referred to as the "Environmental Site Closeout Process."

This guide should be used as a starting point for discussion among the stakeholders at a particular installation. With information about existing site closeout requirements, the restoration project team (including representatives from the DoD, the Environmental Protection Agency [EPA], and state regulatory agencies), working together with other stakeholders, can make knowledgeable decisions about the most effective manner of integrating and applying these requirements at their installation. Stakeholders can include local redevelopment authorities (LRAs), local governments, Indian tribes, other organizations, and the public. In accordance with the March 1998 DoD *Management Guidance for the Defense Environmental Restoration Program (DERP Management Guidance)*, the focus of the restoration program continues to be to reduce risks to human health and the environment. DoD Components will plan, program, and budget resources to meet Defense Planning Guidance (DPG) goals, which currently include reduction of risk and having remedies in place.

### 1.1.1 Why Do We Need This Guide Now?

The DoD environmental restoration program has been under way for two decades and there are now many installations whose cleanup efforts are nearing completion. For such installations, it has become apparent that the site closeout process represents uncharted territory. For many years, environmental program management guidance focused on completing the studies and analyses necessary to make an informed decision regarding

selection and implementation of environmental remedies. Now that many installations have implemented their selected remedies and are in the remedial action operation phase, the next important step is to consider the requirements for completing and documenting the closeout of sites once cleanup goals have been met and other environmental responsibilities have been fulfilled.

BRAC Cleanup Teams (BCTs) and DoD Remedial Project Managers (RPMs) are expected to plan for site closeout based on available guidance documents from the EPA, DoD, and states. However, many of these separate guidance documents are not in complete agreement with each other with respect to definitions, milestones and requirements. Therefore, the BCTs and RPMs have a difficult task ahead to plan with such a variety of guidance in an accurate and consistent manner. This guide is intended as a planning resource that has already completed most of the groundwork in consolidating the guidance from the universe of available sources into a single document. Using this guide, BCTs and RPMs can save a significant amount of time and effort, and promote national consistency in planning for site closeouts. In addition, for access to more site-specific and remedy-specific guidance, please refer to Section 1.8, "Additional Resources."

**Activities That May Remain After Remedy Selection**

- Operation and maintenance of cleanup systems;
- Implementing and monitoring institutional controls;
- Community involvement;
- Performance reviews of cleanup systems;
- Cleanup system modifications or upgrades;
- Final Closeout Reports for installations;
- Long-term monitoring; and
- Cleanup system and monitoring well decommissioning.

For those installations still addressing restoration in the pre-decisional analysis phase, this guide can be an important tool for considering future requirements and incorporating those requirements into current decision making (see the box at right for examples of such requirements). For example, documentation requirements for future reviews and closeout of sites can be established up front and incorporated into decision documents and outyear schedules and budgets.

## 1.1.2 How To Use This Guide

***This guide is not intended to be a prescriptive document that must be followed explicitly.*** It should be used by the restoration project team (the DoD Component Remedial Project Manager and/or BRAC Environmental Coordinator [BEC], working in close cooperation with the EPA and/or state RPM and other stakeholders as appropriate) to facilitate the environmental site closeout process and plan and tailor their site closeout efforts. The site closeout process described in this guide should not be viewed as a rigid process; rather, it should be viewed as a flexible management tool that can be applied to the specific situations that must be addressed by the DoD RPM/BEC at each installation.

**Site Closeout Considerations**

- CERCLA and RCRA Corrective Action Sites
- National Priorities List (NPL) and Non-NPL Facilities
- Removal and Remedial Actions
- BRAC and Active Installations
- Federal and State Regulatory Requirements
- Cleanup Agreements, including Federal Facility Agreements (FFAs)
- Community Involvement

Users of the guide should recognize that, in most cases, only a portion of these requirements would apply at a particular installation. Restoration project team members should discuss the most effective manner of integrating and applying these requirements at their installation. For example, removal actions can occur at multiple points along the continuum of the cleanup process; team members need to determine how best to integrate these actions into the overall site closeout scheme. This guide represents a set of tools with which to develop a site closeout strategy for an installation. Not every installation will require all the tools. DoD Components may identify and disseminate best practices for implementing the environmental site closeout process. This guide can also be used for projecting future resource

requirements associated with site closeout, including programming and budgeting estimates.

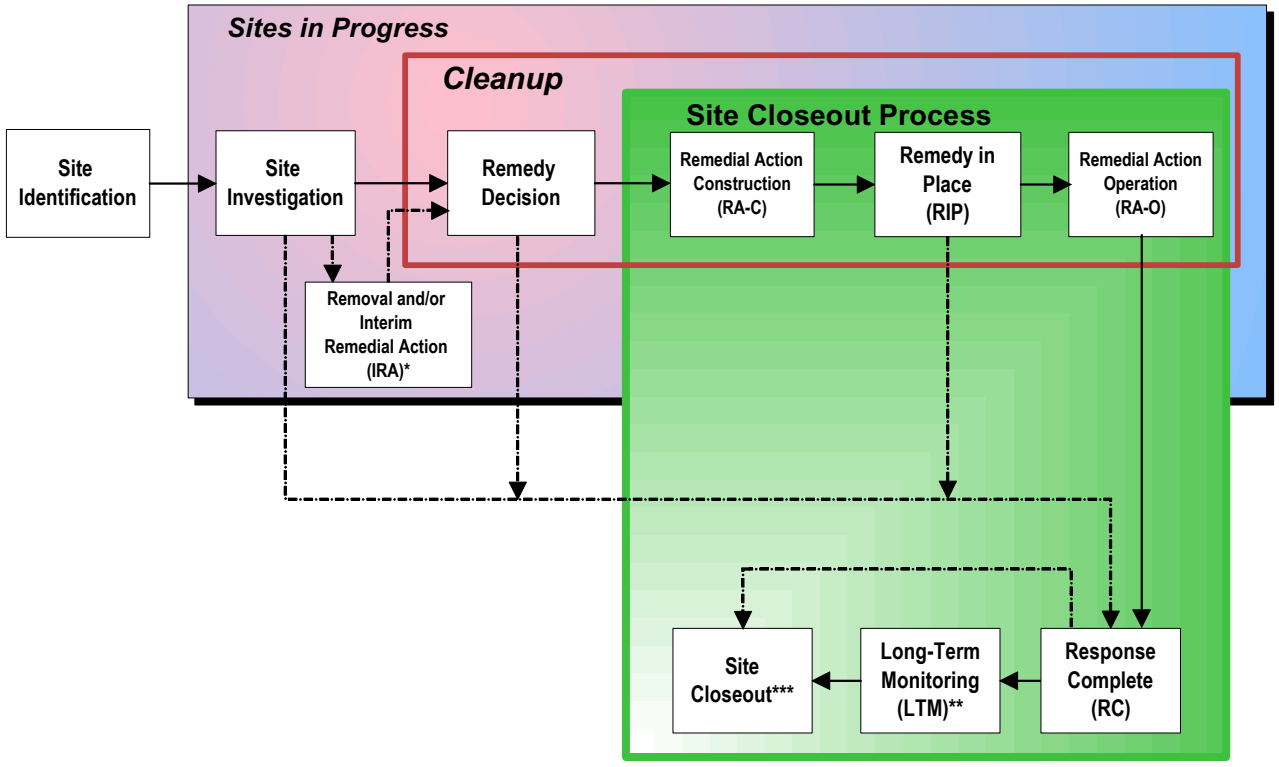
In planning a site closeout strategy for an installation, restoration project teams must address a number of considerations, including the regulatory regime(s) that apply to the installation, the installation's regulatory status; and the cleanup strategies employed and actions taken to date (see box on previous page). The remainder of this guide addresses each of these considerations in greater detail. Restoration project team members are encouraged to consider all of these factors in developing their strategy and to incorporate the relevant requirements as appropriate.

### 1.1.3 Overview of the Defense Environmental Restoration Program (DERP)

As articulated in the March 1998 *DERP Management Guidance,* the purpose of DoD's environmental restoration program is to reduce, in an expeditious and cost-effective manner, risks to human health and the environment attributable to contamination from past DoD activities. When risks have been reduced and cleanup goals met, sites should be closed out and categorized as "No Further Action" (NFA) needed. For BRAC installations, an additional goal is to make property environmentally suitable for transfer. Specific goals for the environmental restoration program are included in the Defense Planning Guidance (DPG). The Office of the Secretary of Defense has established milestones to:

- Reduce risk to human health and the environment at sites;
- Make property at closing/realigning bases environmentally suitable for transfer to other entities; and
- Have final remedies in place.

**Figure 1.1 Defense Environmental Restoration Process**




** Removal and/or Interim Remedial Actions may occur throughout process.*
***Some sites may require indefinite LTM.*
****Sites may be reevaluated, if necessary.*

*Adapted from* FY 1997 Defense Environmental Restoration Program Annual Report to Congress

DoD employs a risk management approach in the environmental restoration program that protects human health and the environment in an expeditious and cost-effective manner. In risk management, several types of information are used collectively to make decisions about cleanup and its timing, such as the remedial investigation/ feasibility study (RI/FS), risk assessments, public health assessments, relative risk site evaluations, and other management factors. The following risk management considerations will be applied in identifying restoration requirements, according to the March 1998 *DERP Management Guidance*:

- Classifying sites as "No Further Action" where adequate existing information does not indicate a concern;
- Proposing cost effective alternatives to treatment options that entail significant capital investments and long term operation and maintenance;
- Considering alternatives to removal or treatment of contamination when another approach might be the most feasible option, or where existing technology cannot achieve cleanup goals;
- Considering the most likely or currently proposed land use when selecting the appropriate cleanup levels with regulatory agencies prior to completing records of decisions (RODs) or decision documents, rather than assuming the most conservative land use scenario.

The major phases associated with the DoD environmental restoration process are shown in Figure 1.1. Initially, **site identification** (through records searches and/or visual inspections) produces a candidate list of areas of concern that warrant further **site investigation**, which can include more detailed environmental sampling and analysis. The site investigation can result in an assessment of potential remedial actions that may be necessary to address any environmental contamination that has been found, including a "proposed plan" for remediation with associated public participation. Both site identification and site investigation may result in a decision that no environmental restoration is required, or in the need for a **removal action**. Removal actions are short-term actions used to minimize or eliminate risk to human health and the environment, and must be consistent with any subsequent remedial actions taken. Similarly, **interim remedial actions** are commonly undertaken as components of larger actions for which a decision document has not yet been finalized, or to minimize or significantly reduce risks during ongoing investigatory efforts.

The **remedy decision** formally documents DoD's decision on a method for final cleanup of contamination, including the "no-action" option where supported by analysis. Remedial action **construction** (if appropriate) can then begin, and **remedial action operation** (ongoing cleanup) can commence once the remedy has been constructed. In certain cases, a selected remedy (e.g., a landfill cap or other containment of contamination) may require only construction and no active, ongoing cleanup in order to achieve cleanup goals. **Response complete** (cleanup goals met) is the point at which the remedy has achieved the required reduction in risk to human health and the environment. Upon response complete, a remedy may require **long-term monitoring** of effectiveness to ensure that the cleanup goals continue to be met; in some instances this monitoring may be required indefinitely. Lastly, when cleanup responsibilities have been completed at a site, **site closeout** can occur.

The Defense Environmental Restoration Program occurs through three primary legal and regulatory frameworks: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and its implementing regulation, the National Contingency Plan (NCP); the Resource Conservation and Recovery Act (RCRA); and the "Environmental Restoration" provisions of Title 10 of the U.S. Code.

This terminology is discussed in greater detail in the following sections. Much guidance has already been prepared to address the first few steps of "Sites in Progress" in Figure 1.1; this guide addresses the subsequent steps that constitute the Site Closeout Process.

### 1.1.4 General Environmental Site Closeout Process

This document is a guide for program execution after the cleanup decision has been made and remedial action is scheduled to begin. From this point forward, efforts should be focused on identifying the steps required to complete and close out the remedial action, i.e., the environmental site closeout process.

As used in this guide, the term **"site"** refers to a sub-element of an installation or Operable Unit (OU) for management or funding purposes. The term **"installation"** is used to refer to the entire installation, including all OUs (by contrast, EPA often uses the term "Site" to refer to an entire facility or installation). Operable units are management tools for environmental restoration that establish a logical sequence of sites to address contamination in a comprehensive fashion. Because OUs define the structure of environmental decision making at an installation, they provide the foundation for an installation-wide remediation strategy.

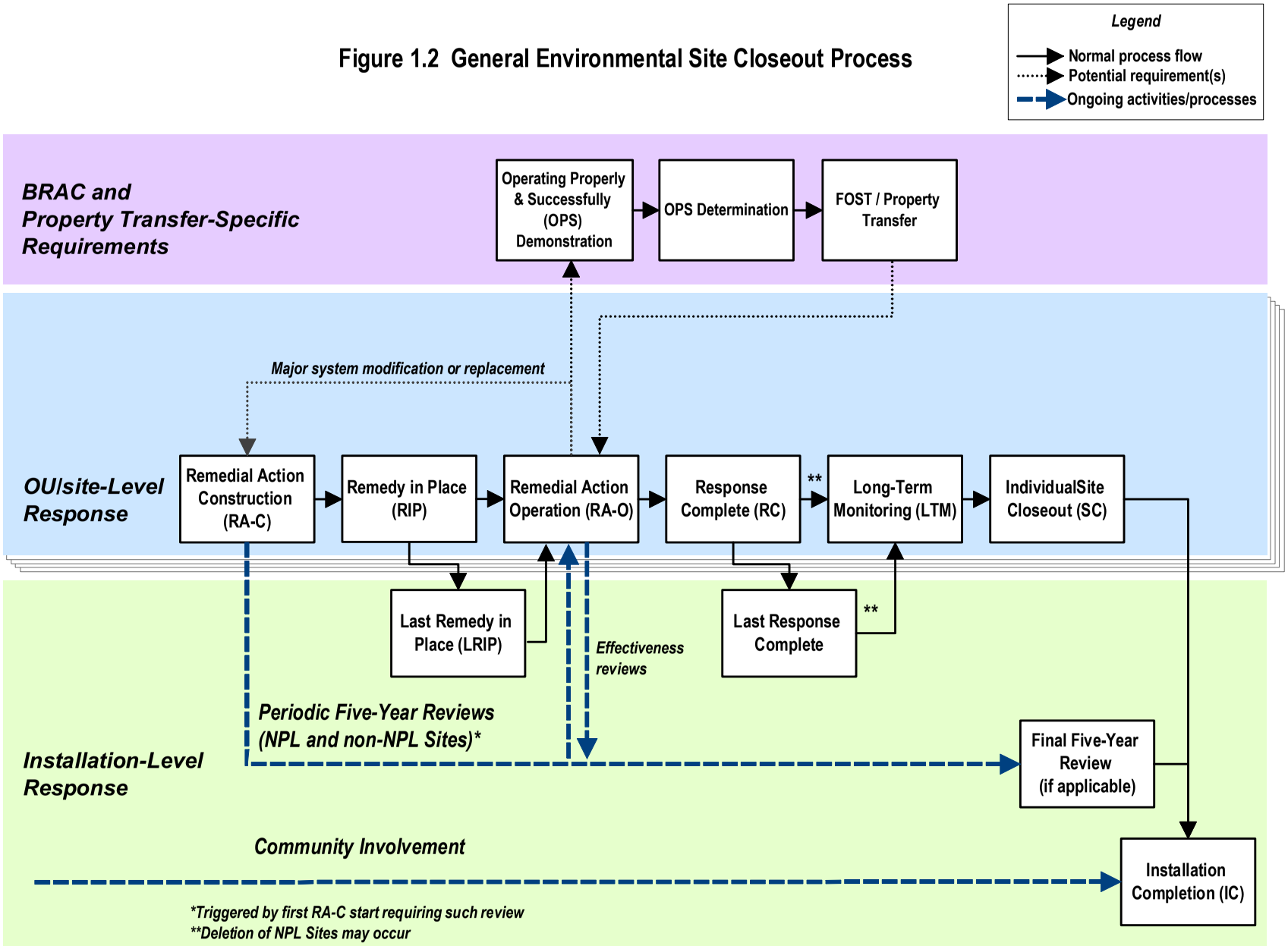
The environmental site closeout process is described in this guide in terms of the major phases and milestones identified in the *DERP Management Guidance*. These are:

- **Remedial Action Construction (RA-C)**;
- **Remedy in Place (RIP)**, the culmination of RA-C;
- **Remedial Action Operation (RA-O)**;
- **Response Complete (RC)**;
- **Long-Term Monitoring (LTM)**; and
- **Site Closeout (SC)**.

The environmental site closeout process is shown generally in Figure 1.2, in terms of the DoD reporting milestones. In addition, Figure 1.2 integrates the general requirement, at installations transferring property, to demonstrate that a remedy is **operating properly and successfully** before a Finding of Suitability to Transfer (FOST) can be made and property transfer by deed can occur. Figure 1.2 also shows the ongoing requirement (both at National Priorities List (NPL) installations and non-NPL installations) to conduct five-year reviews of the effectiveness of ongoing remedies and the protectiveness of completed remedies, including the possibility that reviews may result in the need to undertake system modification or replacement. Five-year reviews are not necessarily a requirement at all sites, only where the remedial action selected results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure. Figure 1.2 also reflects the general requirement under both RCRA and CERCLA for community involvement efforts. In addition, at NPL installations, deletion (or "delisting") of the installation (or partial deletion of individual sites/OUs) from the NPL is part of the overall site closeout process.

Table 1.1 describes phases and milestones identified in the *DERP Management Guidance* and gives examples of those milestones for various remedy scenarios. These scenarios are discussed in greater detail in Section 2.

## Figure 1.2 General Environmental Site Closeout Process



## Table 1.1 Description of Major Phases and Milestones in the Site Closeout Process

| PHASE/MILESTONE | DEFINITION | EXAMPLE REMEDY SCENARIO |
|---|---|---|
| **Remedial Action Construction (RA-C)** | The RA-C phase occurs while the final remedy for a site, or group of sites under an operable unit, is being put in place. | For on-site treatment, this phase comprises construction of the waste treatment facility. Remedies such as excavation or groundwater monitoring may not have an RA-C phase. |
| **Remedy in Place (RIP)*** | The RIP milestone signifies the completion of the RA-C phase, and that the remedy has been implemented and has been demonstrated to be functioning as designed (i.e., "all testing has been accomplished and the remedy will function properly," as defined in the *DERP Management Guidance*). | For on-site treatment, this could occur when the treatment facility demonstrates it can properly treat waste. |
| **Remedial Action Operation (RA-O)** | The RA-O phase occurs while a remedy is being operated to achieve the cleanup objective (traditionally associated with "operation and maintenance" (O&M)), but cleanup goals have not yet been reached. | Operation of a groundwater pump and treatment remedy or soil vapor extraction; monitoring of natural attenuation prior to achievement of cleanup goals. Containment remedies such as landfills do not generally have an RA-O phase (RC occurs concurrently with RIP). |
| **Operating Properly and Successfully (OPS)** | OPS is a milestone that demonstrates a remedy is operating properly and successfully prior to deed transfer of Federally owned property to a non-Federal recipient prior to achieving cleanup goals. Applicable to Federal property transfer; e.g., at BRAC installations. | For a groundwater remedy, an OPS demonstration might include evaluating whether the pump and treat system is performing adequately so that achievement of cleanup goals appears likely. |
| **Response Complete (RC)** | The RC milestone signifies that cleanup goals for a site or group of sites under an OU have been met, the decision has been documented, and any necessary regulatory requirement for notification or application for concurrence has occurred. | For excavation and offsite disposal, this occurs when all contaminated soil has been properly removed and disposed. For longer-term remedies, RC may not be achieved for years or decades. |
| **Long Term Monitoring (LTM)** | The LTM phase may include: environmental monitoring that occurs after cleanup goals have been achieved to ensure that the remedy remains protective of human health and the environment; administrative management of use restrictions; and operation and maintenance of the remedy. Not all remedies require LTM, while some may require indefinite LTM. | Containment remedies such as landfills can require indefinite LTM to ensure contaminants are not migrating from the site at levels harmful to public heath or the environment. |
| **Site Closeout (SC)** | SC implies that DoD has completed active management and monitoring at an environmental restoration site, and no additional environmental restoration funds are expected to be expended at the site unless the need for additional remedial action is demonstrated. | For practical purposes, SC occurs when cleanup goals have been achieved that allow unrestricted use of the property (i.e., no further LTM, including institutional controls, is required). |

** Last Remedy in Place (LRIP) signifies that the RIP milestone has been reached for every site at the installation*

The use of the DoD conventions has been adopted because they are intended to be neutral with respect to the particular regulatory mechanism through which the site is being addressed, i.e., CERCLA (either NPL or non-NPL) or RCRA. Each of the DoD reporting conventions has a similar term within the CERCLA and RCRA regulatory environments (see Sections 3 and 4 for a detailed comparison).

As illustrated in Figure 1.3, some of these terms represent milestones (single points in time for a given site or OU) whereas others represent phases with longer durations. Schedules for a mature installation restoration program should indicate when major milestones will be achieved and the approximate durations of the phases, as required by DoD reporting conventions.

## Figure 1.3 DoD Environmental Restoration Phases and Milestones
**(Every step is not always required)**

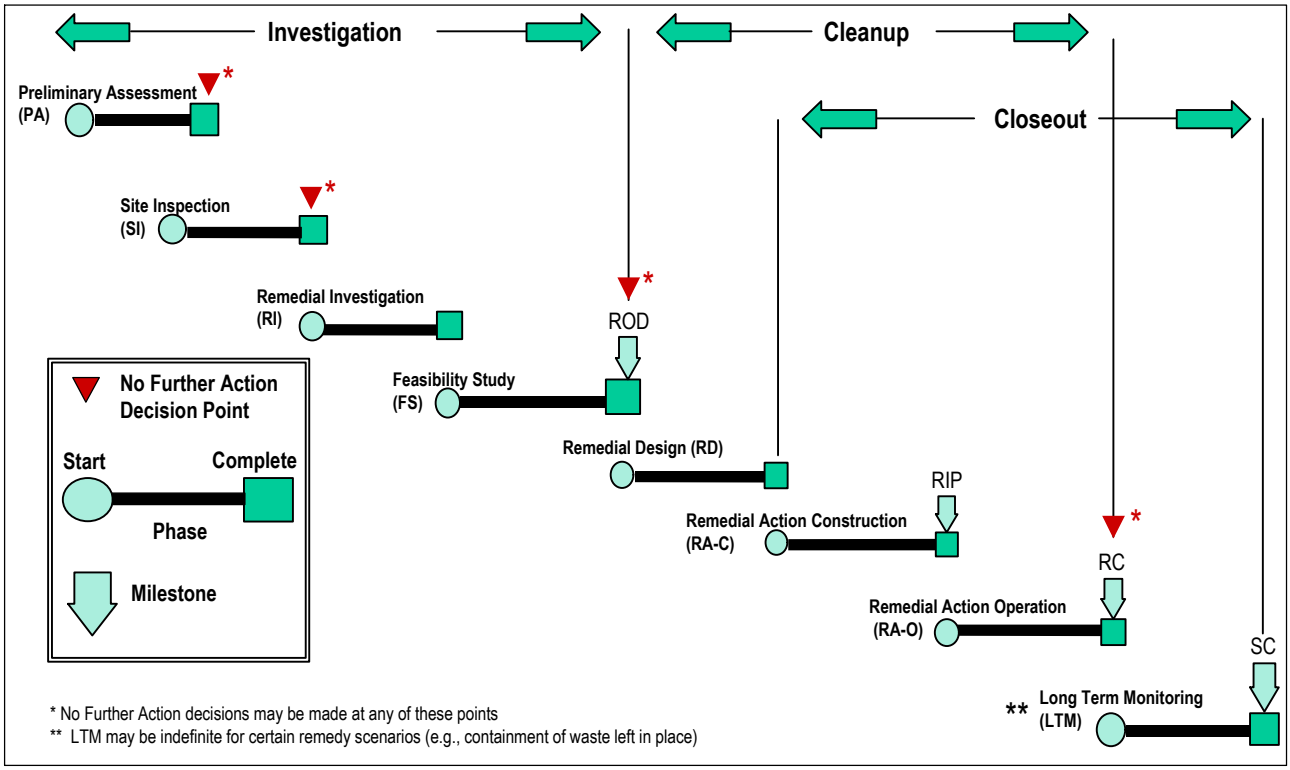


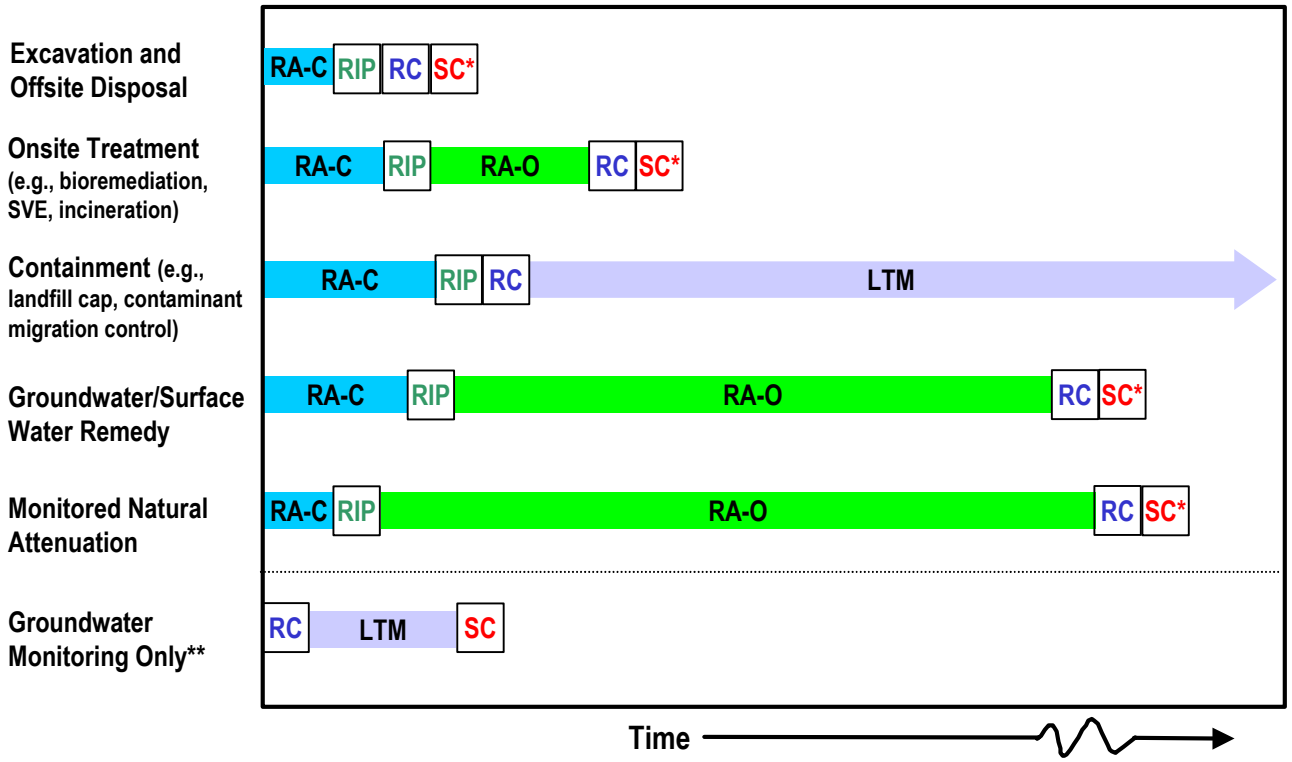

Figure 1.3 is not able to illustrate the variability in the applicability of these phases and milestones from site to site. Some of the phases may last from several months to multiple decades; some phases and milestones may not be applicable. In particular, there are multiple points in the process at which a decision can be made that no further response action is required; properly documented, these decisions constitute achievement of response complete and/or site closeout. In other cases, a chosen response action may not require all phases to achieve site closeout, and multiple milestones may be attained simultaneously.

Figure 1.4 attempts to capture the variety of ways in which these terms apply to multiple remedy scenarios. For example, containment remedies such as landfills have a substantial RA-C phase, but no RA-O phase. In the case of monitored natural attenuation, the monitoring is considered RA-O until cleanup goals have been achieved.

Under all scenarios, some form of LTM may be required if the cleanup goals do not allow for unrestricted land use or if a period of monitoring is required to verify that the remedy has succeeded in protecting human health and the environment. In some cases, where a remedy was specifically chosen to leave contamination in place (e.g., through containment), LTM may be required as long as the contamination remains, with associated monitoring of institutional controls and Five-Year Reviews of the remedy's protectiveness.

These remedy scenarios, and the specific applicability of the site closeout phases and milestones, are discussed in greater detail in Section 2.

**Figure 1.4 Applicable Phases/Milestones and Timeframes for Typical Remedy Scenarios***




*A final remedy may be a hybrid of some or all of these remedy scenarios.
SC* = Indefinite LTM may be required for some sites (see Table 2.0).
** May be the only remedy selected at a site. Also applicable where previous Removal Actions and/or IRAs have achieved cleanup objectives, and the final remedy decision finds that only monitoring is needed to ensure permanence of the remedy.

Specific legal requirements and process steps for achieving the DoD milestones are described in greater detail in subsequent sections of this guide. For each phase/milestone, requirements under CERCLA and RCRA are described separately. For non-NPL sites/OUs not managed under RCRA, documentation during the site/OU closeout process should be consistent with the NCP Remedial Action Report format.

### 1.1.5 Roles and Responsibilities

The participation of organizations other than the DoD and EPA in the site closeout process is recognized as critical to the execution and success of the process. Specifically, state regulators play a significant role, particularly at non-NPL installations and installations with sites addressed through a RCRA regulatory framework, where the state regulatory agency is likely the lead regulator. In addition, CERCLA requires that the lead agency coordinate with the affected state before final selection of the remedial action. This guide does not attempt to assign specific roles or responsibilities for actions, since those assignments have been made through existing statutes (e.g., DERP [10 U.S.C. 2701], CERCLA, and RCRA), regulations, executive orders, and DoD and EPA policies and guidelines.

The RCRA process described in this guide was developed from EPA guidance. In states with delegated RCRA corrective-action regulatory authority, specifics of the process may vary somewhat from those described in this document and states may have more stringent requirements. The dual administration of the RCRA program may require joint permitting where the EPA imposes certain RCRA provisions and the state administers the remaining permitting activities. In such cases, appropriate state regulators should be contacted to identify and define the applicable requirements early in the process. In addition, although this

guide consistently refers to the RCRA regulatory instrument as a "permit," readers should recognize that the process is also applicable to installations addressed through other RCRA instruments (e.g., Corrective Action Consent Orders) and the accompanying requirements.

The Defense Environmental Restoration Program requires a CERCLA-compatible restoration process. Even if an installation is not included on the NPL, section 211 of the Superfund Amendments and Reauthorization Act (SARA, 10 U.S.C. § 2701), and Executive Order 12580 require that all sites be addressed in a manner consistent with CERCLA § 120.

**Roles of the Cleanup Team**

- Understand Federal and state requirements for various components of site closeout
- Ensure requirements beyond Last Remedy in Place are fully characterized and budgeted
- Consider innovative, flexible, and streamlined approaches to expedite the site closeout process and manage costs

To comply with CERCLA § 120, the DoD Component must enter into an interagency agreement (i.e., a Federal Facility Agreement [FFA]) with the EPA at each NPL installation, in order to establish the legal and administrative framework for environmental response actions [CERCLA § 120(e)(2)]. The agreement may also include state agencies. The DoD and states may have separate agreements addressing non-NPL installations and those agreements fulfill the same functional purpose as FFAs.

The FFA or other agreement(s) should provide a roadmap of roles and responsibilities for environmental restoration. Provisions and requirements of the agreement(s) need to be considered by the restoration project team when developing an overall site closeout strategy.

## 1.2 CERCLA Site Closeout

The closeout of sites under CERCLA follows the process defined in the implementing regulations (the National Oil and Hazardous Substances Pollution Contingency Plan [NCP] [40 CFR 300]) and related EPA guidance. A more detailed description of this process is presented in Section 3.

Site restoration under CERCLA also entails two additional requirements not explicitly addressed under RCRA: five-year reviews of remedy protectiveness and deletion of NPL installations from the NPL. These requirements, as well as remedial/removal action integration are described in more detail in Section 3.

## 1.3 RCRA Site Closeout

Site closeout under RCRA can follow two paths, one for closeout of active, regulated units and the other for closeout of corrective actions at inactive solid waste management units (SWMUs). These requirements are addressed in greater detail in Section 4.

## 1.4 RCRA/CERCLA Integration

This site closeout guide lists separately the closeout requirements for sites addressed under RCRA and those addressed under CERCLA. RCRA traditionally applies primarily to active waste management facilities whereas CERCLA was established by Congress to address inactive and abandoned sites. However, certain amendments added provisions to RCRA that enable inactive solid waste management units to be addressed through a "corrective action" program. In addition, CERCLA §120 and Executive Order 12580 establish certain unique requirements associated with hazardous waste cleanup of Federal facilities, including the

requirements to conduct all Federal cleanups in a manner consistent with CERCLA. Due to the overlap between these two regulatory programs, integration and clarification of the implementation procedures are required.

In general, cleanups under RCRA corrective action or CERCLA can satisfy the requirements of both programs. However, since the Defense Environmental Restoration Program requires restoration activities to be conducted in a manner consistent with CERCLA, RCRA corrective action requirements will generally be satisfied under CERCLA, with RCRA an "applicable or relevant and appropriate requirement" (ARAR). In most situations, remediation project managers should be able to conduct cleanup activities for all or part of a site under one program with the expectation that no further cleanup will be required under the other program. For example, when investigations or studies have been completed under one program, there should be no need to review or repeat those investigations or studies under another program. Similarly, a remedy that is acceptable under one program should meet the standards of the other. Some cleanup agreements (e.g., FFAs) may define the integration of RCRA and CERCLA requirements. In the case of NPL sites, all cleanup must be conducted under CERCLA and the NCP.

## 1.5 BRAC Installations and Property Transfer Requirements

At BRAC installations or other installations at which a transfer of property is under consideration, there are additional requirements under CERCLA for site closeout. In particular, CERCLA § 120(h)(3) requires DoD to ensure that "all remedial action necessary to protect human health and the environment with respect to any [hazardous] substance remaining on the property has been taken before the date of such transfer." This provision has been amended over time to clarify the meaning of "has been taken," and to allow for leasing and transfer of property before all required remedial action has been completed. In addition, provisions for "early transfer" have been added. These requirements add to the overall documentation required to complete closeout of BRAC environmental sites, and need to be considered by the BRAC Cleanup Team when developing project schedules and timelines. Applicable requirements, including those for operating properly and successfully determinations and early transfer authority, are addressed in more detail in Section 6.

## 1.6 Community Involvement

Community involvement is a critical element of the overall environmental site closeout process, promoting understanding and building trust in DoD environmental stewardship initiatives. CERCLA defines the process and timetables for community involvement. It is the main planning tool for community outreach activities. The IRP process, as regulated by CERCLA, defines program goals and initiatives to be undertaken for each phase of the IRP process. It also defines the vehicles to be used for communicating site activities and timetables for accomplishing goals.

Past installation restoration program experience has shown that community involvement beyond that strictly required by law is often appropriate and beneficial. Appropriate public participation activities are necessary to fulfill both the goals and the statutory requirements of CERCLA and RCRA, and to ensure that the public remains adequately informed during completion of environmental response actions. In fact, numerous EPA and DoD guidance documents describe suggested public participation activities (see Section 9). In most cases, however, these documents do not address community involvement activities beyond remedy selection. Where requirements exist, they have been incorporated into Sections 3 and 4.

This guide can be used by community involvement specialists to enhance or improve existing community relations plans through the identification of suggested public participation activities during site closeout. These activities are suggestions only and should be used as the basis for tailoring an installation-specific

community relations plan that addresses the particular needs of the community. The level of community involvement activity will vary by installation and over time.

Several significant community involvement activities are ongoing throughout the environmental restoration process. Community involvement personnel should periodically perform:

- Updating and maintenance of the Information Repository and Administrative Record.
- Outreach regarding the availability of technical assistance (Technical Assistance Grants, Technical Assistance for Public Participation, etc.).
- Planning for future management strategies (such as regionalization of program/site management) and an associated communications strategy; i.e., an "exit strategy" for personnel and functions managing the installation, particularly at BRAC locations.

Suggested community involvement activities are discussed in more detail in Section 7.

## 1.7 Evolving Site Closeout Issues

During development of this guide, several, important issues were identified for which there is currently relatively limited information. Strategies and guidance for addressing these issues will evolve as more installations encounter them and additional experience is accumulated in their management. Among these are:

- Institutional controls;
- Remedy performance optimization;
- Data and Records management; and
- CERCLA natural resource injury and damage assessments.

While these issues are not all addressed in detail in this guide, important considerations associated with them that relate to the site closeout process are discussed in Section 8.

## 1.8 Additional Resources

Additional information concerning site closeout can also be found on the Environmental Site Closeout Web site, ***http://www.afbca.hq.af.mil/closeout***. This Web site provides numerous resources for restoration project teams and other stakeholders, including:

- The most recent updates to this guide;
- Information on working group meetings and associated working documents;
- Comments submitted to date on the guide and the opportunity to submit new comments;
- A library of the latest site closeout guidance documents, including many important sources of information beyond those cited in Section 9;
- Example site closeout documents, including the ability for users to provide their own examples;
- An interactive discussion area for site closeout participants;
- Relevant links to site closeout topics;
- Points of contact for the Environmental Site Closeout Working Group; and
- Help on using the Web site.

Section 9 also contains further information about the source documents used in the preparation of this Guide.

The Environmental Site Closeout Web site is intended to provide an interactive capability with respect to this guide document, making it easier for the user to research information relevant to their particular installation and to ensure that this guide remains an evolving and "living" document.

# 2.0 SITE CLOSEOUT PROCESS FOR TYPICAL REMEDY SCENARIOS

Section 1 introduced and defined the major phases and milestones used in the Defense Environmental Restoration Program to describe the environmental site closeout process:

- **Remedial Action Construction (RA-C)**;
- **Remedy in Place (RIP)**;
- **Remedial Action Operation (RA-O)**;
- **Response Complete (RC)**;
- **Long-Term Monitoring (LTM)**; and
- **Site Closeout (SC)**

Sections 3 and 4 discuss in greater detail the specific meanings and requirements of these phases and milestones in CERCLA and RCRA regulatory frameworks, respectively.

This section illustrates the application of the phases and milestones in typical remedy scenarios (independent of regulatory frameworks). Figure 2.0 and Table 2.0 show six general remedy scenarios and the application of the site closeout terminology to each. Most final remedies at sites or OUs will be comprised of one or more of these scenarios; in many cases, a final remedy will be a hybrid of some or all of these scenarios. For example, the remedy at a site with combined soil and groundwater contamination may include excavation of the soil-based source contamination combined with groundwater pump-and-treat to remediate associated groundwater contamination.

Figure 2.0 and Table 2.0 demonstrate that not all phases or milestones are applicable to every remedy scenario. In some cases, a scenario may comprise few phases, with multiple milestones achieved simultaneously; in other cases, a more extensive remedy may undergo all phases and milestones, and may be separated by several years.

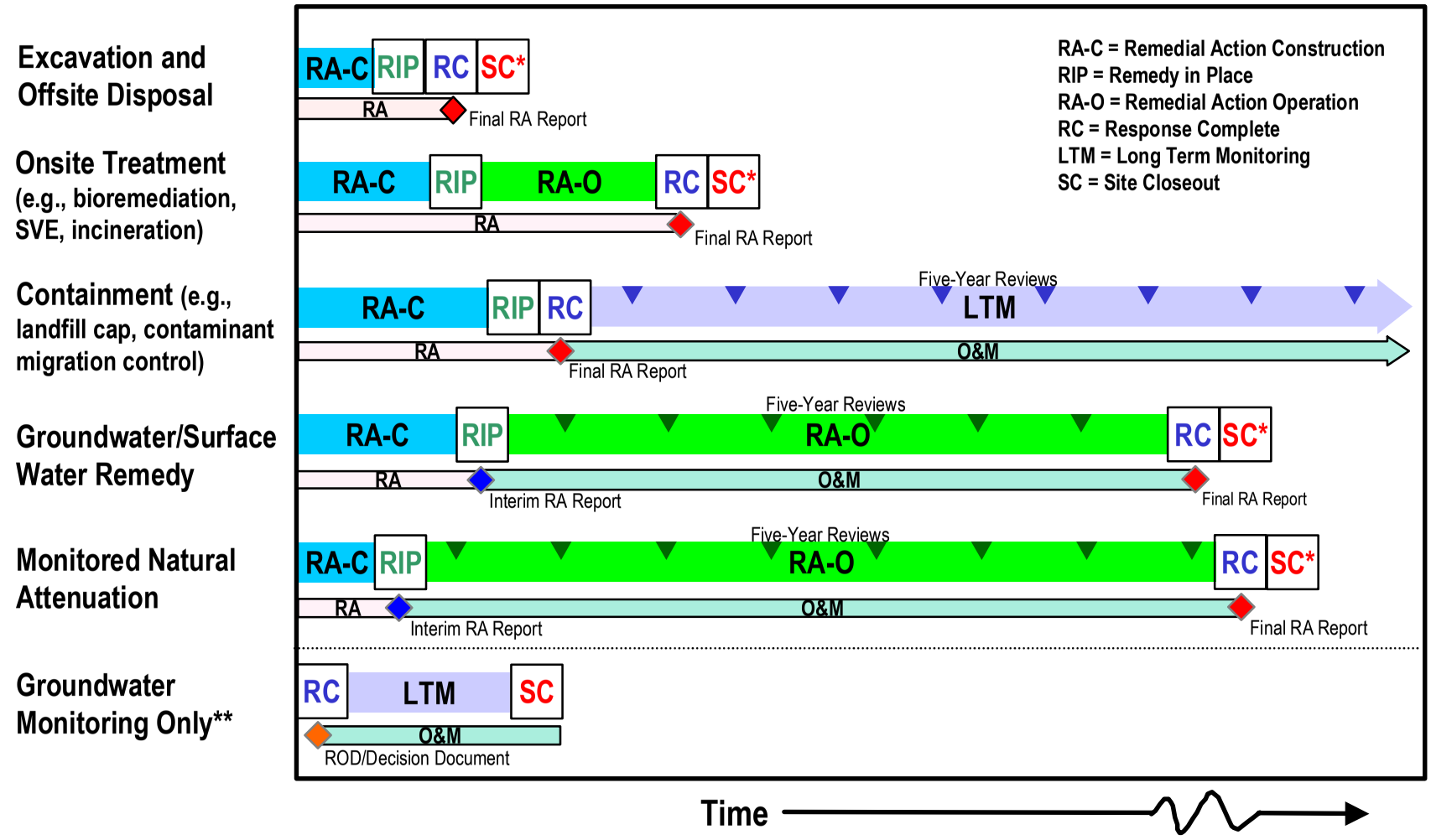
When a selected remedy is a hybrid of several remedy scenarios, it is important to remember that the remedy does not achieve a particular milestone until all components of the remedy have attained that milestone. In the example above, the remedy would not achieve "response complete" until the groundwater pump-and-treat reached its cleanup goals, likely a much later date than that on which the soil source excavation achieved its "response complete."

Figure 2.0 and Table 2.0 also compare the DoD environmental restoration program terminology with that used in EPA's Superfund program. In the Superfund program, the primary post-remedy decision phases are Remedial Action (RA) and Operation and Maintenance (O&M). O&M activities are only applicable to containment remedies, groundwater and surface water restoration, and monitored natural attenuation. O&M are the activities required to maintain the effectiveness or the integrity of the remedy, and, in the case of measures to restore groundwater or surface water and natural attenuation, continued operation of such measures until remediation levels are achieved. Except for long-term groundwater or surface water remedies (pump and treat, natural attenuation), O&M measures are initiated after the remedy has achieved the remedial action objectives and remediation goals in the ROD. Achievement of cleanup goals is marked by completion of a Final RA Report; for long-term groundwater and surface water remedies, an Interim RA Report can be prepared once the remedy is in place.

In many cases there is not a straightforward relationship between the EPA Superfund and DoD terms. However, much of EPA's current guidance is not phrased in terminology applicable to a Federal facility (i.e., it is directed toward Fund-lead and PRP sites). Therefore, it is important to exercise care in the application and usage of EPA's terminology in the context of a DoD facility's environmental restoration program. The comparison of the DoD terminology and the EPA Superfund terminology is also discussed in Section 3.

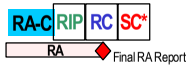
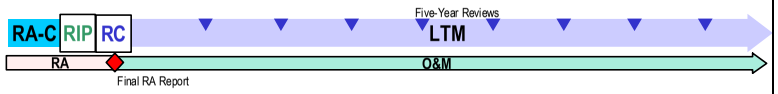
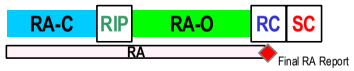
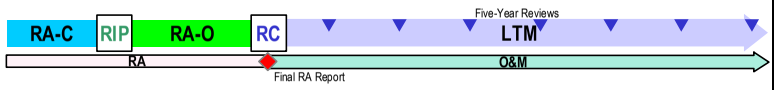
## FIGURE 2.0 APPLICABLE PHASES/MILESTONES AND TIMEFRAMES FOR TYPICAL REMEDY SCENARIOS*

WITH COMPARISON TO EPA/SUPERFUND TERMINOLOGY (SHOWN SECOND FOR EACH SCENARIO)

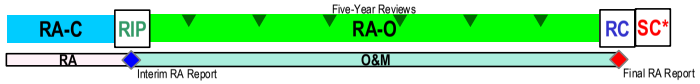
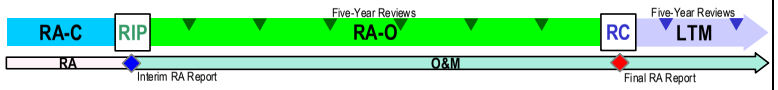



*A final remedy may be a hybrid of some or all of these remedy scenarios.
SC* = Indefinite LTM may be required for some sites (see Table 2.0).
** May be the only remedy selected at a site. Also applicable where previous Removal Actions and/or IRAs have achieved cleanup objectives, and the final remedy decision finds that only monitoring is needed to ensure permanence of the remedy.

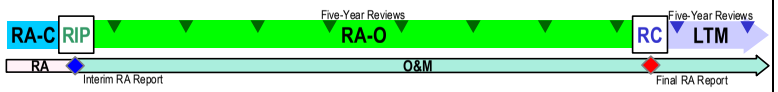
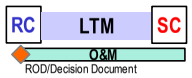
## Table 2.0 Descriptions of Remedy Scenarios

| REMEDY SCENARIO | DESCRIPTION |
|---|---|
| **Excavation and Offsite Disposal**<br><br>**Unlimited Use/Unrestricted Exposure:**<br>  <br><br><br>**Limited Use/Restricted Exposure:**<br>  <br> | The excavation and offsite disposal remedy would be constructed **(RA-C),** as necessary, in accordance with plans and specifications developed during the **RD** phase. **RA-C** would also consist of excavating and transporting contaminated materials to an offsite disposal location. Following completion of **RA-C** and conduct of appropriate inspections, **RIP** would be achieved. If the site is cleaned up to unlimited use and unrestricted exposure levels, **RC,** and **SC** would be achieved.<br><br>If hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (e.g., the site is cleaned up to industrial use levels), indefinite **LTM** would be required, involving at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RA-C/RIP/RC — RA concluding with approval of Final RA Report<br>LTM (if required) — O&M |
| **Onsite Treatment**<br>**(e.g., bioremediation, soil vapor extraction, and incineration)**<br><br>**Unlimited Use/Unrestricted Exposure:**<br>  <br><br><br>**Limited Use/Restricted Exposure (including Technical Impracticability):**<br>  <br> | The onsite treatment system would be constructed **(RA-C)** in accordance with plans and specifications developed during the **RD** phase. Following completion of the remedy construction and conduct of appropriate inspections, **RIP** would be achieved. The treatment system would be operated (**RA-O**) until remedial objectives are achieved. If the site is cleaned up to unlimited use and unrestricted exposure levels, **RC** and **SC** would be achieved.<br><br>If hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure, indefinite **LTM** would be required, involving at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>If it is determined during the **RA-O** phase that remedial action objectives cannot be achieved and a Technical Impracticability (TI) waiver is granted to achieve **RC,** indefinite **LTM** would be required, involving at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews). Groundwater Monitoring may also potentially be required.<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RA-C/RIP/RA-O/RC — RA concluding with approval of Final RA Report<br>LTM (if required) — O&M |

## Table 2.0 Descriptions of Remedy Scenarios

| REMEDY SCENARIO | DESCRIPTION |
|---|---|
| **Containment**<br>**(e.g., landfill cap, leachate collection/treatment systems, and groundwater/ surface water interception/ diversion measures)**<br>  | The containment remedy would be constructed **(RA-C)** in accordance with plans and specifications developed during the **RD** phase. Following completion of the remedy construction and conduct of appropriate inspections, **RIP** would be achieved. **RC** would also be achieved because remedial action objectives would be met with completion of construction. No **RA-O** would be required with this remedy; operation of leachate collection/treatment systems and water interception/diversion measures would be considered part of **LTM**.<br><br>Indefinite **LTM** may be required to operate and/or maintain the effectiveness and integrity of the constructed remedy (e.g., maintenance of a landfill cap), including conduct of five-year reviews to ensure continued protectiveness of the remedial action.<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RA-C/RIP/RC — RA concluding with approval of Final RA Report<br>LTM — O&M |
| **Groundwater or Surface Water Remedy**<br><br>**Unlimited Use/Unrestricted Exposure:**<br>  <br>**Limited Use/Restricted Exposure (including Technical Impracticability):**<br>  | The water treatment remedy (e.g., a groundwater pump and treat system) would be constructed **(RA-C)** in accordance with plans and specifications developed during the **RD** phase. Following completion of the remedy construction and conduct of appropriate inspections, **RIP** would be achieved. The treatment system would be operated (**RA-O**) until remedial action objectives specified in the **ROD/DD** are achieved (**RC**). Limited **LTM** activities (e.g., groundwater monitoring) could be required as part of **RC** to demonstrate that concentrations are at or below cleanup standards prior to achieving **SC**. Five-year reviews would be required during the **RA-O** phase, beginning five years from the date that **RA-C** is initiated.<br><br>If achieved cleanup objectives do not allow for unlimited use and unrestricted exposure (i.e., the site is cleaned up to industrial use levels), indefinite **LTM** would be required, involving at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>If it is determined during the **RA-O** phase that remedial action objectives cannot be achieved and a Technical Impracticability (TI) waiver is granted to achieve **RC,** indefinite **LTM** would be required, involving at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RA-C/RIP — RA concluding with approval of Interim RA Report<br>RA-O/RC/LTM — O&M with approval of Final RA Report at RC |

## Table 2.0 Descriptions of Remedy Scenarios

| REMEDY SCENARIO | DESCRIPTION |
|---|---|
| **Monitored Natural Attenuation**<br><br>**Unlimited Use/Unrestricted Exposure:**<br>  <br><br><br>**Limited Use/Restricted Exposure (including Technical Impracticability):**<br>  <br> | **RA-C** would consist of construction of a monitoring system in accordance with plans and specifications developed during the **RD** phase. **RA-C** would likely only involve the installation of additional monitoring wells; for some sites, no **RA-C** activities may be required. Following completion of the remedy construction and conduct of appropriate inspections, **RIP** would be achieved. The treatment remedy would be operated (**RA-O**) (i.e., performance monitoring) until remedial action objectives specified in the **ROD/DD** are achieved (**RC**). Limited **LTM** (e.g., groundwater monitoring) could be required as part of **RC** to demonstrate that concentrations are at or below cleanup standards prior to achieving **SC**. Five-year reviews would be required during the **RA-O** phase, beginning five years from the date that **RA-C** is initiated.<br><br>If achieved cleanup objectives do not allow for unlimited use and unrestricted exposure (i.e., the site is cleaned up to industrial use levels), indefinite **LTM** would be required, involving, at a minimum, review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>If it is determined during the **RA-O** phase that remedial action objectives cannot be achieved and a Technical Impracticability (TI) waiver is granted to achieve **RC,** indefinite **LTM** activities would be required, involving at a minimum, groundwater monitoring and review of the protectiveness of the remedial action no less often than every five years to ensure that human health and the environment are being protected (i.e., five-year reviews).<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RA-C/RIP — RA concluding with approval of Interim RA Report<br>RA-O/RC/LTM — O&M with approval of Final RA Report at RC |
| **Groundwater Monitoring Only****<br><br>  <br><br><br>** Typically applicable where previous Removal Actions and/or IRAs have achieved cleanup objectives, and the final remedy decision finds that only monitoring is needed to ensure permanence of the remedy. | If a No Action **ROD/DD** (e.g., for a site with a previous removal action) specifies that groundwater monitoring (**LTM**) is the only activity that would be undertaken, **RC** would be achieved when the **ROD/DD** is signed. The limited **LTM** activities would be performed to ensure that assumptions regarding no action are correct. When the limited **LTM** activities are terminated, **SC** would be achieved.<br><br>***Corresponding EPA Superfund Milestones/Phases:***<br>DoD — EPA<br>RC/LTM — O&M |

# 3.0 CERCLA SITE CLOSEOUT PROCESS

This section of the guide addresses the CERCLA requirements and should be used by the restoration project team to plan and tailor their site closeout efforts and to facilitate the environmental site closeout process at their installation. This is not intended to be a prescriptive document that must be followed explicitly. The CERCLA guidance and information described in this section provide the DoD Component RPM/BEC a flexible management tool that can be applied to the specific situations at each installation.

Users of this section should recognize that in most cases only a portion of these requirements would apply at a particular installation. Restoration project team members should discuss the most effective manner of integrating and applying these requirements at their installation. A set of tools, information, and considerations with which to develop a site closeout strategy for an installation is presented. Not every installation will require all the tools.

The closeout of sites under CERCLA follows the process defined in the implementing regulations (the National Oil and Hazardous Substances Pollution Contingency Plan [NCP] [40 CFR 300]) and related EPA guidance. Major milestones, phases, and documentation requirements for this process are identified in Figure 3.0 and Tables 3.0-1, 3.0-2, and 3.0-3.

Table 3.0-1 presents a comparison of DoD and CERCLA/Superfund phase and milestone terminology. It should be noted that certain other commonly used EPA/Superfund fund-lead terms (e.g., operational and functional and long-term remedial action) are not readily comparable to DoD terminology and are not necessarily applicable for a Federal facility; for this reason they have been omitted from Table 3.0-1.

Table 3.0-2 presents typical contents for site closeout documentation during major phases and milestones of the process. Restoration project teams are encouraged to use this table to tailor the contents and determine the applicability of documentation to their installation. This is an area where, by working together up front, teams can streamline and consolidate their documentation effort, as illustrated by the commonality of document components shown in Table 3.0-2. Restoration project teams must document their efforts in a manner similar to the CERCLA process, whether or not their installation is on the NPL, in order to show consistency with the NCP.

Table 3.0-3 lists in greater detail the various forms and purposes of site closeout documentation, including documents beyond those presented in Table 3.0-2.

Site restoration under CERCLA also entails two additional requirements not explicitly addressed under RCRA: Five-Year Reviews of remedy protectiveness and deletion of NPL installations from the NPL. These requirements are addressed in Sections 3.8 and 3.9, respectively.

In the following subsections, figures and accompanying tables describe an overall framework for closeout of sites under CERCLA. The figures in the following subsections are all consolidated into a single foldout flowchart at the end of this section. The information is a compilation of existing laws, regulations, policies, and guidance, and assigns responsibilities for each task to a **Lead** (the person/organization primarily responsible for task execution) and **Coordination/Concurrence** (the person(s)/organization(s) that must assist in, coordinate on, review, concur with, and/or approve task execution). For NPL sites, these coordination/concurrence roles are generally well-defined; at non-NPL sites, the respective roles of EPA and the state may require further definition. In the accompanying flow charts, task boxes with the ⌐ shape indicate tasks that are primarily documentation requirements.

## Figure 3.0. General Environmental Site Closeout Process (CERCLA)

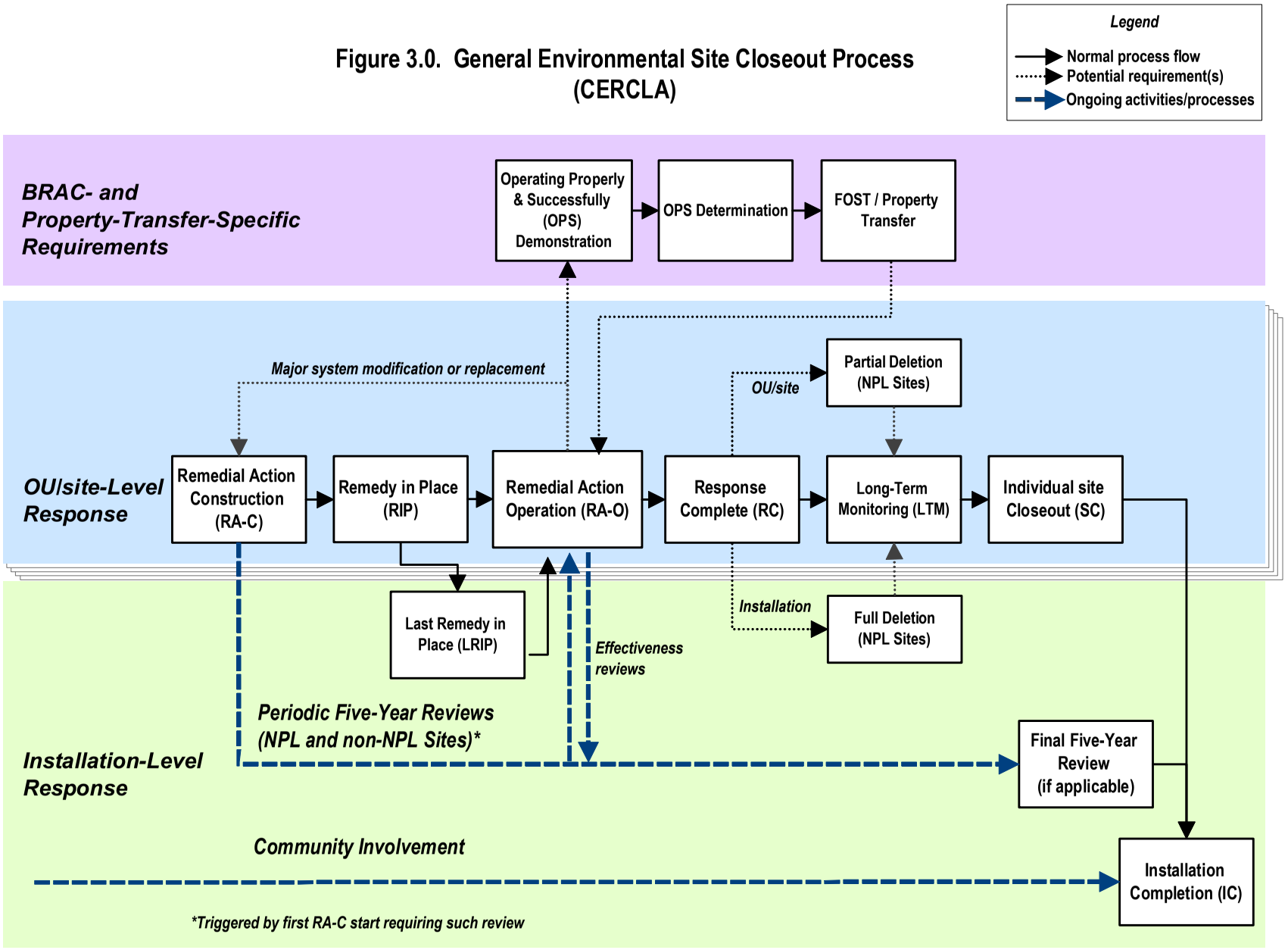


**TABLE 3.0-1 COMPARISON OF DOD AND CERCLA/SUPERFUND PHASE AND MILESTONE TERMINOLOGY**

| DoD Phases/Milestones | CERCLA/Superfund Phases/Milestones |
|---|---|
| Site Discovery | Site Discovery |
| Preliminary Assessment/Site Investigation | Preliminary Assessment/Site Investigation |
| Remedial Investigation | Remedial Investigation |
| Feasibility Study | Feasibility Study |
| Record of Decision | Record of Decision |
| Remedial Design | Remedial Design |
| **Remedial Action Construction (RA-C)*** | **Remedial Action Start through Completion** |
| **Remedy in Place (RIP)*** | **Remedial Action Completion** |
| **Last Remedy in Place (LRIP)*** | **NPL Site Construction Completion/ Preliminary Close Out Report [all Operable Units/Entire Installation]** |
| **Remedial Action – Operation (RA-O)*** | **Remedial Action (RA) or Operation & Maintenance (O&M) [depending on remedy]** |
| **Response Complete*** | **Final RA Report [individual sites/OUs] or NPL Site Completion/Final Close Out Report [all Operable Units/Entire Installation]** |
| | **NPL Deletion** |
| **Long-Term Monitoring (LTM)*** | **Operation and Maintenance**** |
| **Site Closeout*** | *None* |

*Milestones/phases used in this guide

**Will continue beyond NPL deletion

## TABLE 3.0-2 DOCUMENTATION CONTENTS FOR CERCLA SITE CLOSEOUT

| Contents | Remedy Placement (RIP(1)) | | Remedy Performance (RA-O(2), RC(1)) | | | Remedy Protectiveness (LTM(2), SC(1)) |
|---|---|---|---|---|---|---|
| | Site/OU level | Installation Level | Site/OU Level | | Installation Level | Installation Level |
| | Interim RA Report | Preliminary Closeout Report (PCOR) | OPS Demonstration | RA Report | Final Closeout Report (FCOR) | Five-Year Review Report |
| Introduction | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Summary of Site Conditions | ✔ | ✔ | ✔ | | ✔ | ✔ |
| Chronology of Events | ✔ | | | ✔ | | |
| Performance Standards and Construction Quality Control | ✔ | | | ✔ | | |
| Construction Activities | ✔ | | ✔ | ✔ | | |
| Certification that Remedy is Functioning Properly | ✔ | | | ✔ | | |
| Demonstration of Cleanup Activity QA/QC | | ✔ | | | ✔ | |
| Monitoring Results | ✔ | ✔ | | ✔ | ✔ | ✔ |
| Operation and Maintenance Plan | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Schedule for Site Completion | ✔ | ✔ | ✔ | | | ✔ |
| Confirmation Sampling for Attainment of Cleanup Objectives | | | | | ✔ | ✔ |
| Final Remedy Inspection and Results | | | | ✔ | ✔ | |
| Analysis of Protectiveness | | | | | ✔ | ✔ |
| Five-Year Review Schedule | | ✔ | | | ✔ | |
| Summary of Costs | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

(1) Signifies that this is a Milestone
(2) Signifies that this is a Phase

## Table 3.0-3 Summary of CERCLA Site Closeout Documentation Requirements*

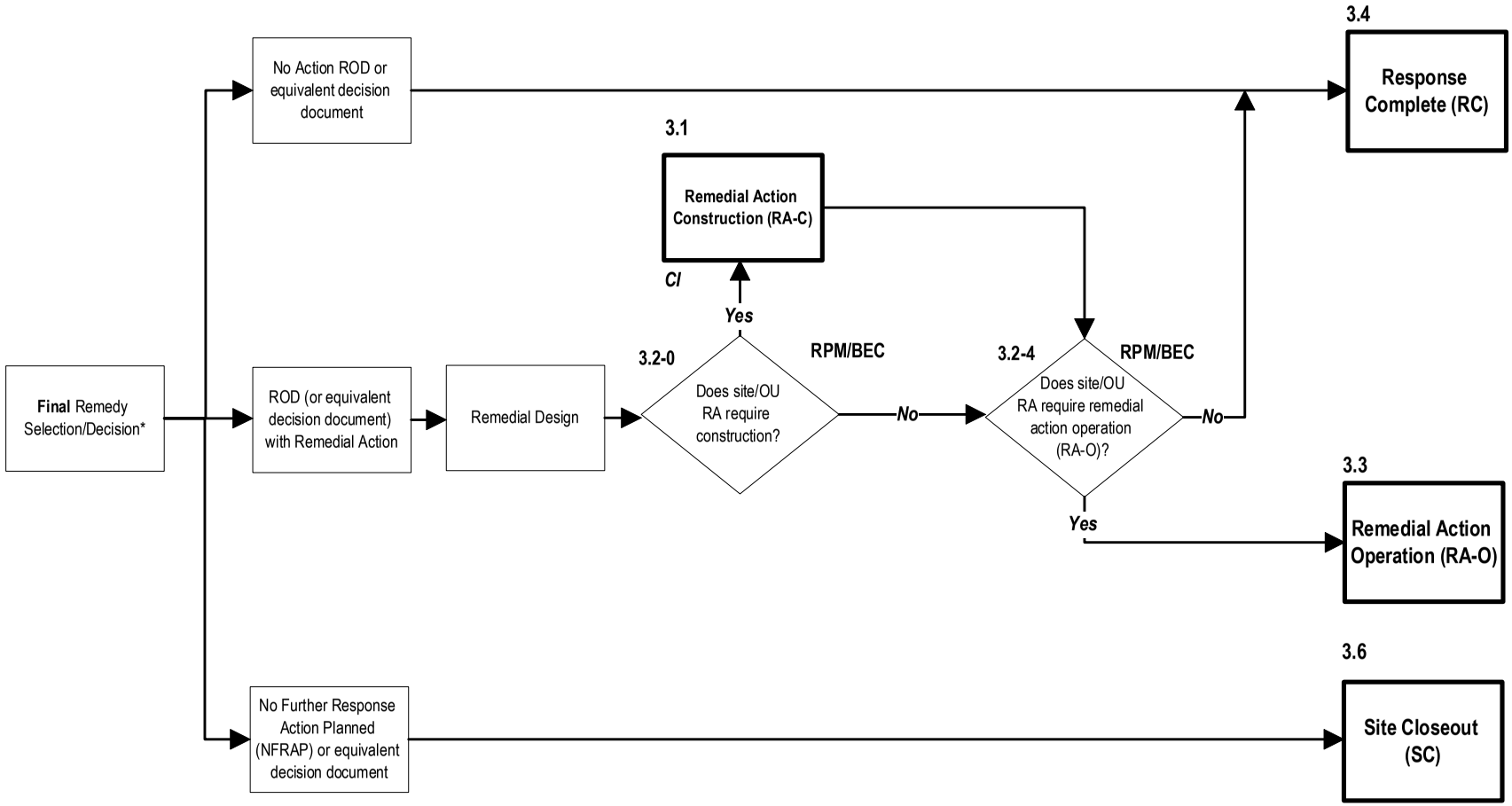
| Document | Also RCRA Requirement | Applicability | | | Purpose/Function |
|---|---|---|---|---|---|
| | | Site | OU | Inst. | |
| **Remedy Decision** | | | | | |
| No Action Record of Decision (ROD) or equivalent decision document | | ✓ | ✓ | | Results when the lead agency (DoD Component) determines that no remedial action is necessary |
| ROD (or equivalent decision document) with Remedial Action | | ✓ | ✓ | | Documents remedy to be taken at sites requiring action. |
| Public Notice of Availability of ROD | | ✓ | ✓ | | Required under the NCP when a ROD is signed and issued |
| No Further Response Action Planned (NFRAP) or equivalent decision document | | ✓ | ✓ | | NFRAP is a decision document that indicates that no further remedial action is considered necessary at a site. |
| **Remedy in Place (RIP)** | | | | | |
| Interim RA Report | | ✓ | ✓ | | For long-term groundwater and surface water remedies, documents that physical construction is complete and unit is operating as designed. Only applicable when attainment of cleanup goals will take a long time. |
| Preliminary Close Out Report (PCOR) | | | | ✓ | Demonstrates and documents that physical construction at all sites/OUs at an installation has been completed. |
| **Remedial Action Operation (RA-O)** | | | | | |
| Remedial Action Operation Plan | | ✓ | ✓ | | A general plan for the conduct of a response action, addressing RA operations and maintenance, health and safety, performance and environmental monitoring |
| Progress/Performance Report(s) | | ✓ | ✓ | | Documents that the remedial action is performing properly and in accordance with the ROD |
| Public Notice/Comment for Remedy Alterations | ✓ | ✓ | ✓ | | When a remedy must be altered because cleanup goals are not being achieved (e.g., through a ROD amendment or modified corrective action plan), public notice/ comment is generally required |
| **Five-Year Review(s)** | | | | | |
| Five-Year Review Report | | | | ✓ | Documents scope and nature of the review, results, actions taken or proposed, and scope and nature of future reviews |
| **Operating Properly and Successfully (OPS) Demonstration** | | | | | |
| OPS Demonstration and Approval Letter | | ✓ | ✓ | | Only applicable in cases where property is being transferred. Indicates that the remedy has been demonstrated to EPA to be operating properly and successfully. |
| Finding of Suitability to Transfer (FOST) | | ✓ | ✓ | | Documents that property is suitable for deed transfer under CERCLA |
| Public Notice of FOST | | ✓ | ✓ | | Notifies the public that a FOST has been signed/issued |
| **Response Complete (RC)** | | | | | |
| Remedial Action (RA) Report | | ✓ | ✓ | | Documents that cleanup activities have taken place at a single OU/site and that ROD cleanup standards have been met |
| Long-Term Monitoring Plan | ✓ | ✓ | ✓ | | A general plan indicating how a successful RA will continue to be monitored to ensure that the remedy remains effective |
| Final Close Out Report (FCOR) | | | | ✓ | Documents compliance with statutory requirements and provides a consolidated record of all remedial activities for all OUs at an installation |
| **NPL Deletion** | | | | | |
| Letter of state Concurrence | | ✓ | ✓ | ✓ | Indicates that state concurs with EPA's intent to delete site from the NPL; deletion cannot occur without state concurrence |
| [Partial or Full] Deletion Docket | | ✓ | ✓ | ✓ | Contains all pertinent information supporting the deletion recommendation |
| [Partial or Full] Notice of Intent to Delete (NOID) | | ✓ | ✓ | ✓ | Informs the public of EPA's intent to delete all or a portion of an installation from the NPL; published in the *Federal Register* |
| Responsiveness Summary | | ✓ | ✓ | ✓ | Presents comments received during the public comment period with detailed responses to the comments |
| Notice of [Partial or Full] Deletion | | ✓ | ✓ | ✓ | States that all responses under CERCLA have been implemented and that no further response is appropriate for all or a portion of an installation |
| **Site Closeout (SC)** | | | | | |
| Federal Facilities Agreement termination | ✓ | | | ✓ | Documents that restoration of an NPL installation is complete and terms of the FFA have been met |

* A list of example documents are tabulated in Section 9, many of which can be obtained on the Environmental Site Closeout website, *http://www.afbca.hq.af.mil/closeout.*

## 3.1 REMEDIAL ACTION CONSTRUCTION (RA-C)

Much guidance has already been prepared to address the initial steps of the environmental site closeout process, including Remedial Action Construction. As a result, Table 3.1 only includes task guidance and information for community involvement at a high level. Readers can refer to other sources for additional guidance and information on RA-C. Subsequent steps of the Site Closeout Process are discussed in greater detail in later sections.

## Figure 3.1. Remedial Action Construction (CERCLA)




***CI*** denotes Community Involvement

*EE/CAs, IRAs, Removal Actions require final decision document

**TABLE 3.1 REMEDIAL ACTION CONSTRUCTION (CERCLA)**

*This Table accompanies **Figure 3.1, Remedial Action Construction (CERCLA)***

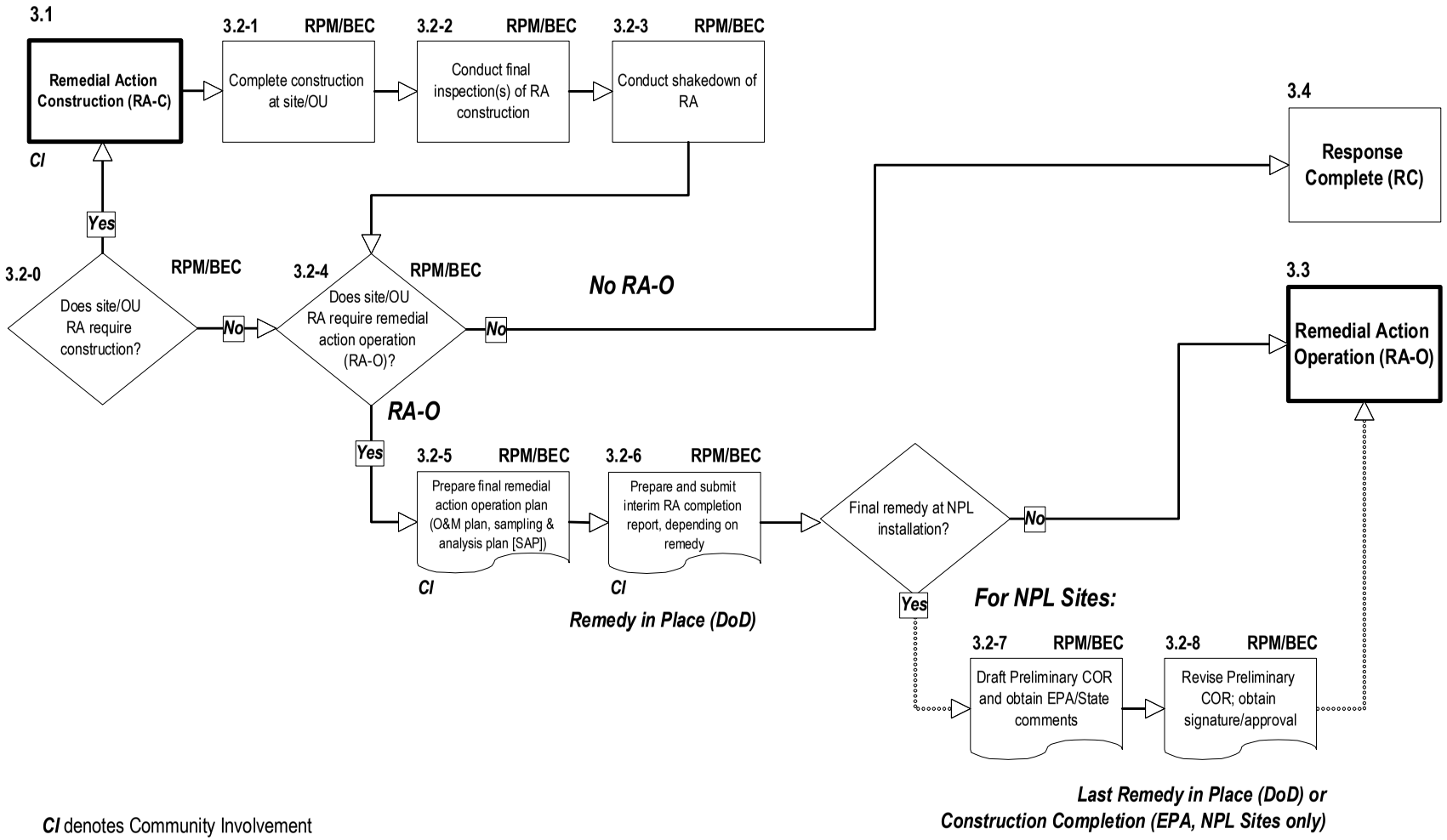
| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **REMEDIAL ACTION CONSTRUCTION (CERCLA)** | | | |
| | Final Remedy Selection/Decision | RPM/BEC | | ❑ Interim Remedial Actions (IRAs), or previous Engineering Evaluations/Cost Analyses (EE/CAs) and Removal Actions, require a final decision document if they are intended to serve as the final remedy for a site/OU. The overall site closeout process refers to the final remedy for a site; site closeout cannot be accomplished until the final remedy has been identified and selected. |
| | No Action Record of Decision (ROD) or equivalent decision document | RPM/BEC | | ❑ Typically issued at site/OU level when existing conditions do not warrant further remedial action. May document that previously conducted removal actions or interim remedial actions were sufficient to protect human health and the environment. |
| | ROD (or equivalent decision document) with Remedial Action | RPM/BEC | | ❑ Documents planned remedial activities at site/OU level or across an entire installation. |
| | No Further Response Action Planned (NFRAP) or equivalent decision document | RPM/BEC | | ❑ NFRAP is an Air Force decision document. In general, a NFRAP document indicates no further action is required at a site/OU or for an entire installation. In the context of Figure 3.1, the NFRAP documents that the final remedy requires no action; i.e., no additional remedial action is planned across the entire installation. |
| | Remedial Design | RPM/BEC | | ❑ In general, a selected remedy that requires some form of remedial action will also require a remedial design phase. In the case of simple excavation, the RD phase may consist of developing the plan for executing the excavation. For more complex, long-term remedies such as groundwater pump-and-treat, the RD phase will be more substantial. |
| 3.1 | **Remedial Action Construction (RA-C)** | | | ***Community Involvement***<br>*Required*<br>❑ At completion of engineering design, produce and distribute updated Fact Sheet on Final Engineering Design.<br>❑ Conduct public briefing on Final Engineering Design (as appropriate).<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 3.2 Documentation of Remedy in Place

The process for Documentation of Remedy in Place is graphically shown in Figure 3.2 with accompanying task guidance and information in Table 3.2.

## Figure 3.2. Documentation of Remedy in Place (CERCLA)

***(Must be done for each individual site/OU)***




***CI*** denotes Community Involvement

## TABLE 3.2 DOCUMENTATION OF REMEDY IN PLACE (CERCLA)

*This Table accompanies **Figure 3.2, Documentation of Remedy in Place (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **DOCUMENTATION OF REMEDY IN PLACE (CERCLA) (FOR EACH SITE/OU)** | | | |
| 3.2-0 | Does site/OU RA require construction? *[If No, proceed to task 3.2-4]* | RPM/BEC | | ❑ A site may be a construction completion candidate even when no physical construction is required or a long operation phase follows physical construction.<br>❑ If no construction is required, proceed to task 3.2-4. |
| | **Remedial Action Construction (RA-C)** | | | ***See Table 3.1*** |
| 3.2-1 | Complete construction at site/OU | RPM/BEC | | ❑ If construction is completed at the last site/OU, construction is also completed at the installation. |
| 3.2-2 | Conduct final inspection(s) of RA construction | RPM/BEC | EPA/state RPM | ❑ A pre-final inspection should be conducted at the site/OU. Construction completion criteria are satisfied when only minor "punch list" items are identified in the inspection to finish the work in accordance with design plans and specifications. A final inspection may be required before final acceptance.<br>❑ An inspection involving the RPM/BEC, the EPA RPM, the RA contractor, and other agencies with a jurisdictional interest (i.e., the state) is generally required. The purpose of this inspection is to determine if all aspects of the plans and specifications have been implemented according to applicable enforcement documents. |
| 3.2-3 | Conduct shakedown of RA | RPM/BEC | | ❑ The shakedown period enables minor modifications in the remedy to ensure the remedy is operating as designed. |
| 3.2-4 | Does site/OU RA require remedial action operation (RA-O)? *[If No, proceed to task 3.4]* | RPM/BEC | | ❑ *See Section 2 for examples of remedy scenarios and the applicability of the RA-O phase to various types of remedial actions.* |
| 3.2-5 | Prepare final remedial action operation plan (O&M plan, sampling & analysis plan [SAP]) | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.2-6 | Prepare and submit interim RA completion report, depending on remedy | RPM/BEC | | ❑ An interim RA completion report is a general term used for an interim RA Report at an NPL installation or an equivalent decision document at a non-NPL installation.<br>❑ For longer-term remedies (e.g., groundwater or surface water remedies or monitored natural attenuation), an interim RA completion report is prepared when the physical construction of the system is complete and the unit is operating as designed. The report is amended and completed when the cleanup standards specified in the ROD are achieved (see Section 3.4).<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

**TABLE 3.2 DOCUMENTATION OF REMEDY IN PLACE (CERCLA)**

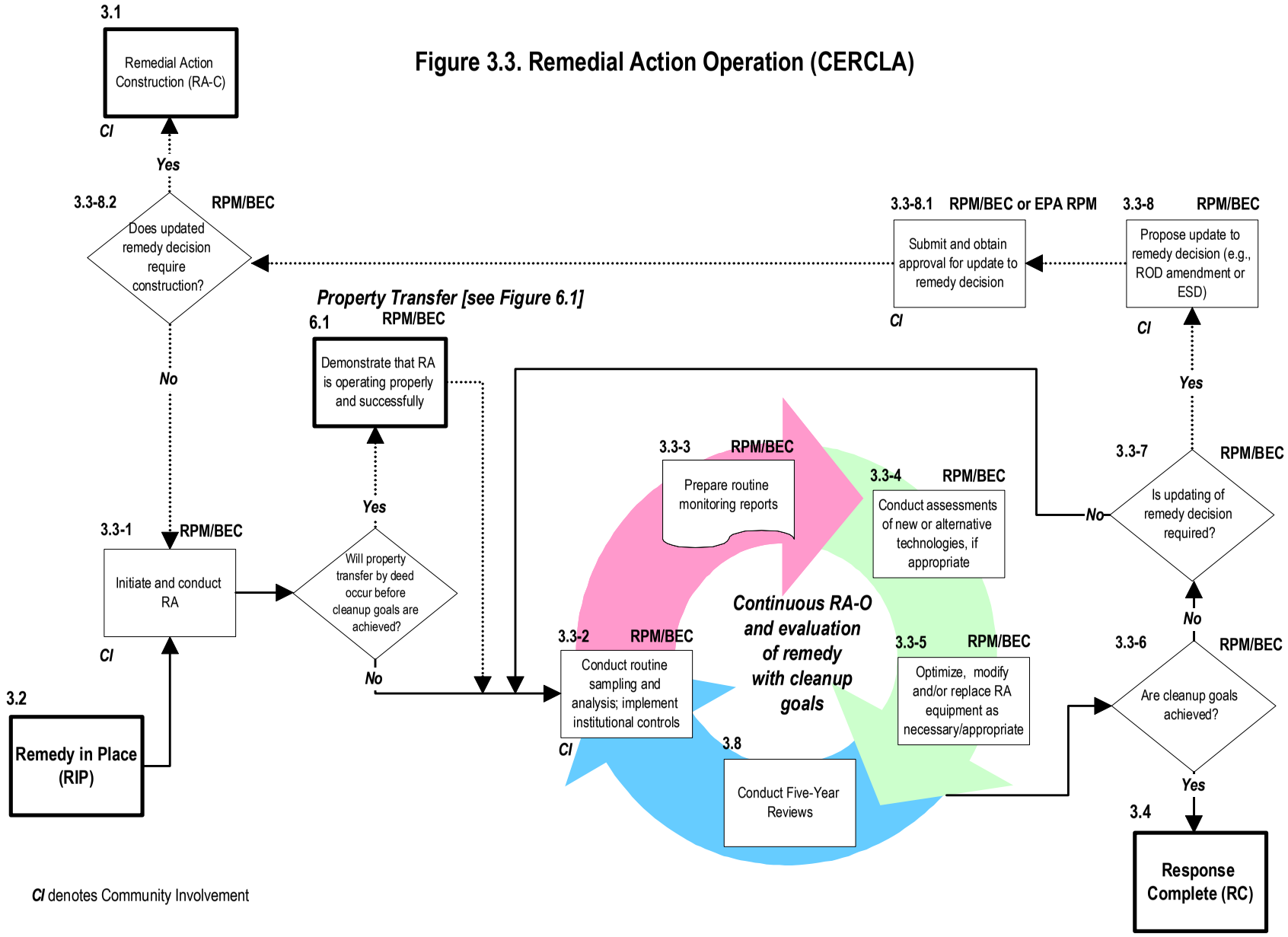
*This Table accompanies **Figure 3.2, Documentation of Remedy in Place (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | Final remedy at NPL installation? *[If No, proceed to task 3.3]* | | | ❑ If final remedy at an NPL installation, begin preparing a Preliminary Close Out Report (PCOR) for the installation. |
| 3.2-7 | Draft Preliminary Close Out Report (PCOR) and obtain EPA/state comments | RPM/BEC | EPA RPM | ❑ The RPM/BEC will draft the Preliminary Close Out Report (PCOR) and provide it to the EPA RPM for review/action.<br>❑ A PCOR demonstrates and documents that physical construction at an installation has been completed. The PCOR must contain a schedule for the installation to satisfy the NCP and other procedural requirements necessary to issue a Final Close Out Report.<br>❑ The PCOR can be prepared before the RA Report for the final site/OU is complete and the remedy has been determined to be functioning properly.<br>❑ The EPA RPM sends the PCOR to EPA Headquarters for comments. |
| 3.2-8 | Revise Preliminary COR; obtain signature/approval | RPM/BEC | EPA RPM | ❑ After incorporating Headquarters' comments and obtaining the signature of the delegated regional official, a copy of the signed report is forwarded to EPA Headquarters.<br>❑ Proceed to task 3.3 |

## 3.3 Remedial Action Operation (RA-O)

The process for Remedial Action Operation is graphically shown in Figure 3.3 with accompanying task guidance and information in Table 3.3.

## Figure 3.3. Remedial Action Operation (CERCLA)



## TABLE 3.3 REMEDIAL ACTION OPERATION (CERCLA)

*This Table accompanies **Figure 3.3, Remedial Action Operation (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **REMEDIAL ACTION OPERATION (CERCLA)** | | | |
| 3.3-1 | Initiate and conduct RA | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| | Will property transfer by deed occur before cleanup goals are achieved?<br>*[If Yes, proceed to task 6.1]* | RPM/BEC | | ❑ Prior to property transfer where a remedial action is ongoing, an operating properly and successfully (OPS) demonstration must be made and approved. |
| 3.3-2 | Conduct routine sampling and analysis; implement institutional controls | RPM/BEC | | ❑ All RA activities should be conducted in conformance with the remedy selected and set forth in the ROD and other decision documents for the site.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.3-3 | Prepare routine monitoring reports | RPM/BEC | | ❑ Evaluate performance of RA against cleanup goals.<br>❑ Submit the required progress reports to the appropriate regulatory agency. |
| 3.3-4 | Conduct assessments of new or alternative technologies, if appropriate | RPM/BEC | | ❑ Comparison of the existing RA system against potential new alternatives will require detailed information about system performance. |
| 3.3-5 | Optimize, modify, and/or replace RA equipment as necessary/appropriate | RPM/BEC | | ❑ Assess the need for upgrade or replacement of RA due to technological improvements, obsolescence, end of useful/expected life, or other factors. Consider associated costs, staffing, and related planning horizons.<br>❑ The *ACC IRP Site Closure Guidance Manual* includes detailed information on RA-O optimization. |
| 3.3-6 | Are cleanup goals achieved?<br>*[If Yes, proceed to task 3.4]* | RPM/BEC | | ❑ Achievement of cleanup goals may be an iterative process including sampling and analysis, modification of remedy equipment, and assessment of new technologies. |
| 3.3-7 | Is updating of remedy decision required?<br>*[If No, proceed to task 3.3-2]* | RPM/BEC | | ❑ Updating of the remedy decision may be required if the remedial action is not progressing toward attainment of cleanup goals for a substantial time. |
| 3.3-8 | Propose update to remedy decision (e.g., ROD amendment or ESD) | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.3-8.1 | Submit and obtain approval for update to remedy decision | RPM/BEC | EPA RPM | ❑ Approval should be obtained before updated remedy decision is implemented. |

**TABLE 3.3 REMEDIAL ACTION OPERATION (CERCLA)**

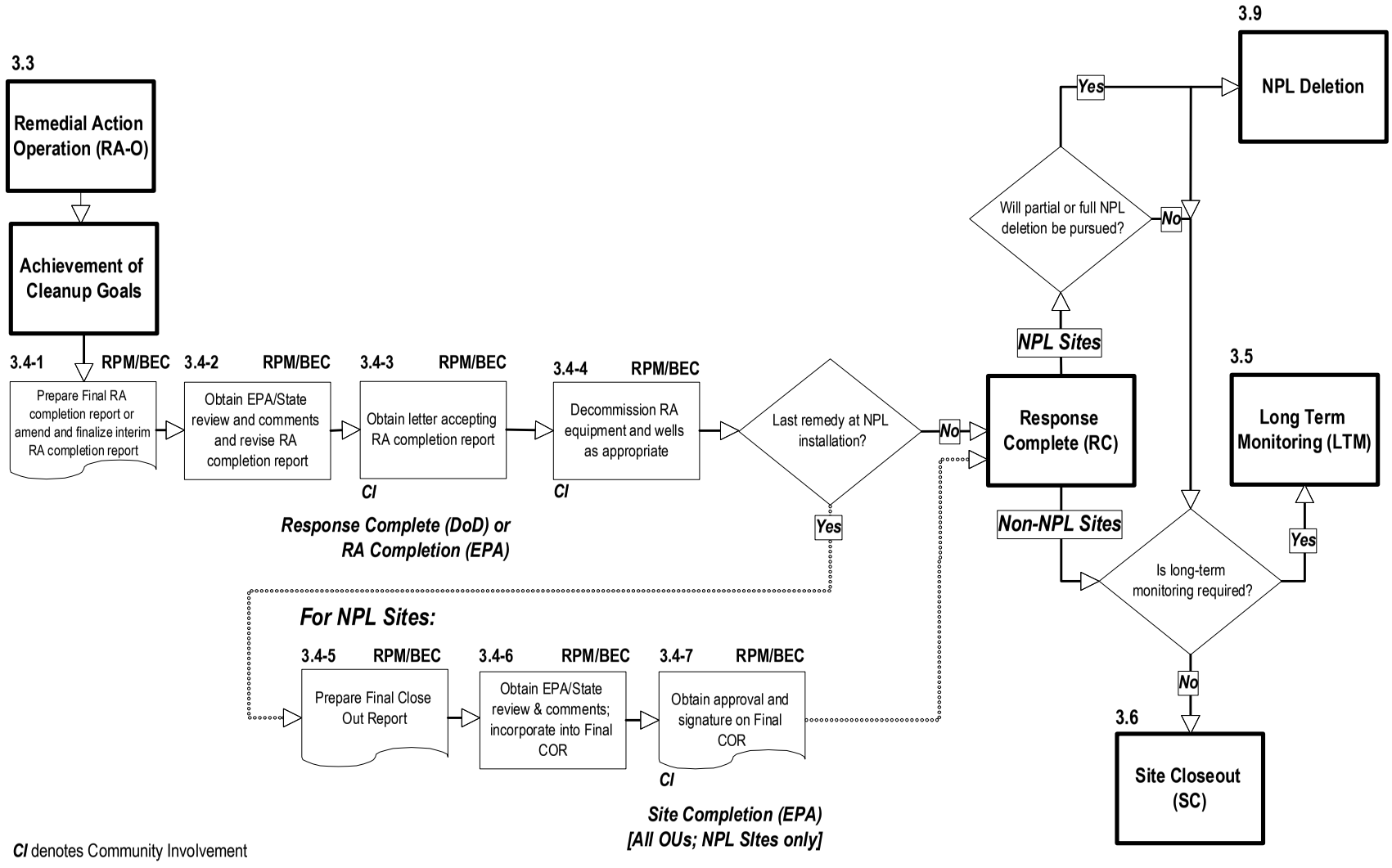
*This Table accompanies **Figure 3.3, Remedial Action Operation (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| 3.3-8.2 | Does updated remedy decision require construction?<br>*[If Yes, proceed to task 3.1]*<br>*[If No, proceed to task 3.3-1]* | RPM/BEC | | ❑ An updated remedy decision may not require construction; e.g., replacement of a pump-and-treat system for groundwater with monitored natural attenuation. |

## 3.4 Documentation of Response Complete

The process for Documentation of Response Complete is graphically shown in Figure 3.4 with accompanying task guidance and information in Table 3.4.

## Figure 3.4. Documentation of Response Complete (CERCLA)




*CI* denotes Community Involvement

## TABLE 3.4 DOCUMENTATION OF RESPONSE COMPLETE (CERCLA)

*This Table accompanies **Figure 3.4, Documentation of Response Complete (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **DOCUMENTATION OF RESPONSE COMPLETE (CERCLA)** | | | |
| 3-4.1 | Prepare final RA completion report or amend and finalize interim RA completion report | RPM/BEC | | ❑ An RA completion report is a general term used for an RA Report at an NPL installation or an equivalent decision document at a non-NPL installation.<br>❑ The final RA completion report documents the cleanup activities that took place at a single site/OU under remedial authority. In addition, it documents that the cleanup standards specified in the Record of Decision (ROD) have been met.<br>❑ After signing and dating the RA Report, the RPM/BEC sends it to the EPA RPM for review and comments. |
| 3-4.2 | Obtain EPA/state review and comments and revise RA completion report | RPM/BEC | EPA RPM | ❑ Revised RA completion report should incorporate EPA/State comments, as appropriate. |
| 3-4.3 | Obtain letter accepting RA completion report | RPM/BEC | EPA RPM | ❑ Once the EPA RPM's comments are incorporated, the designated regional EPA official signs a letter accepting the final RA Report.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3-4.4 | Decommission RA equipment and wells as appropriate | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| | Last remedy at NPL installation?<br>*[If Yes, proceed to task 3.4-5]* | | | ❑ EPA guidance requires NPL installations to document achievement of Response Complete at all sites/OUs (EPA's Site Completion milestone).<br>❑ Non-NPL installations may also prepare an analogous document to record achievement of cleanup goals for all remedies at the installation. |
| | **Response Complete (RC)** | | | ❑ **NPL Installations:** Will partial or full NPL deletion be pursued? *[If Yes, proceed to task 3.9, **Partial/Full NPL Deletion**]*<br>❑ **Non-NPL Installations:** Is long-term monitoring required? *[If Yes, proceed to task 3.5, **Long-Term Monitoring**; if No, proceed to task 3.6, **Site Closeout**]* |

**TABLE 3.4 DOCUMENTATION OF RESPONSE COMPLETE (CERCLA)**

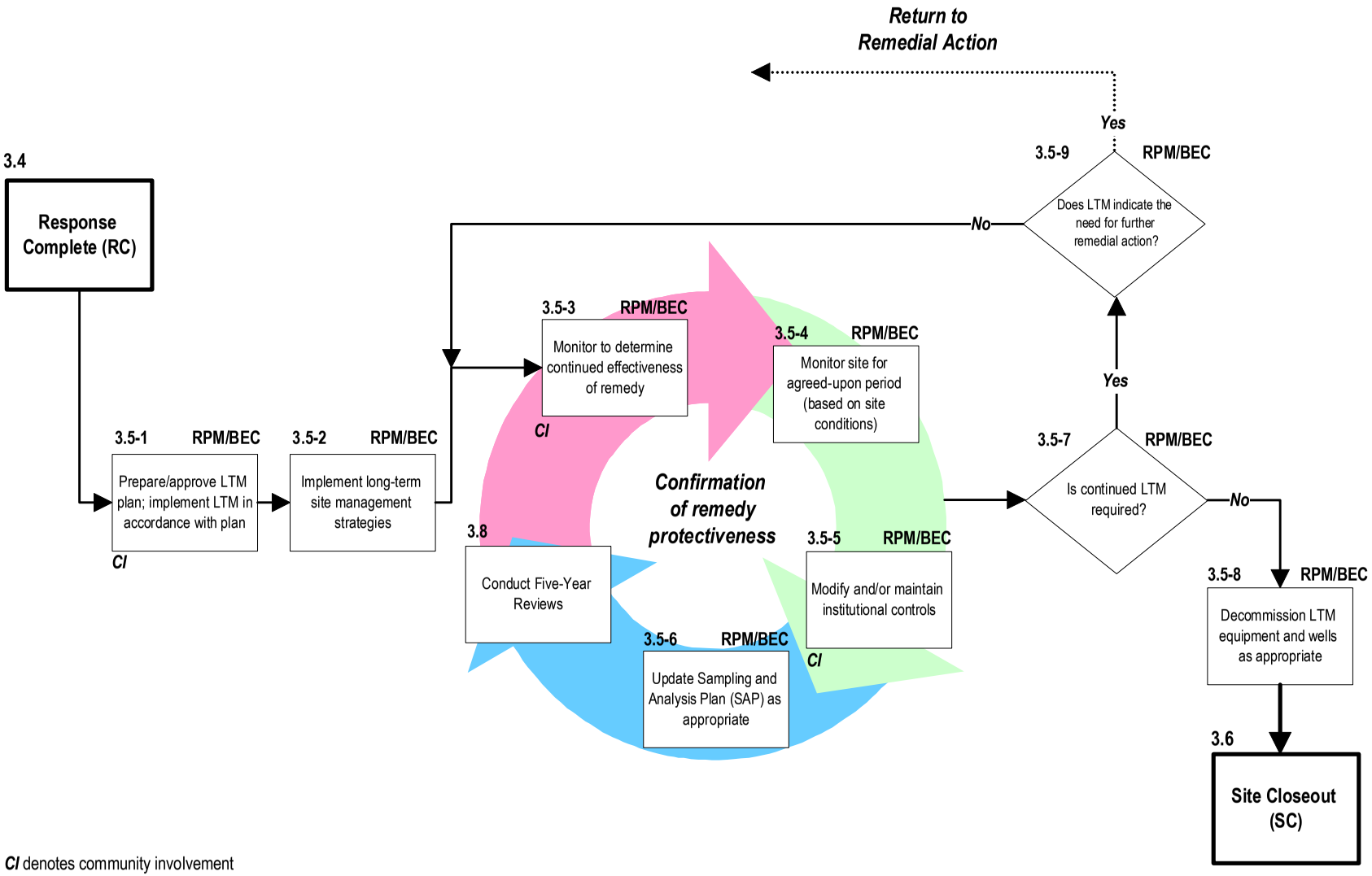
*This Table accompanies **Figure 3.4, Documentation of Response Complete (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| 3-4.5 | Prepare Final Close Out Report | RPM/BEC | | ❑ An installation must meet all four criteria below to be eligible for Response Complete (EPA's Site Completion):<br>• Cleanup levels specified in the RODs are met, and all cleanup actions and other measures identified in the RODs are successfully implemented;<br>• The constructed remedies are operational and performing according to engineering design specifications;<br>• The installation is protective of human health and the environment; and<br>• The only remaining activities, if any, at the installation are long-term monitoring.<br>❑ The RPM/BEC may draft the Final COR and provide it to the EPA RPM for review/action.<br>❑ The Final COR covers the entire installation. A Remedial Action (RA) Report for each operable unit, including the final, is required to document that the work was performed according to design specifications. A Final RA Report, however, cannot document Site Completion (Response Complete) for an installation. Only the Final COR, and in some cases a No Action ROD, satisfies completion requirements. |
| 3-4.6 | Obtain EPA/state review and comments; incorporate into Final COR | RPM/BEC | EPA/state RPM | ❑ EPA Headquarters and the state should have an opportunity to review and comment on the report prior to final approval.<br>❑ The EPA RPM sends the FCOR to EPA Headquarters for comments. |
| 3-4.7 | Obtain approval and signature on Final COR | RPM/BEC | EPA RPM | ❑ EPA Headquarters has Regional Coordinators assigned to act as primary reviewers of the Final COR. These individuals will work closely with the EPA RPM in performing completion activities and will review the Final COR. A copy of the approved Final COR should be sent to EPA Headquarters following signature by the appropriate Regional official.<br>❑ File the Final COR in the Administrative Record.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 3.5 Long-Term Monitoring

The process for Long-Term Monitoring is graphically shown in Figure 3.5 with accompanying task guidance and information in Table 3.5.

## Figure 3.5. Long-Term Monitoring (CERCLA)




*CI* denotes community involvement

## TABLE 3.5 LONG-TERM MONITORING (CERCLA)

*This Table accompanies **Figure 3.5, Long-Term Monitoring (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **LONG-TERM MONITORING (CERCLA)** | | | |
| 3.5-1 | Prepare/approve LTM plan; implement LTM in accordance with plan | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.5-2 | Implement long-term site management strategies | RPM/BEC | | ❑ At this point it may be appropriate to consider an alternative site management strategy that is better aligned with the requirements of the LTM phase. |
| 3.5-3 | Monitor to determine continued effectiveness of remedy | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.5-4 | Monitor site for agreed-upon period (based on site conditions) | RPM/BEC | | ❑ The period for monitoring may be indefinite, depending on the remedy and site conditions. |
| 3.5-5 | Modify and/or maintain institutional controls | RPM/BEC | | ❑ At this point, adjustments may be made to previously established institutional controls. For example, restrictions related to protection of the RA-O equipment may be lifted when the equipment has been removed, and use restrictions necessitated by pre-cleanup contaminant levels may be lifted.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.5-6 | Update Sampling and Analysis Plan (SAP) as appropriate | RPM/BEC | | ❑ The SAP may include the Quality Assurance Project Plan (QAPP), health and safety plan, and other related plans.<br>❑ In particular, the SAP should be revisited in light of potentially changing data quality objectives and the possibility of significantly altered sampling and analysis protocols as the site moves into the LTM phase. |
| 3.5-7 | Is continued LTM required?<br><br>*[If Yes, proceed to task 3.5-9]* | RPM/BEC | | ❑ LTM may be discontinued if site conditions become conducive to unrestricted use and unlimited exposure.<br>❑ To ensure optimum efficiency of an existing LTM program, the LTM optimization process should be reviewed and updated periodically. |
| 3.5-8 | Decommission LTM equipment and wells as appropriate | RPM/BEC | | ❑ Proceed to task 3.6, **Site Closeout** |
| 3.5-9 | Does LTM indicate the need for further remedial action?<br>*[If No, proceed to task 3.5-3]*<br>*[If Yes, return to task 3.3]* | RPM/BEC | | ❑ Further remedial action may be required where LTM shows an increased level of contamination at a site. |

## 3.6 Site Closeout

Task guidance and information for Site Closeout is shown in Table 3.6.

**TABLE 3.6 SITE CLOSEOUT (CERCLA)**

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **SITE CLOSEOUT (CERCLA)** | | | |
| 3.6-1 | Terminate active management of site | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.6-2 | Initiate long-term installation-management transition, as appropriate | Installation Manager | | ❑ Since the Site Closeout milestone represents the termination of active site management by the DoD, the appropriate DoD Component Installation Manager (e.g., Installation Commander or Civil Engineer) should phase out associated management strategies, including transition of affected personnel and functions.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 3.7 Installation Completion

Task guidance and information for Installation Completion is shown in Table 3.7.

**TABLE 3.7 INSTALLATION COMPLETION (CERCLA)**

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **INSTALLATION COMPLETION (CERCLA)** | | | |
| 3.7-1 | Close out Federal Facilities Agreement [NPL only] | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.7-2 | Complete long-term installation management strategies | Installation Manager | | ❑ Complete transition of installation personnel and functions<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 3.8 Five-Year Review(s)

Section 121(c) of CERCLA, as amended, provides that:

*"If the [lead agency] selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the [lead agency] shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected..."*

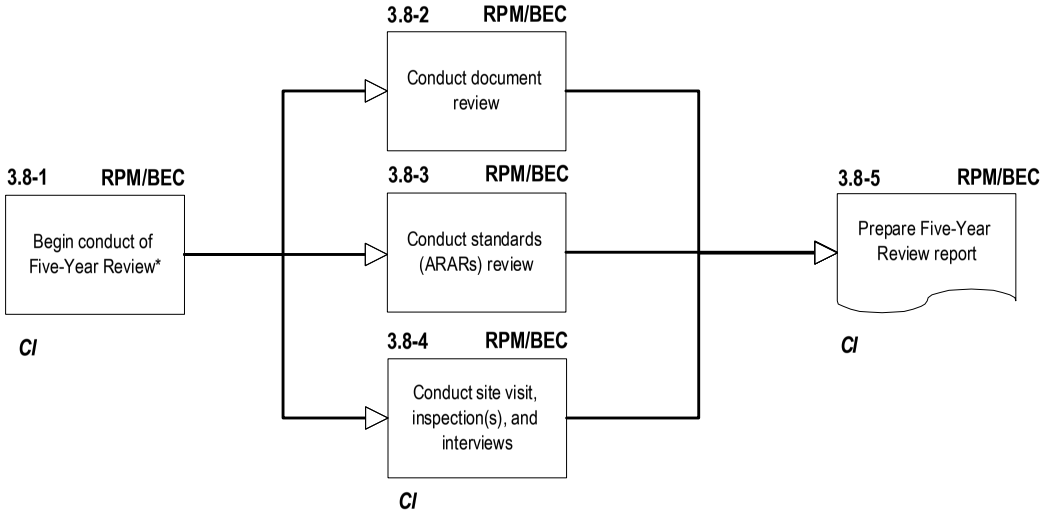
Five-Year Reviews are intended to evaluate whether the response action remains protective of public health and the environment, is functioning as designed, and necessary operation and maintenance is being performed. **The lead agency conducts *statutory* Five-Year Reviews of any site at which a post-SARA (after October 1986) remedy, upon attainment of cleanup levels specified in the ROD, will not allow for unlimited use and unrestricted exposure.** The review is required to occur no less often than every five years after initiation of the selected remedial action. While Five-Year Reviews are not a statutory requirement at all sites, they should be completed as a matter of EPA policy to be consistent with the NCP. These "policy Five-Year Reviews" are conducted at pre-SARA sites and sites where the ROD specifies a response that will require at least five years to achieve cleanup to levels allowing unlimited use and unrestricted exposure. At installations operating under the RCRA regulatory framework, analogous steps under RCRA (see Table 4.0-1) can fulfill the functional requirements of Five-Year Reviews.

The focus of the Five-Year Review will depend on the original goal of the response action. If protectiveness is being ensured through exposure protection (e.g., containment with a cap) and implementation of institutional controls, the review should focus on whether the cap remains effective and the institutional controls remain in place. For a long-term remedy (i.e., an ongoing remedial action that has not yet achieved the cleanup standards set in the ROD), the focus of the review should be on both the effectiveness of the technology and on the specific performance levels established in the ROD (e.g., performance of an extraction and treatment system for groundwater). Five-Year Reviews generally include document reviews, reviews of cleanup standards, interviews, inspections, technology reviews, and preparation of a report summarizing the findings and recommendations. Statutory Five-Year Reviews require a written determination by EPA that the remedy remains protective.

**The initiation of Five-Year Reviews is triggered by the start (defined as on-site construction at the applicable OU) of the first remedial action that requires such a review.** Once begun, Five-Year Reviews may be discontinued only if levels of contaminants allow for unrestricted use and unlimited exposure, and appropriate documentation and notification is given. This criterion can potentially result in an indefinite requirement for conducting Five-Year Reviews (e.g., applicable landfill caps). The restoration project team should consider these requirements carefully when reaching remedial decisions and planning for future requirements.

EPA's guidance for Five-Year Reviews continues to evolve and is currently undergoing revision. Current EPA guidance/directives on Five-Year Reviews are cited in Section 9. Restoration project team members are advised to keep abreast of emerging new guidance on this subject, and to confer regularly regarding strategies and expectations for conduct of Five-Year Reviews at specific installations. In particular, restoration team members should look for opportunities for optimization and efficiency in the conduct of Five-Year Reviews and other documentation with similar content.

## Figure 3.8. Five-Year Review(s) (CERCLA)




***CI*** denotes Community Involvement

*Triggered by first RA-C start requiring such a review

## TABLE 3.8 FIVE-YEAR REVIEW(S) (CERCLA)

*This Table accompanies **Figure 3.8, Five-Year Review(s) (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **FIVE-YEAR REVIEW(S) (CERCLA)** | | | |
| 3.8-1 | Begin conduct of Five-Year Review<br><br>Triggered by first RA-C start requiring such a review | RPM/BEC | EPA RPM | ❑ Statutory reviews should be completed within five years of the initiation of the first remedial action (or operable unit) at a site/OU.<br>❑ Sites subject to Five-Year Reviews with multiple remedies or operable units should conduct a Five-Year Review for the entire site/OU, and not separate Five-Year Reviews for each remedy or operable unit.<br>❑ Performance reporting requirements under RCRA fulfill the functional requirements for Five-Year Reviews.<br>❑ Five-Year Reviews may be terminated when no hazardous substances, pollutants, or contaminants remain at the installation above levels that allow for unrestricted use and unlimited exposure.<br>***Community Involvement***<br>*Required*<br>❑ The public will be informed of the determination that a Five-Year Review is appropriate, the planned scope of the review, the location of the report on the review, on-site review activities, actions taken based on the review, and the location of the Administrative Record file for the installation. |
| 3.8-2 | Conduct document review | RPM/BEC | EPA RPM | ❑ Document review for a Five-Year Review at an active installation is designed to acquaint the reviewer with the ongoing remedial action and should be less extensive than for a completed installation. |
| 3.8-3 | Conduct standards (ARARs) review | RPM/BEC | EPA RPM | ❑ Standards review in a Five-Year Review context means the review of ARARs, and of risk considerations. For an ongoing remedial action, it is not necessary to review ARARs, nor in most circumstances to recalculate the risk or perform a new risk assessment.<br>❑ When changes in ARARs necessitate further action, the DoD may at any time implement such action through an Explanation of Significant Differences (ESD), ROD amendment, amendment to a consent decree or order, or other enforceable document, as appropriate. |
| 3.8-4 | Conduct site/OU visit, inspection(s), and interviews | RPM/BEC | EPA RPM | ❑ A site/OU visit is normally an integral part of a Five-Year Review. However, special site visits at installations where remedial action is ongoing are unnecessary, since visual inspection is ongoing at such sites.<br>❑ Current conditions at the installation may be summarized based on other regular visits to the installation.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 3.8-5 | Prepare Five-Year Review report | RPM/BEC | EPA RPM | ❑ The Five-Year Report should contain an introduction; a discussion of remedial objectives; areas of noncompliance with those objectives; recommendations; a statement on whether the remedy remains protective; and notice of the next Five-Year Review, if applicable.<br>***Community Involvement***<br>*Required*<br>❑ Add the Five-Year Review report to the Administrative Record. |

## 3.9 Partial/Full NPL Deletion

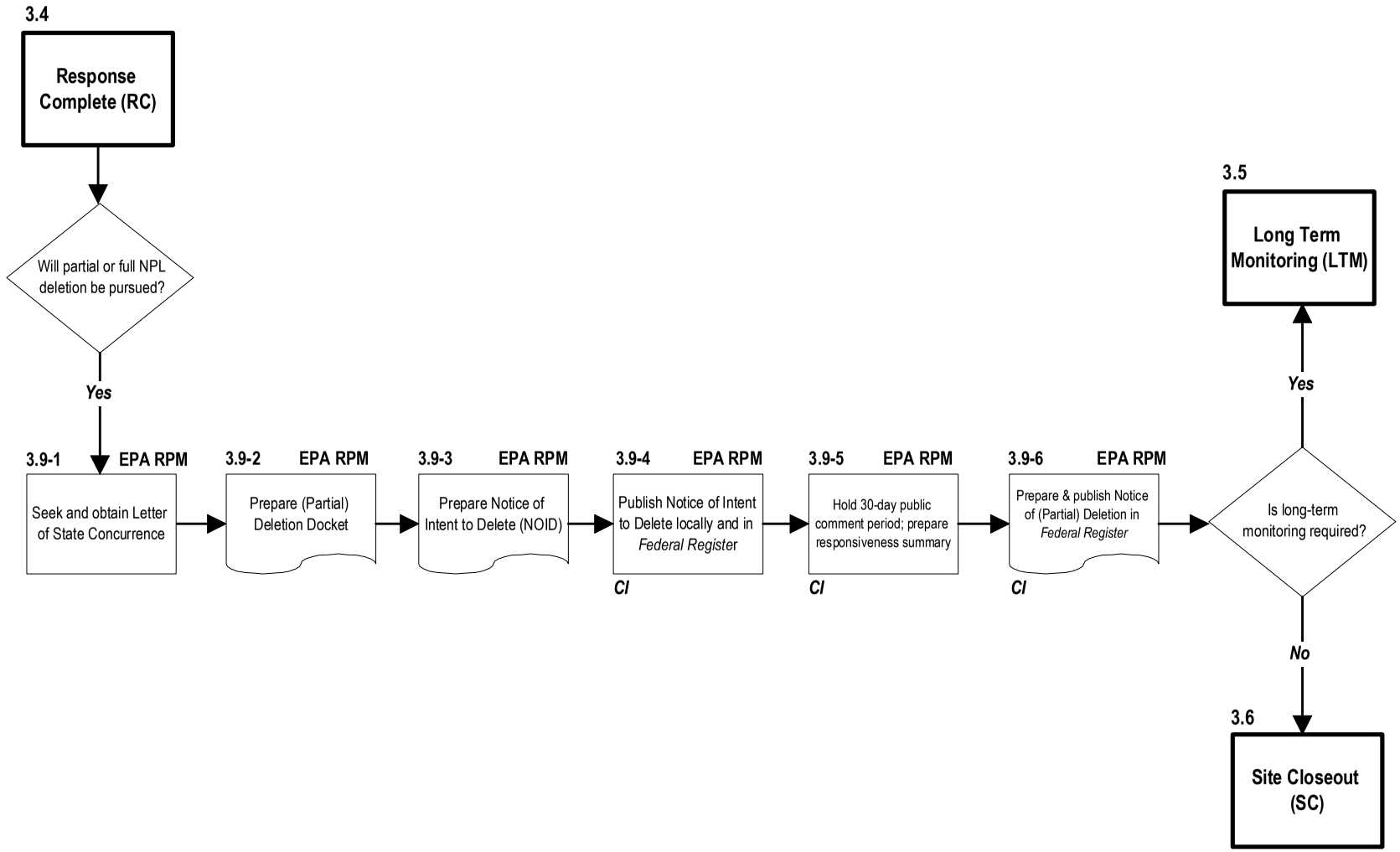
The NPL deletion process begins at most installations once the RC milestone has been achieved, i.e., once cleanup goals have been met for all sites/OUs at the installation. Therefore, deletion can occur while LTM is being performed. Site deletion requirements ensure that: 1) the documentation of activities and decision making at the installation is complete, 2) the activities conducted and documented are verified, and 3) the state and public have an opportunity for notice and comment before an installation is formally deleted from the NPL.

The deletion process is dictated by the NCP. To delete an installation from the NPL, EPA must determine, in consultation with the state, that one of the following criteria has been met:

- Responsible or other parties have implemented all response actions required, or
- The RI has shown that the release poses no significant threat to public health or the environment, and, therefore, it is not appropriate to take remedial measures.

Deletion of an entire installation does not acknowledge the completed cleanup of portions of the installation. Total installation cleanup may take many years, while portions of the installation may have been cleaned up and may be available for productive use. Some potential investors or developers may be reluctant to undertake economic activity at even a cleaned-up portion of real property that is part of an installation listed on the NPL. Therefore, EPA will consider petitions for "partial deletions" where the requirements for deletion noted above have been met for the particular parcel of property to be transferred.

## Figure 3.9. Partial/Full NPL Deletion (CERCLA)




***CI*** denotes Community Involvement

## TABLE 3.9 PARTIAL/FULL NPL DELETION (CERCLA)

*This Table accompanies **Figure 3.9, Partial/Full NPL Deletion***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **PARTIAL/FULL NPL DELETION** | | | |
| | Will partial or full NPL deletion be pursued? | RPM/BEC | | ❑ The RPM/BEC must decide whether to seek partial deletion of the NPL installation or defer deletion until the entire installation can be deleted. |
| 3.9-1 | Seek and obtain Letter of state Concurrence | EPA RPM | RPM/BEC | ❑ EPA must consult with the state before making a determination that a site or installation warrants deletion from the NPL. |
| 3.9-2 | Prepare (Partial or Full) Deletion Docket | EPA RPM | | ❑ The EPA Region prepares a deletion docket containing all pertinent information supporting the deletion recommendation.<br>❑ The deletion docket is not a continuation of the Administrative Record for the site. Documents in the Administrative Record can be referenced and do not have to be duplicated in the deletion docket (provided the Administrative Record is still available to the public).<br>❑ The documents contained in the deletion docket will vary depending on the type of response (e.g., remedial action, removal action, no action) and the lead agency (i.e., DoD Component). |
| 3.9-3 | Prepare Notice of Intent to Delete (NOID) | EPA RPM | | |
| 3.9-4 | Publish Notice of Intent to Delete locally and in *Federal Register* | EPA RPM | | ***Community Involvement***<br>*Required*<br>❑ The EPA Region prepares and publishes the NOID in accordance with the Federal Register publication requirements. Headquarters staff can help review these notices to ensure national consistency and completeness. |
| 3.9-5 | Hold 30-day public comment period; prepare responsiveness summary | EPA RPM | | ***Community Involvement***<br>*Required*<br>❑ A minimum of 30-day comment period is required for NPL deletions. The 30-day period begins on the date of publication of the Notice of Intent to Delete. |
| 3.9-6 | Prepare and publish Notice of (Partial or Full) Deletion in *Federal Register* | EPA RPM | | ❑ The EPA Region then will publish the Notice of Deletion in the Federal Register. This notice states that all appropriate responses under CERCLA have been implemented and that no further response is appropriate. The Notice of Deletion includes an effective date, a Regional contact, and supplemental site/OU information. All NPL rulemakings after publication of this notice will reflect the deletion.<br>***Community Involvement*** |
| | Is long-term monitoring required?<br><br>*[If Yes, proceed to task 3.5]*<br>*[If No, proceed to task 3.6]* | | | ❑ Long-term monitoring will typically be required where waste is left in place, to ensure protectiveness of public health and the environment. |

## 3.10 Remedial/Removal Action Integration

The integration of remedial and removal response actions is an installation-specific strategy upon which the restoration project team needs to agree. More formal closeout of removal actions (with regulatory coordination/concurrence) may be needed in certain frameworks (e.g., under FFAs or IAGs), while a more-informal "removal closeout report" (with format and content agreed to by the project team) may be acceptable in other cases. For sites where a removal action is the final remedial activity to be taken, a more formal decision document generally should be prepared to close out the site (e.g., a No-Action ROD if appropriate). In all cases, the team should decide on a consistent mechanism for documenting the decision that no further action is needed for a site. For example, the Air Force's *No Further Response Action Planned (NFRAP) Guide* (June 1995) and EPA OSWER Directive 9200.1-23P, "Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents" (July 1999), provide a framework and guidance on how to document removal actions. The FFA or similar agreement(s) may also provide the necessary framework.

# 4.0 RCRA SITE CLOSEOUT PROCESS

This section of the guide addresses the RCRA requirements and should be used by the restoration project team to plan and tailor their site closeout efforts, and to facilitate the environmental site closeout process at their installation. It is not intended to be a prescriptive document that must be followed explicitly. The RCRA guidance and information described in this section provide the DoD Component RPM/BEC a flexible management tool that can be applied to the specific situations at each installation.

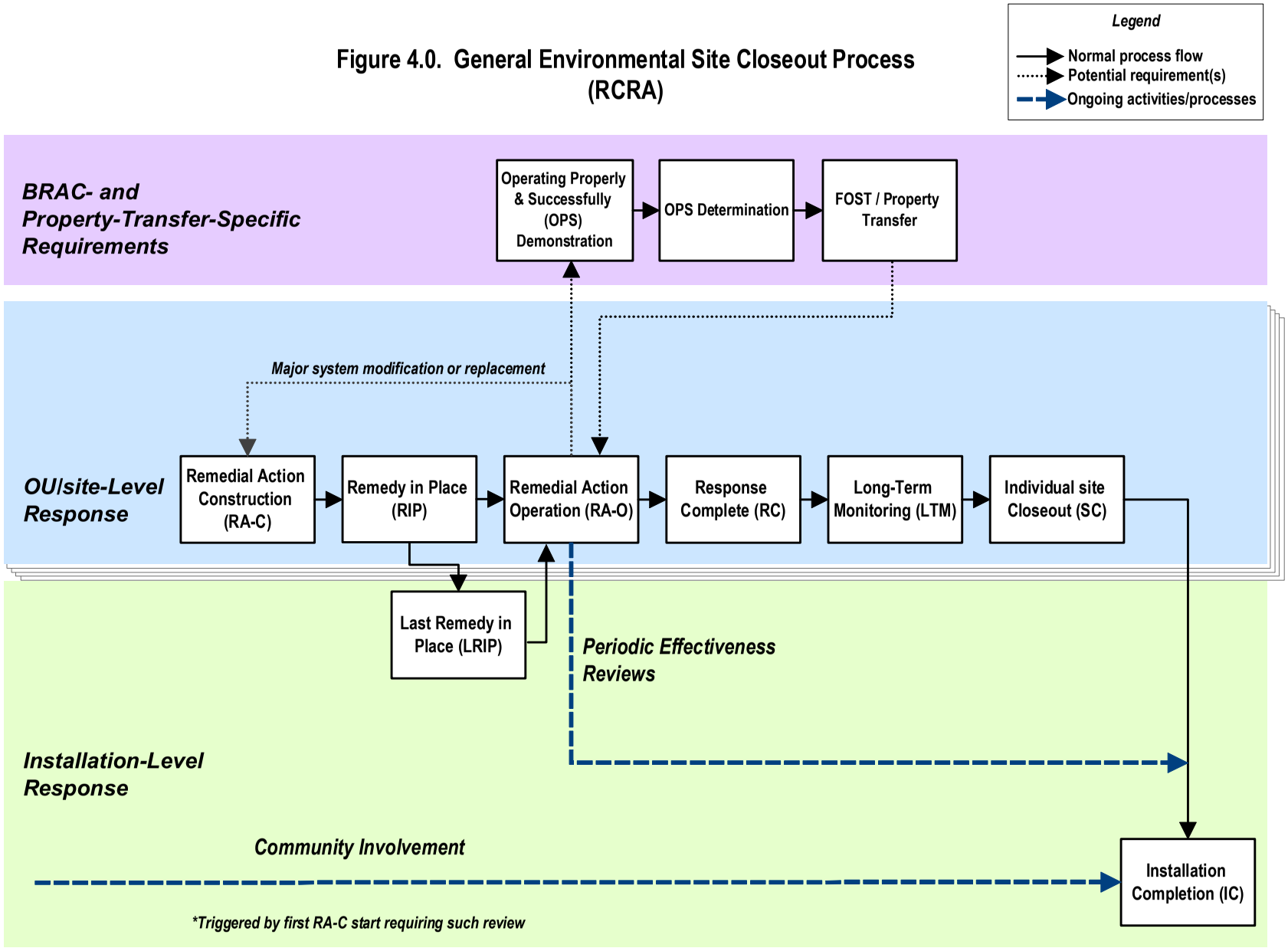
Users of this section should recognize that in most cases only a portion of these requirements would apply at a particular installation. Restoration project team members should discuss the most effective manner of integrating and applying these requirements at their installation. A set of tools, information, and considerations with which to develop a site closeout strategy for an installation is presented. Not every installation will require all the tools.

Site closeout under RCRA can follow two paths, one for closeout of active, regulated units and the other for closeout of corrective actions at inactive solid waste management units (SWMUs). Table 4.0-1 highlights the respective milestones for these two regulatory frameworks (and compares them to DoD terminology), and Section 4.8 includes a brief discussion of their similarities and differences.

Major milestones, phases, and documentation requirements for the site closeout process under RCRA are identified in Figure 4.0 and Table 4.0-2. Even though operating properly and successfully (OPS) demonstrations are defined in CERCLA regulations, it should be noted that they are necessary for any transfer of property, whether or not the site is undergoing a RCRA or CERCLA closeout.

In the following subsections, figures and accompanying tables describe an overall framework for closeout of sites under RCRA. The figures in the following subsections are all consolidated into a single foldout flowchart at the end of this section. The information is a compilation of existing laws, regulations, policies, and guidance, and assigns responsibilities for each task to a **Lead** (the person/organization primarily responsible for task execution) and **Coordination/Concurrence** (the persons/organizations that must assist in, coordinate on, review, concur with, and/or approve task execution). For NPL sites, these coordination/concurrence roles are generally well-defined; at non-NPL sites, the respective roles of EPA and the state may require further definition. In the accompanying flow charts, task boxes with the ⌐ shape indicate tasks that are primarily documentation requirements.

## Figure 4.0. General Environmental Site Closeout Process (RCRA)



## Table 4.0-1. Comparison of DoD and RCRA Phases, Milestones and Terminology

| DoD IRP Phases/Milestones | EPA RCRA Phases/Milestones | |
|---|---|---|
| | **Closure and Post- Closure Permits (Waste in Place)** | **Corrective Action** |
| *Source: Department of Defense Reporting Conventions (Restoration Management Information System; Management Guidance for DERP*) | *Source: 40 CFR Chapter I, Parts 260, 261, 262, 263, 264, 265 and 270*<br>***APPLIES TO REGULATED UNITS*** | *Source: RCRIS Data Element Dictionary, January 1995*<br>***APPLIES TO SOLID WASTE MANAGEMENT UNITS (COULD INCLUDE REGULATED UNITS)*** |
| Site Discovery | Part A Permit Notification | |
| PA/SI Completion | | RCRA Facility Assessment |
| | | National Corrective Action Prioritization System (NCAPS) |
| | | |
| Remedial Investigation (RI) | Closure Plan and Post-Closure Permit Application | RCRA Facility Investigation Imposed by Permit or Order |
| Interim Remedial Action | | Interim/Stabilization Measures |
| Relative Risk Reduction | | |
| Feasibility Study (FS) | Closure Plan | Corrective Action Plan (CAP), Corrective Measures Study (CMS) |
| | | |
| Record of Decision | Closure Plan Approval and Post Closure Permit Issuance | Statement of Basis |
| Remedial Design (RD) | Closure Plan Implementation and Ground Water Cleanup | |
| Remedial Action (RA) | | |
| Remedial Action Construction (RA-C) | | Corrective Measures Implementation Plan |
| | Closure Certification | Certification of Remedy Completion or Construction Complete |
| Remedy in Place (RIP) | | |
| Remedial Action Operation (RA-O) | | |
| Response Complete (RC) | | |
| Long Term Monitoring | Post Closure Permit | |
| | Terminate or Reissue 10 Year Post-Closure Permit | |
| | | |
| Site Closeout | Post-Closure Permit Expiration | Corrective Action Process Terminated |

## Table 4.0-2. Summary of RCRA Site Closeout Documentation Requirements*

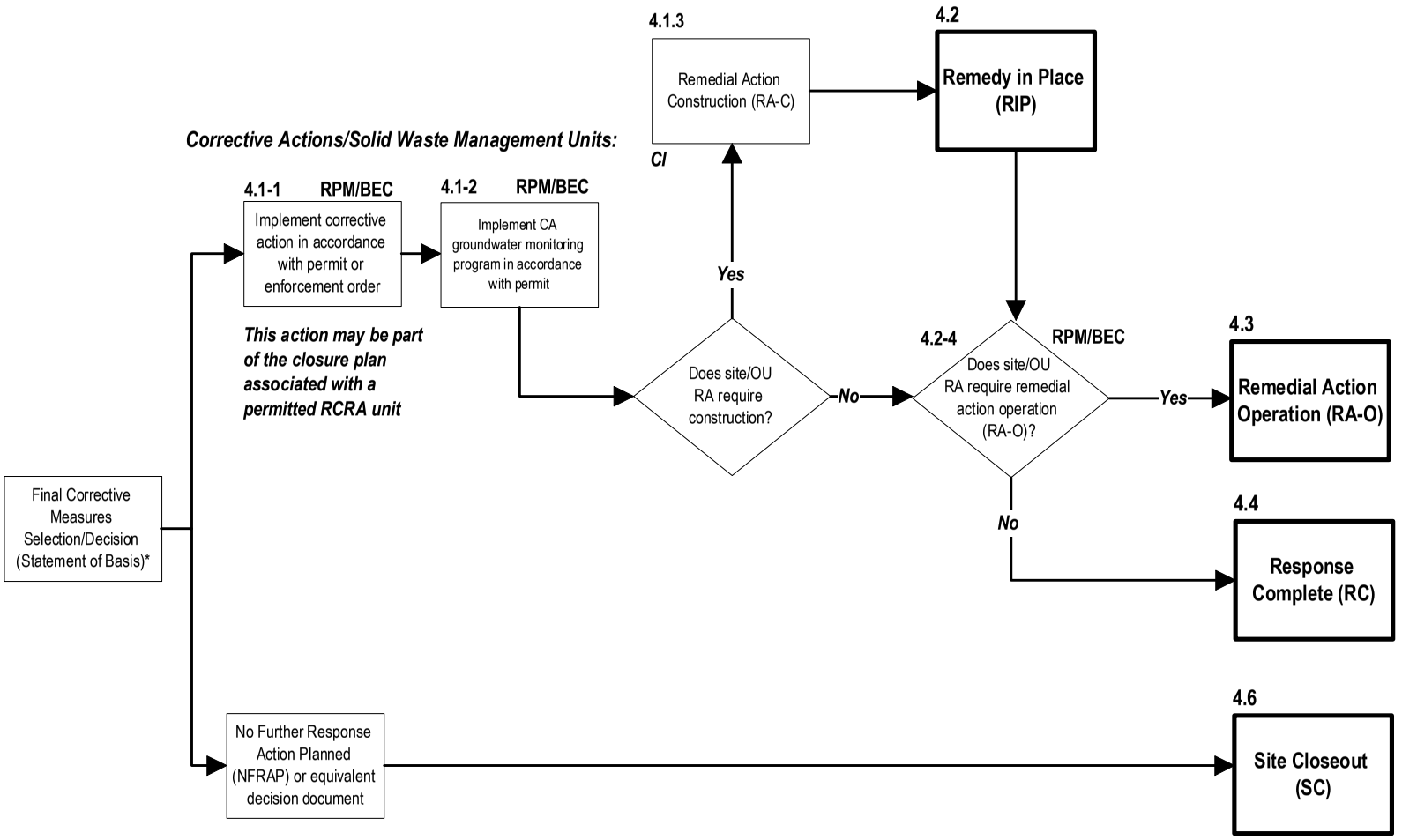
| Document | Also CERCLA Requirement | Applicability | | | Purpose/Function |
|---|---|---|---|---|---|
| | | Site | OU | Inst. | |
| **Remedy in Place (RIP)** | | | | | |
| Certification of Remedy Complete | | ✓ | ✓ | | For RCRA units, documents that physical construction is complete and unit is operating as designed |
| **Remedial Action Operation (RA-O)** | | | | | |
| Corrective Measures Progress Report(s) | | ✓ | ✓ | | For RCRA units, documents that corrective action is performing properly in accordance with the closure performance standard |
| Public Notice/Comment for Remedy Alterations | ✓ | ✓ | ✓ | | When a remedy must be altered because cleanup goals are not being achieved (e.g., through a ROD amendment or modified corrective action plan), public notice/ comment is generally required |
| Corrective Measures Completion Report | | ✓ | ✓ | | |
| **Response Complete (RC)** | | | | | |
| Long Term Monitoring Plan | ✓ | ✓ | ✓ | | A general plan indicating how a successful RA will continue to be monitored to ensure that the remedy remains effective |
| Class 3 Permit Modification | | ✓ | ✓ | | Deletes from an active permit a SWMU for which corrective actions have been completed |
| Public Notice of Permit Modification | | ✓ | ✓ | | Notifies the public of the proposed permit modification and solicits comments |
| Response to Comments | | ✓ | ✓ | | Responds to comments received during the public comment period |
| Closure Plan | | ✓ | ✓ | ✓ | Explains in detail how an owner/operator [DoD] will achieve the closure performance standard reference 40 CFR 264.111 and 265.111 |
| Certification of Closure | | ✓ | ✓ | ✓ | Certifies that a hazardous waste management unit or facility has closed in accordance with the approved closure plan |
| Post-Closure Notices | | ✓ | ✓ | ✓ | Contains notification in property deed of Post-Closure Permit hazardous waste activities. |
| **Long-Term Monitoring (LTM)** | | | | | |
| Post-Closure Monitoring and Maintenance Plan | | ✓ | ✓ | ✓ | Describes planned maintenance and groundwater monitoring to ensure continued integrity of remedy |
| Post-Closure Plan | | ✓ | ✓ | ✓ | When units cannot clean-close, this plan (generally part of the facility's overall permit) ensures that appropriate monitoring & maintenance activities are conducted |
| Public Notice of Permit | | ✓ | ✓ | ✓ | Notifies the public of the proposed post-closure permit or permit modification (where applicable) and solicits comments |
| Response to Comments | | ✓ | ✓ | ✓ | Responds to comments received during the public comment period for the post-closure permit or for permit modifications |
| **Site Closeout (SC)** | | | | | |
| Certification of Completion of Post-Closure Care | | ✓ | ✓ | ✓ | Certifies that the post-closure care period was performed in accordance with the approved closure plan |
| Public Notice of Post-Closure Care Completion | | ✓ | ✓ | ✓ | Notifies the public that post-closure care has been completed |
| RCRA Permit Termination | | | | ✓ | Terminates the RCRA permit/order under which installation restoration occurred |

* A list of example documents are listed in Section 9, many of which can be attained on the Environmental Site Closeout website, *http://www.afbca.hq.af.mil/closeout.*

## 4.1 Remedial Action Construction (RA-C)

Much guidance has already been prepared to address the initial steps of the environmental restoration process, including Remedial Action Construction. As a result, Figure 4.1 and Table 4.1 only include task guidance and information for RA-C at a high level. Readers can refer to other sources of guidance for more information on RA-C (see Section 9 for other sources). Subsequent steps of the Site Closeout Process are discussed in greater detail.

## Figure 4.1. Remedial Action Construction (RCRA)




***CI*** denotes Community Involvement

*IRAs and Removal Actions require final decision document

## TABLE 4.1 REMEDIAL ACTION CONSTRUCTION (RCRA)

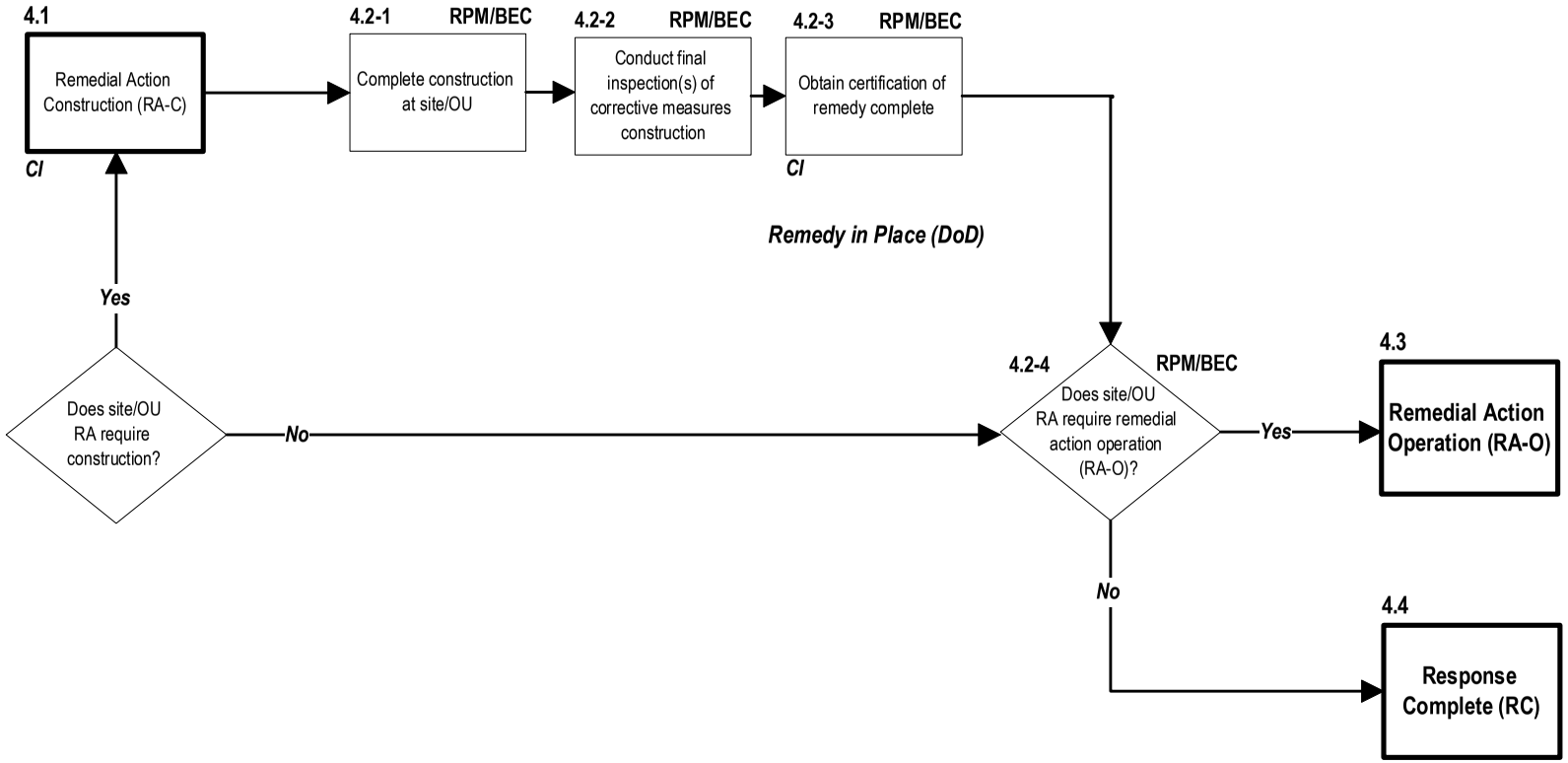
*This Table accompanies **Figure 4.1, Remedial Action Construction (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **REMEDIAL ACTION CONSTRUCTION (RCRA)** | | | |
| | Final Corrective Measures Selection/Decision (Statement of Basis) | | | ❑ Previously conducted Interim Corrective Measures and/or Stabilization Actions under RCRA require a final decision document to confirm that actions taken constitute the full, required, final corrective action. |
| | No Further Response Action Planned (NFRAP) decision or equivalent decision document | | | ❑ In certain cases, corrective action may have been proposed when, it is later determined, none is required. In such instances, the decision not to pursue corrective action should be documented in the appropriate decision document.<br>❑ Proceed to task 4.6, **Site Closeout**. |
| 4.1-1 | Implement corrective action in accordance with permit or enforcement order | RPM/BEC | | ❑ *This action may be part of the closure plan associated with a permitted RCRA unit.*<br>❑ The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place.<br>❑ The owner or operator must begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The Regional Administrator or state director will specify that time period in the facility permit.<br>❑ If a facility permit includes a corrective action program in addition to a compliance monitoring program, the permit will specify when the corrective action will begin and such a requirement will operate in lieu of § 264.99(i)(2). |
| 4.1-2 | Implement CA groundwater monitoring program in accordance with permit | RPM/BEC | | ❑ In conjunction with a corrective action program, the owner or operator must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program.<br>❑ Such a monitoring program may be based on the requirements for a compliance monitoring program under § 264.99 and must be as effective as that program in determining compliance with the groundwater protection standard under § 264.92, and in determining the success of a corrective action program under § 264.100(e), where appropriate. |
| | Does site/OU RA require construction?<br><br>*[If No, proceed to task 4.2-4]* | | | ❑ Certain remedy types (e.g., excavation and offsite treatment of contaminated soil) may not require a construction phase. Other remedies (such as groundwater pump-and-treat) may require a lengthy construction period. The need for construction is determined as part of the corrective action selection/decision. See Section 2 for a discussion of remedy scenarios and the applicability of the RA-C phase to various types of remedies. |
| 4.1-3 | Remedial Action Construction (RA-C) | RPM/BEC | | ***Community Involvement***<br>*Required*<br>❑ Hold 45-day public-comment period; obtain public comment on Corrective Measures Implementation (CMI).<br>❑ During this process, maintain dialogue with community members, keeping them apprised of activities during the CMI phase.<br>❑ *For a list of additional activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 4.2 Documentation of Remedy in Place

The process for Documentation of Remedy in Place is graphically shown in Figure 4.2 with accompanying task guidance and information in Table 4.2.

## Figure 4.2. Documentation of Remedy in Place (RCRA)




***CI*** denotes Community Involvement

**TABLE 4.2 DOCUMENTATION OF REMEDY IN PLACE (RCRA)**

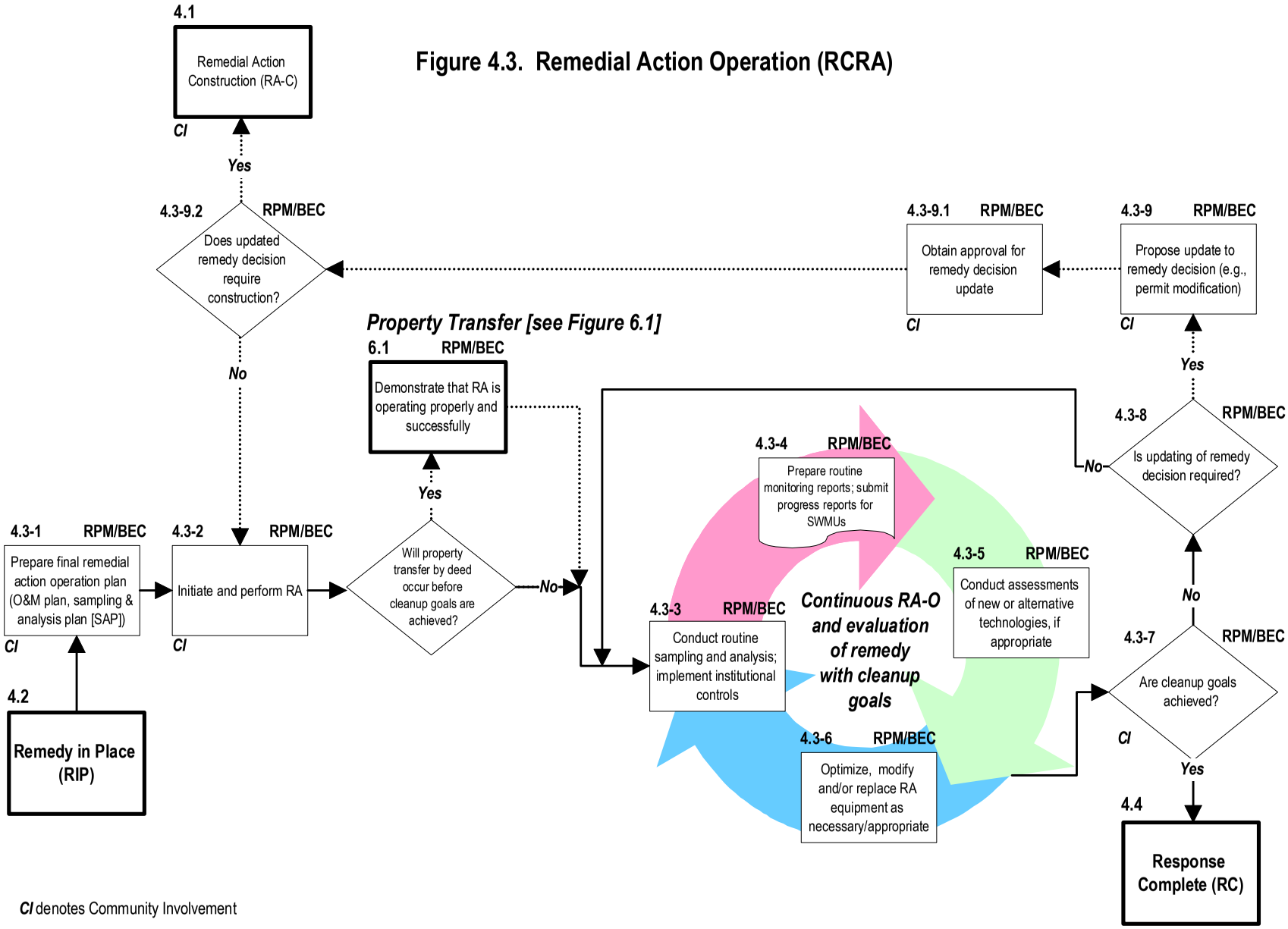
*This Table accompanies **Figure 4.2, Documentation of Remedy in Place (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **REMEDY IN PLACE (RCRA)** | | | |
| 4.2-1 | Complete construction at site/OU | RPM/BEC | | |
| 4.2-2 | Conduct final inspection(s) of corrective measures construction | RPM/BEC | EPA/state RPM | |
| 4.2-3 | Obtain certification of remedy complete | RPM/BEC | EPA/state RPM | ❑ Regulatory agencies evaluate submission on remedy completion.<br>❑ If agencies concur, proceed to Remedial Action Operation (RA-O).<br>***Plan-Ahead Consideration:***<br>❑ For BRAC facilities or facilities where property ownership is transferred, a determination must be made on permit modification (see also Sections 4.9 and 6.1).<br>• RPM/BEC conducts consultation with LRA to determine whether the LRA is willing to become a joint holder of the RCRA permit.<br>• If so, then the RPM/BEC will prepare a request for a permit modification and submit to the appropriate regulatory authority.<br>• If not, then corrective action will proceed under current permit holder and title will remain with the DoD Component until corrective action is complete.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.2-4 | Does site/OU RA require remedial action operation (RA-O)?<br><br>*[If No, proceed to task 4.4, Response Complete]* | RPM/BEC | | ❑ If the remedy is complete without an operation phase (e.g., a landfill cap), proceed to task 4.4, **Response Complete**<br>❑ Otherwise, conduct Remedial Action Operation (RA-O) in accordance with permit/corrective action plan; proceed to task 4.3, **Remedial Action Operation**. |

## 4.3 Remedial Action Operation (RA-O)

The process for Remedial Action Operation is graphically shown in Figure 4.3 with accompanying task guidance and information in Table 4.3.

## Figure 4.3. Remedial Action Operation (RCRA)




*CI* denotes Community Involvement

## TABLE 4.3 DOCUMENTATION OF REMEDIAL ACTION OPERATION (RCRA)

*This Table accompanies **Figure 4.3, Documentation of Remedial Action Operation (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **REMEDIAL ACTION OPERATION (CERCLA/RCRA)** | | | |
| 4.3-1 | Prepare final remedial action operation plan (O&M plan, sampling & analysis plan [SAP]) | RPM/BEC | | ***Community Involvement***<br>❑ Seek community review/input on technical documents produced, and ensure public has access and is apprised of continuing activities.<br>❑ *For a list of additional activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.3-2 | Initiate and perform RA | RPM/BEC | | ❑ Conduct corrective measures in a manner consistent with the Corrective Measures Implementation Plan.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| | Will property transfer by deed occur before cleanup goals are achieved? | RPM/BEC | | ❑ *[If Yes, proceed to task 6.1, Operating Properly and Successfully Demonstration]* |
| 4.3-3 | Conduct routine sampling and analysis; implement institutional controls | RPM/BEC | | ❑ These activities will likely be ongoing throughout the entire phase. |
| 4.3-4 | Prepare routine monitoring reports; submit progress reports for SWMUs | RPM/BEC | | ❑ Evaluate performance of RA against cleanup goals.<br>❑ Submit the required progress reports to the appropriate regulatory agency. |
| 4.3-5 | Conduct assessments of new or alternative technologies, if appropriate | RPM/BEC | | ❑ Comparison of the existing RA system against potential new alternatives will require detailed information about system performance. |
| 4.3-6 | Optimize, modify and/or replace RA equipment as necessary/appropriate | RPM/BEC | | ❑ Assess the need for upgrade or replacement of RA equipment due to technological improvements, obsolescence, end of useful/expected life, or other factors. Consider associated costs, staffing, and related planning horizons.<br>❑ The *ACC IRP Site Closure Guidance Manual* includes detailed information on RA-O optimization. |
| 4.3-7 | Are cleanup goals achieved?<br><br>*[If Yes, proceed to task 4.4, Response Complete]* | RPM/BEC | | ❑ Documents specifying corrective measures implementation should include methods to determine when remedial goals have been achieved.<br>❑ EPA proposes that corrective measures be considered complete based on a three-part evaluation:<br>• The corrective measure has to have complied with all media cleanup standards;<br>• All required source control actions will have to be completed; and<br>• All specified procedures for removal and decontamination of units, equipment, devices, and structures will have to be complete.<br>***Community Involvement***<br>*Required*<br>❑ The public and affected community should be given notice and an opportunity to review and comment on all proposals to complete corrective measures. |

**TABLE 4.3 DOCUMENTATION OF REMEDIAL ACTION OPERATION (RCRA)**

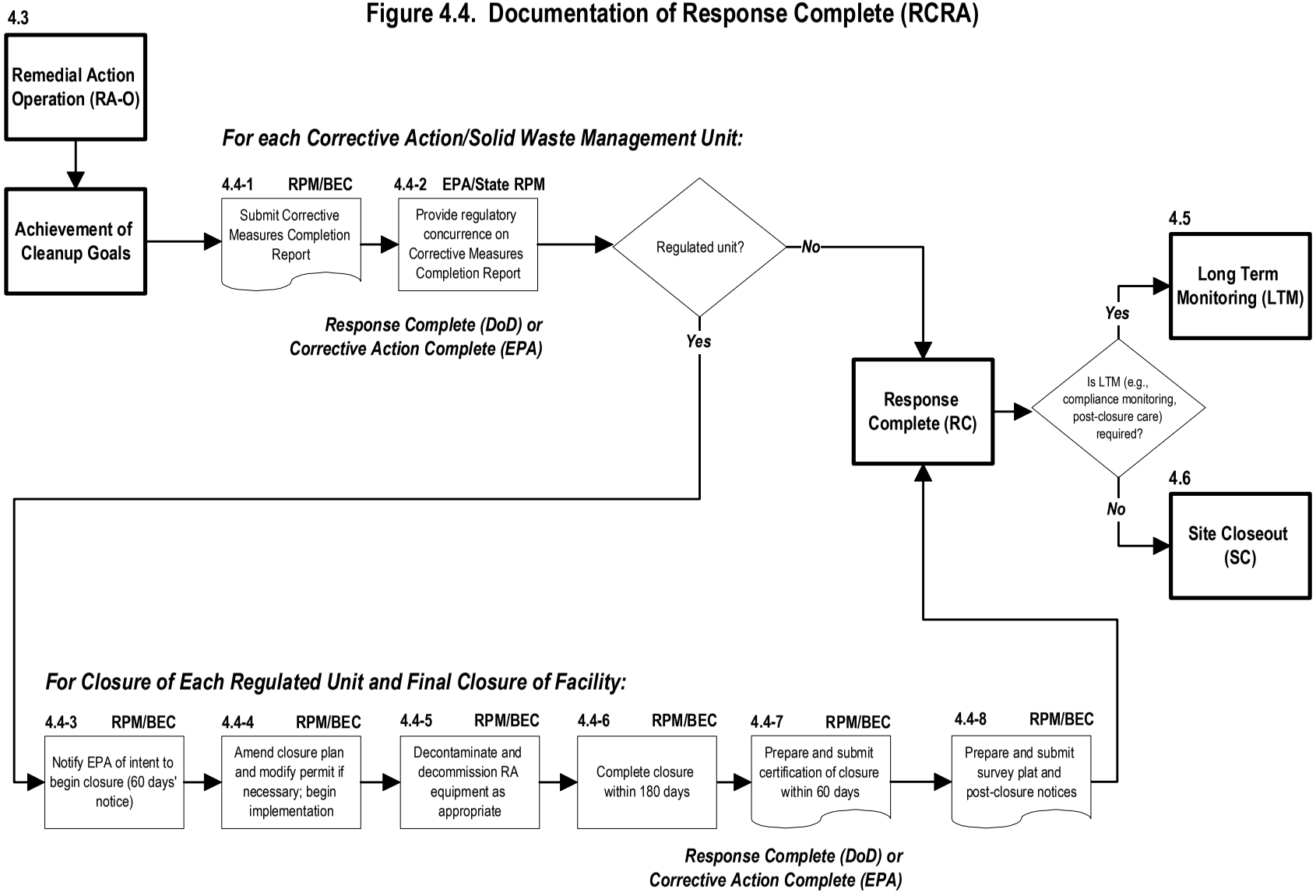
*This Table accompanies **Figure 4.3, Documentation of Remedial Action Operation (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| 4.3-8 | Is updating of remedy decision required? *[If No, proceed to 4.3-3]* | RPM/BEC | | ❑ *For additional information regarding strategies and considerations related to remedy updates and modifications, see Section 8.2.* |
| 4.3-9 | Propose update to remedy decision (e.g., permit modification) | RPM/BEC | EPA/state RPM | ***Community Involvement***<br>*Required*<br>❑ Public notice must be given if implementation of an approved corrective action plan for UST(s) does not achieve the established cleanup levels in the plan and termination of the plan is under consideration. |
| 4.3-9.1 | Obtain approval for remedy decision update | RPM/BEC | EPA/state RPM | ***Community Involvement***<br>*Required*<br>❑ Accomplish appropriate community involvement, e.g., public notice/comment for permit modifications. See Section 4.9 for more information on remedy updates requiring permit modifications and associated community involvement requirements.<br>❑ *For a list of additional activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.3-9.2 | Does updated remedy decision require construction? *[If Yes, proceed to task 4.1]* *[If No, proceed to task 4.3-2]* | RPM/BEC | | ❑ If Yes, return to Remedial Action Construction to implement RA modifications. |

## 4.4 Documentation of Response Complete

The process for Documentation of Response Complete is graphically shown in Figure 4.4 with accompanying task guidance and information in Table 4.4. See Section 4.7 for a discussion of integration of corrective action and regulated unit closure requirements.

## Figure 4.4. Documentation of Response Complete (RCRA)




***CI*** denotes Community Involvement

## TABLE 4.4 DOCUMENTATION OF RESPONSE COMPLETE (RCRA)

*This Table accompanies **Figure 4.4, Documentation of Response Complete (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **RESPONSE COMPLETE (RCRA)** | | | |
| ***For each Corrective Action/Solid Waste Management Unit:*** | | | | |
| 4.4-1 | Submit Corrective Measures Completion Report | RPM/BEC | | ❑ Determine whether corrective measure completion criteria have been met as specified in the Corrective Measures Implementation Plan. Demonstrate that the completion criteria have been met and summarize work accomplishments. Summarize inspection findings and total operation and maintenance costs. |
| 4.4-2 | Provide regulatory concurrence on Corrective Measures Completion Report | EPA/state RPM | | ❑ The Corrective Measures Completion Report will be reviewed to determine whether specified cleanup goals have been achieved. |
| | Regulated unit? *[If Yes, proceed to task 4.4-3]* | | | ❑ If No, is LTM (e.g., compliance monitoring, post-closure care) required? *[If Yes, proceed to task 4.5]* *[If No, proceed to task 4.6]* |
| ***For Closure of Each Regulated Unit and Final Closure of Facility:*** | | | | |
| 4.4-3 | Notify EPA of intent to begin closure (60 days' notice) | RPM/BEC | | ❑ For permitted units the owner/operator must notify the RA at least 60 days prior to the date on which he/she "expects to begin closure" of a surface impoundment, waste pile, land treatment or landfill unit, or final closure of a facility with such a unit (§264.112(d)). |
| 4.4-4 | Amend closure plan and modify permit if necessary; begin implementation | RPM/BEC | | ❑ All TSDFs must submit closure plans for both partial and final closure in accordance with §§264/265.112. These plans explain in detail how the owner or operator will achieve the closure performance standard under §§264/265.111.<br>❑ Permitted facilities are required to submit a closure plan with the Part B permit application; the approved closure plan then becomes an enforceable component of the facility permit. Interim status facilities must have a written closure plan on the premises six months after the facility becomes subject to §265.112.<br>❑ The closure plan may be amended by either the facility owner/operator or the RA by following the steps in §§264/265.112(c) when there is a change in the design or operation of the facility, a change in the expected closure date, or an unexpected event. |
| 4.4-5 | Decontaminate and decommission RA equipment as appropriate | RPM/BEC | | ❑ During partial and final closure periods all contaminated equipment, structures, and soils must be properly disposed of or decontaminated unless otherwise specified in the unit-specific closure requirements (§§264/265.114). |
| 4.4-6 | Complete closure within 180 days | RPM/BEC | | ❑ Once partial or final closure is initiated, closure activities must be completed within 180 days of receiving the final volume of hazardous waste (§§264/265.113(b)).<br>❑ For interim status facilities, closure activities must be completed within 180 days of approval of the closure plan, or within 180 days of receiving the final volume of hazardous waste, whichever is later. |
| 4.4-7 | Prepare and submit certification of closure within 60 days | RPM/BEC | | ❑ According to §§264/265.115, the owner/operator must submit to the RA (by registered mail) a certification that the hazardous waste management unit or facility has closed in accordance with the specifications in the approved closure plan. This submittal must take place within 60 days of completion of closure of each regulated unit and within 60 days of the completion of final closure. |

**TABLE 4.4 DOCUMENTATION OF RESPONSE COMPLETE (RCRA)**

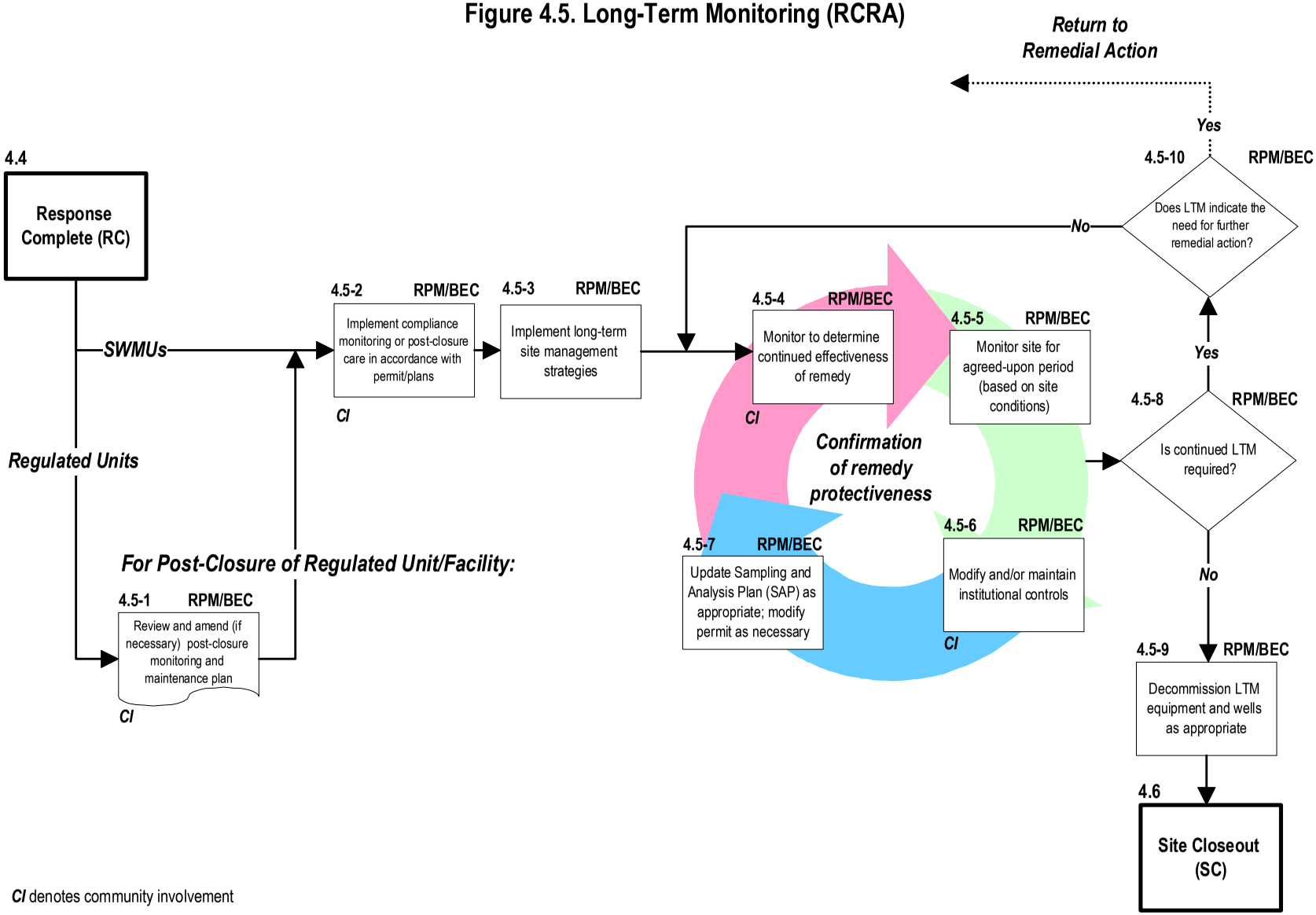
*This Table accompanies **Figure 4.4, Documentation of Response Complete (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| 4.4-8 | Prepare and submit survey plat and post-closure notices | RPM/BEC | | ❑ The owner/operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the EPA Regional Administrator a survey plat indicating the location and dimensions of the hazardous waste units (§§264/265.116).<br>❑ The survey plat must be submitted no later than the submission of certification of closure of each hazardous waste disposal unit.<br>❑ Within 60 days after closure certification (by a registered engineer or qualified soil scientist), the local zoning or land use authority and the RA must receive a record of the type, location, and quantity of hazardous wastes in each disposal unit (§§264/265.119).<br>❑ Is LTM (e.g., compliance monitoring, post-closure care) required?<br>*[If Yes, proceed to task 4.5, **Long-Term Monitoring**]*<br>*[If No, proceed to task 4.6, **Site Closeout**]* |

## 4.5 Long-Term Monitoring (LTM)

The process for Long-Term Monitoring is graphically shown in Figure 4.5 with accompanying task guidance and information in Table 4.5. See Section 4.7 for a discussion of integration of corrective action and regulated unit closure requirements.

## Figure 4.5. Long-Term Monitoring (RCRA)




*CI* denotes community involvement

## TABLE 4.5 LONG-TERM MONITORING (RCRA)

*This Table accompanies **Figure 4.5, Long-Term Monitoring (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **LONG-TERM MONITORING (RCRA)** | | | |
| 4.5-1 | Review and amend (if necessary) post-closure monitoring and maintenance plan | RPM/BEC | | ❑ The post-closure plan under §§264/265.118 must include:<br>• A description of planned groundwater monitoring activities.<br>• A description of planned maintenance activities.<br>• The name, address, and telephone number of the person or office to contact during the post-closure period.<br>❑ Permitted facilities must submit the post-closure care plan as part of the post-closure permit application. An amendment to the plan requires a permit modification.<br>❑ Post-closure monitoring (LTM) should be optimized, taking into account decision criteria, field procedures, analytical protocols, and data management plans.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.5-2 | Implement compliance monitoring or post-closure care in accordance with permit/plans | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.5-3 | Implement long-term site management strategies | RPM/BEC | | ❑ Since the LTM phase potentially represents a different level of DoD management involvement at a site, the beginning of this phase represents an opportunity to examine historic management strategies in light of likely future requirements. At this point it may be appropriate to consider an alternative site management strategy that is better aligned with the requirements of the LTM phase. |
| 4.5-4 | Monitor to determine continued effectiveness of remedy | RPM/BEC | | ❑ These activities also include routine inspections and operation of containment remedies such as landfill caps.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.5-5 | Monitor site for agreed-upon period (based on site conditions) | RPM/BEC | | ❑ Conduct appropriate post-closure care:<br>• Maintain waste containment systems (e.g., leachate collection, groundwater interception); and<br>• Conduct detection or compliance groundwater monitoring.<br>❑ Post-closure care generally lasts for 30 years after completion of closure but may be extended or shortened with regulatory approval. |

**TABLE 4.5 LONG-TERM MONITORING (RCRA)**

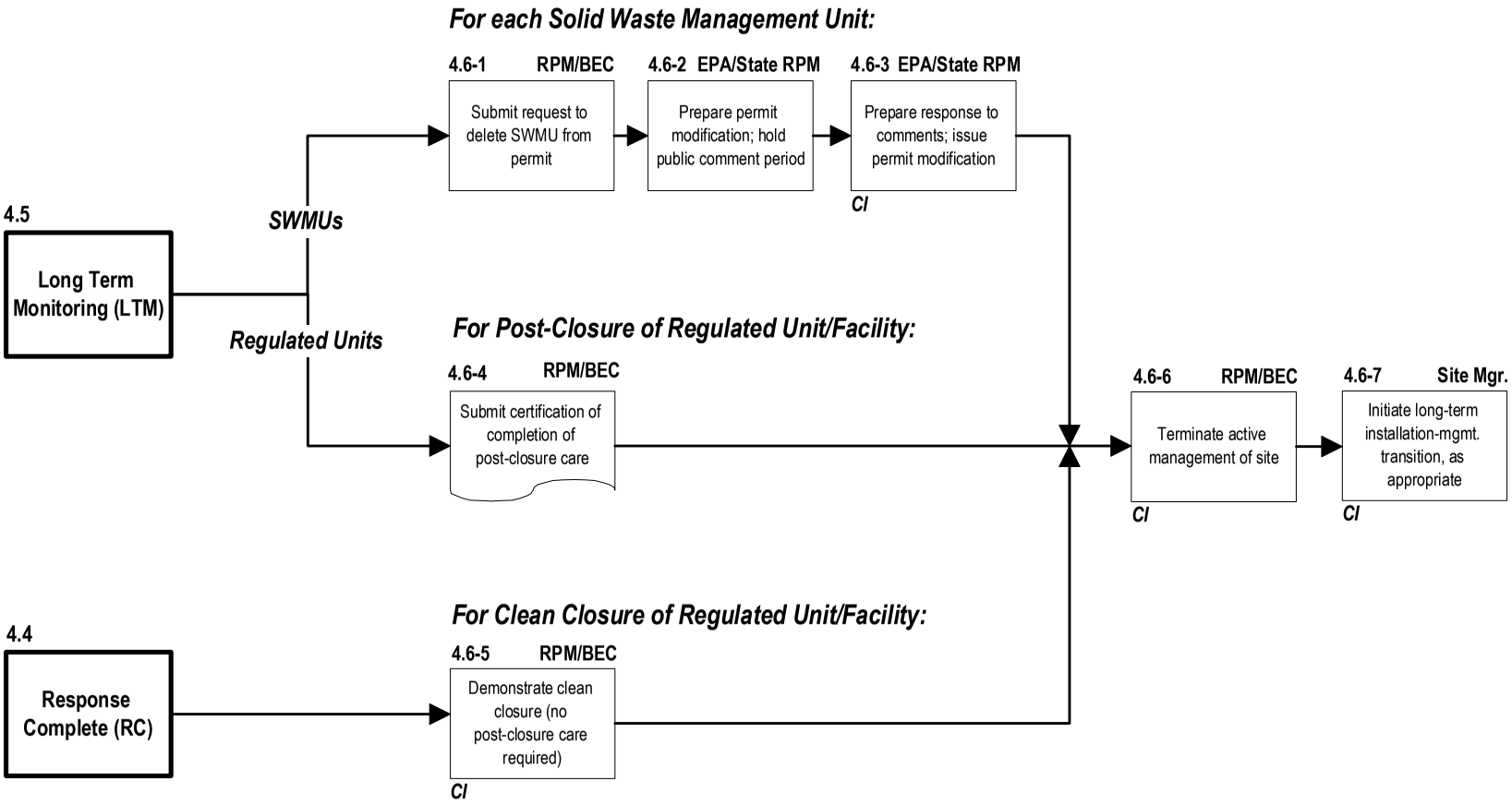
*This Table accompanies **Figure 4.5, Long-Term Monitoring (RCRA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| 4.5-6 | Modify and/or maintain institutional controls | RPM/BEC | | ❑ Coordinate institutional controls with appropriate local officials/authorities.<br>❑ At this point, adjustments may be made to previously-established institutional controls. For example, restrictions related to protection of the RA-O equipment may be lifted when the equipment has been removed and use restrictions necessitated by pre-cleanup contaminant levels may be lifted.<br>❑ ICs may be further modified as long-term monitoring progresses; e.g., restrictions to protect monitoring wells may be modified as well numbers and locations change over time.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.5-7 | Update Sampling and Analysis Plan (SAP) as appropriate | RPM/BEC | | ❑ The SAP may include the Quality Assurance Project Plan (QAPP), health and safety plan, and other related plans.<br>❑ In particular, the SAP should be revisited in light of potentially changing data quality objectives and the possibility of significantly altered sampling and analysis protocols as the site moves into the LTM phase.<br>❑ To ensure optimum efficiency of an existing LTM program, the LTM optimization process (see task 4.5) should be reviewed and updated periodically |
| 4.5-8 | Is continued LTM required?<br><br>*[If Yes, proceed to task 4.5-10]* | RPM/BEC | EPA/state RPM | ❑ Documents specifying corrective measures implementation should include methods to determine when remedial goals have been achieved.<br>❑ In general, once a unit has completed the post-closure care period, groundwater monitoring may be discontinued.<br>❑ Depending on the specific RCRA permit provisions, termination of the post-closure care period may not be based on a set time interval but may instead be determined through performance standards. |
| 4.5-9 | Decommission LTM equipment and wells as appropriate | RPM/BEC | | ❑ Once completed, proceed to task 4.6, **Site Closeout**. |
| 4.5-10 | Does LTM indicate the need for further remedial action?<br>*[If Yes, return to task 4.3, **Remedial Action Operation**]*<br>*[If No, proceed to task 4.5-4]* | RPM/BEC | | ❑ Should LTM indicate that the remedy has ceased to be protective of human health and the environment, additional remedial/corrective action may be necessary. |

## 4.6 Site Closeout

The process for Site Closeout is shown graphically in Figure 4.6 and is described in greater detail in Table 4.6. See Section 4.7 for a discussion of integration of corrective action and regulated unit closure requirements.

## Figure 4.6. Site Closeout (RCRA)




*CI* denotes community involvement

## TABLE 4.6 SITE CLOSEOUT (RCRA)

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **SITE CLOSEOUT (RCRA)** | | | |
| | ***For each Solid Waste Management Unit:*** | | | |
| 4.6-1 | Submit request to delete SWMU from permit | RPM/BEC | | ❑ Description of desired permit modification including description of unit to be deleted from the permit must be submitted to the appropriate regulatory agency (EPA or the state). |
| 4.6-2 | Prepare permit modification; hold public comment period | EPA/state RPM | | ❑ The appropriate regulatory agency will prepare the permit modification and initiate the permit modification process.<br>***Community Involvement***<br>*Required*<br>❑ Solicit public comments on the permit modification (see Section 4.9 and 40 CFR Part 270 for details). |
| 4.6-3 | Prepare response to comments; issue permit modification | EPA/state RPM | | ***Community Involvement***<br>*Required*<br>❑ Prepare response to comments received during the public comment period.<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| | ***For Post-Closure of Regulated Unit/Facility:*** | | | |
| 4.6-4 | Submit certification of completion of post-closure care | RPM/BEC | | ❑ No later than 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner/operator must submit to the RA (by registered mail) a certification that the post-closure care period was performed in accordance with the specifications established in the approved closure plan (§§264/265.120). |
| | ***For Clean Closure of Regulated Unit/Facility:*** | | | |
| 4.6-5 | Demonstrate clean closure (no post-closure care required) | RPM/BEC | | ❑ In order to demonstrate clean closure (or closure by removal), an owner/operator must show that levels of hazardous contaminants do not exceed EPA-recommended exposure levels, or clean closure levels.<br>❑ An owner/operator who cannot clean close must close as a landfill and obtain a permit for the post-closure period (§270.1(c)). In general the post-closure plan will be approved as part of the facility's overall RCRA permit.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| | | | | |
| 4.6-6 | Terminate active management of site | RPM/BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 4.6-7 | Initiate long-term installation-management transition, as appropriate | Installation Manager | | ❑ Since the Site Closeout milestone represents the termination of active site management by the DoD, the appropriate DoD Component Installation Manager (e.g., Installation Commander or Civil Engineer) should phase out associated management strategies, including transition of affected personnel and functions.<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 4.7 Installation Completion

The process for Installation Completion is shown in Table 4.7.

**TABLE 4.7 INSTALLATION COMPLETION (RCRA)**

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **INSTALLATION COMPLETION (RCRA)** | | | |
| 4.7-1 | Terminate RCRA permit | RPM/BEC | EPA/state RPM | ❑ Complete any additional required documentation in order to terminate the RCRA permit or order under which corrective actions were carried out. |
| 4.7-2 | Complete long-term installation management strategies | Installation Manager | | ❑ Complete transition of installation personnel and functions<br>***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 4.8 Regulated Units vs. Corrective Actions

Closure of regulated units under RCRA and conduct of corrective actions occur under two distinct regulatory processes. There are specific RCRA regulations that set forth how regulated units are permitted or closed, and similarly specific regulations for corrective actions. For example, a closure plan would typically focus on how an individual regulated unit (e.g., landfill) would be closed. This is in contrast to a corrective action, which is generally much broader in scope and addresses all solid waste management units at a facility. Thus, certification of closure for a regulated unit does not necessarily mean that corrective action has addressed all solid waste management units at a facility.

Under RCRA guidance, regulated units are considered to be solid waste management units. This is because the definition of a solid waste management unit is broad, covering any unit that may have managed solid waste. However, the regulatory processes under RCRA for closing a regulated unit and carrying out corrective action for solid waste management units are different. EPA has recognized this issue and has proposed a regulation that would bring the closure and corrective action processes closer together. On November 8, 1994, EPA requested comment on an approach that would reduce or eliminate the regulatory distinction between cleanup of releases from closed or closing regulated units and cleanup of releases from non-regulated units under the RCRA corrective action program (59 FR 55778).

In October 1998, EPA issued a final rule (63 FR 56709) regarding the closure process and the need for post-closure permits at regulated units. The rule introduces new flexibility in two areas:

- Closure requirements at certain regulated units may be replaced with similar, site-specific requirements developed through the corrective action process

- The regulatory requirements of a post-closure permit may be achieved through an enforceable document issued under corrective action authority instead of a permit

The tasks in Sections 4.4, 4.5, and 4.6 discuss regulated units in terms of the traditional closure and post-closure permit process. RPMs and BECs at installations with a RCRA-based program should be aware of this new flexibility and tailor their strategies accordingly. The final rule should allow much-improved integration of the closeout process for corrective actions and regulated units, which will be reflected in subsequent editions of this Guide.

**Closure and "Clean Closure" of Regulated Units (see EPA memorandum "Risk-Based Clean Closure," March 16, 1998).** EPA issued this memorandum to clarify the meaning of "clean closure" and to emphasize that a risk-based approach could be used to satisfy these requirements. Closure is the term used to describe taking a RCRA regulated unit out of service. During closure, facility owners/operators must comply with the performance standard at 40 CFR 264.111 or 40 CFR 265.111; closure must be completed in a manner that:

(a) minimizes the need for further maintenance;
(b) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to ground or surface waters or to the atmosphere; and,
(c) complies with the unit-specific closure requirements of 40 CFR Part 264 or 265. Generally, two types of closure are allowed—closure by removal or decontamination (referred to here as "clean closure") and closure with waste in place.

The premise of clean closure is that all hazardous wastes have been removed from a given RCRA regulated unit, and any releases at or from the unit have been remediated so that further regulatory control under RCRA Subtitle C is not necessary to protect human health and the environment. As part of meeting the closure performance standard referenced above, for clean closure, facility owners/operators must remove all wastes from the closing unit and remove or decontaminate all waste residues, contaminated containment system components, contaminated soils (including ground water and any other environmental media contaminated by releases from the closing unit), and structures and equipment contaminated with hazardous waste and hazardous waste leachate.

EPA's expectation is that, with the exception of landfills and most land treatment units, well-designed and well-operated RCRA units (i.e., units that comply with the unit-specific minimum technical requirements) will generally be clean closed. Units that are not clean closed remain subject to the requirements for post-closure care, including post-closure permitting.

Since 1987, EPA has interpreted the regulations governing closure by removal and the term "remove or decontaminate" to mean that, except for hazardous waste and liners, for clean closure, the regulations do not require one to completely remove all contamination, i.e., to background, at or from a closing unit. Rather, some limited quantity of hazardous constituents might remain in environmental media after clean closure provided they are at concentrations below levels that may pose a risk to human health and the environment.

Procedures and guidance generally used to develop protective, risk-based media cleanup standards for the RCRA corrective action and CERCLA cleanup programs are also appropriate to define the amount of hazardous constituents that may remain in environmental media after clean closure. In other words, site-specific, risk-based media cleanup levels developed under the RCRA corrective action and CERCLA cleanup programs are appropriate levels at which to define clean closure.

In situations where, because of a change in land use, additional cleanup is needed after clean closure, EPA would retain authority to take action, under appropriate circumstances, using RCRA Section 7003, CERCLA Section 106, and other authorities. In addition, until clean-closed facilities undergo final administrative

disposition of a RCRA permit application (i.e., through permit issuance or permit denial) they would remain subject to corrective action under RCRA Section 3008(h).

## 4.9 RCRA Permit Modifications and Site Closeout

The dynamic process of environmental restoration may require multiple adjustments to be made to a corrective action program in order to adequately and cost-effectively protect human health and the environment. In some cases, these adjustments may be relatively minor (such as a change in the number of monitoring wells), or, in extreme cases, may represent a fundamental rethinking of the chosen corrective action (see section 8.2 for a discussion of updating of remedy decisions).

When corrective actions are being conducted under a RCRA permit, these adjustments may require a modification to the permit as mandated by 40 CFR Part 270. Causes for a permit modification include the following:

- Material and substantial alterations or additions to the permitted facility or activity that occurred after permit issuance
- Receipt of information that was not available at the time of permit issuance
- Change, by statute or by judicial decision, of the standards or regulations on which the permit was based
- Events over which the permittee has little or no control that may cause a modification of compliance schedules

In addition, a permit may be modified, or revoked and reissued, if there is a proposed transfer of the permit to a new owner/operator.

Depending on the scope of the proposed change, the administrative and regulatory requirements for executing the permit modification can vary substantially. Permit modifications are grouped into three classes, according to the modifications' potential impacts:

**Class 1** modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. The permittee generally must notify the regulatory agency concerning the Class 1 modification within 7 calendar days after the change is put into effect, and send notice to the facility mailing list within 90 days. Certain Class 1 modifications, however, require prior written approval by the regulatory agency.

**Class 2** modifications apply to changes that are necessary to enable a permittee to respond, in a timely manner, to common variations in the types and quantities of the wastes managed under the facility permit, technological advancements, and changes necessary to comply with new regulations. Class 2 modifications entail a more substantial approval process, including significant community involvement requirements. The permittee must submit the proposed modification to the regulatory agency, send notice to the facility mailing list, hold a 60-day public comment period, conduct a public meeting, and make the proposed modification publicly available. The Class 2 process includes opportunities for revision and resubmission of the proposed modification, and the modification is automatically authorized if the regulatory agency does not approve or deny it after a set period.

**Class 3** modifications substantially alter the facility or its operations. Requirements for Class 3 modifications are similar to those for Class 2 modifications, including the same community involvement requirements. However, the information required for submission of a Class 3 modification is greater than that for a Class 2 modification, and the regulatory agency is required to make an approval or denial decision within an allotted time period.

Permittees may also request temporary authorization to proceed with a Class 2 or Class 3 modification pending a regulatory decision on the proposed modification. Full details of the permit modification process are described in 40 CFR § 270.42.

Table 4.9 provides examples of certain types of permit modifications that are relevant to site closeout, along with their classifications. Restoration project teams should assess the applicable permit modifications required during optimization of corrective actions and plan activities accordingly.

**Table 4.9 Examples of Classifications of Permit Modifications Relevant to Site Closeout**

| Modification Types* | Class |
|---|---|
| ***General Permit Provisions*** | |
| Administrative and informational changes | 1 |
| Correction of typographical errors | 1 |
| Equipment replacement or upgrading with functionally equivalent components | 1 |
| Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee: | |
| To provide for more frequent monitoring, reporting, sampling, or maintenance | 1 |
| Other changes | 2 |
| Changes in expiration date of permit to allow earlier permit termination | 1[1] |
| Changes in ownership or operational control of a facility | 1[1] |
| ***General Facility Standards*** | |
| Changes to waste sampling or analysis methods | 1, 1[1] or 2 |
| Changes to analytical quality assurance/control plan | 1 or 2 |
| Changes in frequency or content of inspection schedules | 2 |
| Contingency plan: | |
| Changes in emergency procedures | 2 |
| ***Ground-Water Protection*** | |
| Changes in the number, location, depth, or design of upgradient or downgradient wells of permitted ground-water monitoring system | 2 |
| Replacement of an existing well that has been damaged or rendered inoperable | 1 |
| Changes in ground-water sampling or analysis procedures or monitoring schedule, with prior approval | 1[1] |
| Changes in point of compliance | 2 |
| Changes in indicator parameters | 3 |
| Changes to a detection monitoring program | 2 |
| Compliance monitoring program: | |
| Addition of compliance monitoring program | 3 |
| Changes to a compliance monitoring program | 2 |
| Corrective action program: | |
| Addition of a corrective action program as required by 40 CFR §§264.99(i)(2) and 264.100 | 3 |

## Table 4.9 Examples of Classifications of Permit Modifications Relevant to Site Closeout

| Modification Types* | Class |
|---|---|
| Changes to a corrective action program | 2 |
| ***Closure*** | |
| Changes in the closure schedule for any unit | 1[1] |
| Changes in the expected year of final closure | 1[1] |
| Changes in procedures for decontamination of facility equipment or structures | 1[1] |
| Changes in approved closure plan | 2 |
| Extension of the closure period | 2 |
| ***Post-Closure*** | |
| Extension of post-closure care period | 2 |
| Reduction in the post-closure care period | 3 |
| Changes to the expected year of final closure | 1 |
| Changes in post-closure plan | 2 |
| ***Landfills and Unenclosed Waste Piles*** | |
| Addition or modification of a liner, leachate collection system, leachate detection system, run-off control, or final cover system | 3 |
| Modification of a landfill unit without changing a liner, leachate collection system, leachate detection system, run-off control, or final cover system | 2 |
| Modification of a landfill management practice | 2 |
| Changes in response action plan: | |
| Increase in action leakage rate | 3 |
| Change in a specific response reducing its frequency or effectiveness | 3 |
| Other changes | 2 |

*Partial list; for a comprehensive list, see 40 CFR § 270.42, Appendix I

[1] Class 1 modifications requiring prior regulatory agency approval.

# 5.0 CERCLA/RCRA INTEGRATION

This site closeout guide lists separately the closeout requirements for sites addressed under RCRA (Section 4) and those addressed under CERCLA (Section 3). RCRA traditionally applies primarily to active waste management facilities whereas CERCLA was established by Congress to address inactive and abandoned sites. However, certain amendments added provisions to RCRA that enable inactive solid waste management units to be addressed through a "corrective action" program. In addition, CERCLA §120 and Executive Order 12580 establish certain unique requirements associated with hazardous waste cleanup of Federal facilities, including the requirements to conduct all Federal cleanups in a manner consistent with CERCLA. Due to the overlap between these two regulatory programs, integration and clarification of the implementation procedures are required. In addition, the lead regulatory authority can differ in the two programs, with authorized states taking the lead under RCRA and either the state or EPA (for NPL Sites) assuming the lead role under CERCLA.

In general, cleanups under RCRA corrective action or CERCLA can satisfy the requirements of both programs. However, since the Defense Environmental Restoration Program requires restoration activities to be conducted in a manner consistent with CERCLA, RCRA corrective action requirements will generally be satisfied under CERCLA, with RCRA an "applicable or relevant and appropriate requirement" (ARAR). In most situations, remediation project managers should be able to conduct cleanup activities for all or part of a site under one program with the expectation that no further cleanup will be required under the other program. For example, when investigations or studies have been completed under one program, there should be no need to review or repeat those investigations or studies under another program. Similarly, a remedy that is acceptable under one program should meet the standards of the other. Some cleanup agreements (e.g., Federal Facility Agreements, FFAs) may define the integration of RCRA and CERCLA requirements. In the case of NPL sites, all cleanup must be conducted under CERCLA and the NCP.

While consolidating all requirements under one program (CERCLA) is typically the most efficient and desirable way to address overlapping cleanup requirements, in some cases, complete consolidation will not be appropriate and coordination between programs will be required. The goal of any approach to coordination of remedial requirements should be to avoid duplication of effort (including oversight) and second-guessing of remedial decisions. Restoration project teams are encouraged to be creative and focus on the most efficient path to the desired environmental result as they craft strategies for coordination of cleanup requirements under RCRA and CERCLA, and between Federal and state/tribal cleanup programs.

To that end, Table 5.0 summarizes and compares the terminology used in the CERCLA and RCRA regulatory frameworks with the Defense Environmental Restoration Program phases and milestones. The intent of this table is to foster improved communication among practitioners within the two frameworks and to illustrate the specific parallels that exist between the two. With this information, and a close examination of the specific requirements at an installation, a restoration project team should be able to realize improved coordination and integration of remedial requirements.

In many cases there is not a straightforward relationship between the EPA and DoD terms. Much of EPA's current guidance is not phrased in terminology applicable to a Federal facility (i.e., directed toward fund-lead and PRP sites). Therefore, it is important to exercise care in the application and usage of EPA's terminology in the context of a DoD facility's environmental restoration program.

## Table 5.0 Comparison of DoD, RCRA, and CERCLA Phases, Milestones and Terminology

| DoD IRP Phases/Milestones | EPA RCRA Phases/Milestones | | EPA CERCLA Phases/Milestones |
|---|---|---|---|
| | **Closure and Post- Closure Permits (Waste in Place)** | **Corrective Action** | |
| *Source: Department of Defense Reporting Conventions (Restoration Management Information System; Management Guidance for DERP*) | *Source: 40 CFR Chapter I, Parts 260, 261, 262, 263, 264, 265 and 270*<br>***APPLIES TO REGULATED UNITS*** | *Source: RCRIS Data Element Dictionary, January 1995*<br>***APPLIES TO SOLID WASTE MANAGEMENT UNITS (COULD INCLUDE REGULATED UNITS)*** | *Sources: National Oil and Hazardous Substances Pollution Contingency Plan (NCP);EPA Reporting Guidance* |
| Site Discovery | Part A/Part B Permit Notification | | Site Discovery |
| PA/SI Completion | | RCRA Facility Assessment | Preliminary Assessment/Site Inspection Completion |
| | | National Corrective Action Prioritization System (NCAPS) | Hazard Ranking System (HRS) |
| | | | National Priorities List (NPL) |
| Remedial Investigation (RI) | Closure Plan and Post-Closure Permit Application | RCRA Facility Investigation Imposed by Permit or Order | Remedial Investigation (RI) |
| Interim Remedial Action | | Interim/Stabilization Measures | Interim Remedial Action (IRA)/ Early Action |
| Relative Risk Reduction | | | |
| Feasibility Study (FS) | Closure Plan | Corrective Action Plan (CAP), Corrective Measures Study (CMS) | Feasibility Study (FS) |
| | | | Public Comment |
| Record of Decision | Closure Plan Approval and Post Closure Permit Issuance | Statement of Basis/Corrective Action Decision (CAD) | Record of Decision |
| Remedial Design (RD) | Closure Plan Implementation and Groundwater Cleanup | | Remedial Design (RD) |
| Remedial Action (RA) | | | Remedial Action Start |
| Remedial Action Construction (RA-C) | | Corrective Measures Implementation Plan | Remedial Action Start through Completion |
| Remedy in Place (RIP) | Closure Certification | Certification of Remedy Completion or Construction Complete | Remedial Action Completion |
| Last Remedy in Place (LRIP) | | | NPL Site Construction Completion/ Preliminary Close Out Report [all OUs/entire installation] |
| Remedial Action Operation (RA-O) | | | Remedial Action (RA) or Operation & Maintenance (O&M) [depending on remedy] |
| Response Complete (RC) | | | Final RA Report [individual sites/OUs] or NPL Site Completion/Final Close Out Report [all OUs/entire installation] |
| | | | NPL Deletion |
| Long Term Monitoring | Post Closure Permit | | Operation and Maintenance |
| | Terminate or Reissue 10 Year Post-Closure Permit | | Five Year Review as needed |
| Site Closeout | Post-Closure Permit Expiration | Corrective Action Process Terminated | |

As discussed in EPA's September 1996 memorandum, "**Coordination between RCRA Corrective Action and Closure and CERCLA Site Activities**" (available at the Site Closeout Web site, *www.afbca.hq.af.mil/closeout*), several approaches for coordination between programs at facilities subject to both RCRA and CERCLA are currently in use. It is important to note that options for coordination at Federal facilities subject to CERCLA §120 may differ from those at non-Federal facilities because of certain prescriptive requirements under §120. Current approaches that are in use include:

- *Craft CERCLA or RCRA decision documents so that cleanup responsibilities are clear*. CERCLA and RCRA decision documents do not have to require that the entire facility be cleaned up under one or the other program. For example, at some facilities being cleaned up under CERCLA, the RCRA units (regulated or solid waste) are physically distinct and could be addressed under RCRA. In these cases, the CERCLA decision documents can focus CERCLA activities on certain units or areas, and designate others for action under RCRA. When units or areas are deferred from RCRA to CERCLA, RCRA permits or orders can reference the CERCLA cleanup process and state that complying with the terms of the CERCLA requirements would satisfy the requirements of RCRA.
- *Establish timing sequences in RCRA and CERCLA decision documents.* RCRA and CERCLA decision documents can establish schedules, which allow the requirements for cleanup at all or part of a facility under one authority to be determined only after completion of an action under the other authority. For example, RCRA permits/orders can establish schedules of compliance which allow decisions on the necessity of corrective action is required to be made after completion of a CERCLA cleanup or a cleanup under a state/tribal authority. After the state or CERCLA response is carried out, there should be no need for further cleanup under RCRA and the RCRA permit/order could simply make that finding. Similarly, CERCLA or state/tribal cleanup program decision documents could delay review of units or areas that are being addressed under RCRA, with the expectation that no additional cleanup will need to be undertaken pending successful completion of the RCRA activities.

  A disadvantage of this approach is that it contemplates subsequent review of cleanup by the deferring program, and creates uncertainty by raising the possibility that a second round of cleanup may be necessary. Therefore, EPA recommends that program implementers look first to approaches that divide responsibilities, as described above. A timing approach, however, may be most appropriate in certain circumstances, for example, where two different regulatory agencies are involved. Whenever a timing approach is used, the final review by the second program will generally be very streamlined. In conducting this review, there should be a strong presumption that the cleanup under the other program is adequate and that reconsidering the remedy should rarely be necessary. Note that under the Defense Environmental Restoration Program, all remedies must be consistent with CERCLA; as a result, it will generally be the case that RCRA corrective action requirements will be satisfied by a cleanup under CERCLA.

Agreements on coordination of cleanup programs should be fashioned to prevent revisiting of decisions and should be clearly incorporated and cross-referenced into existing or new agreements, permits or orders. This up-front coordination can require significant resources. Over the long-term, duplicative regulatory agency oversight will be reduced and cleanup efficiency will be enhanced.

Some of the most significant RCRA/CERCLA integration issues are associated with coordination of requirements for closure of RCRA regulated units with other cleanup activities. Currently, there are regulatory distinctions between requirements for closure of RCRA regulated units and other cleanup requirements (e.g., RCRA corrective action requirements). RCRA regulated units are subject to specific standards for operation, characterization of releases, groundwater corrective action and closure. Coordination of these standards with other remedial activities can be challenging.

There are several approaches program implementers can use to reduce inconsistency and duplication of effort when implementing RCRA closure requirements during CERCLA cleanups or RCRA corrective actions. These approaches are analogous to the options discussed above for coordination between cleanup programs. For

example, a cleanup plan for a CERCLA operable unit that physically encompasses a RCRA regulated unit could be structured to provide for concurrent compliance with CERCLA and the RCRA closure and post-closure requirements. In this example, the RCRA permit/order could cite the ongoing CERCLA cleanup, and incorporate the CERCLA requirements by reference. RCRA public participation requirements would have to be met for the permit/order to be issued; however, at many installations it may be possible to use a single process to meet this need under RCRA and CERCLA.

At some installations, inconsistent cleanup levels have been applied for removal and decontamination ("clean closure") of regulated units and for installation-wide remediation under CERCLA or RCRA corrective action. Where this has happened, clean closure levels have been generally set at background levels while, at the same site, cleanup levels have been at higher, risk-based concentrations. To avoid inconsistency and to better coordinate between different regulatory programs, EPA encourages use of risk-based levels when developing clean closure standards (see Section 4.7).

Since almost all states oversee the closure/post-closure process and more than half implement RCRA corrective action, coordination of RCRA corrective action and closure will often be solely a state issue. However, if a state is not authorized for corrective action, or if a facility is subject to CERCLA as well as RCRA corrective action, close coordination between Federal and state agencies will be necessary. As discussed above, actual approaches to coordination or consolidation at any installation should be developed in consideration of installation-specific and community concerns.

## 5.1 Lead Regulatory Role

Under the Defense Environmental Restoration Program, CERCLA, the NCP, and Executive Order 12580, DoD is the lead agency for cleanup at its installations. For purposes of effective restoration program management, it is also important to identify a lead *regulatory* agency in order to streamline regulator oversight and coordination.

As stated in its **"Lead Regulator Policy for Cleanup Activities at Federal Facilities on the National Priorities List" (November 6, 1997)** (available at the Site Closeout Web site, *www.afbca.hq.af.mil/closeout*), EPA expects that for the foreseeable future, the resources for Federal and state oversight of cleanup at Federal facilities will remain relatively constant. The total workload for overseeing the work at contaminated Federal facility sites, however, is expected to increase. Therefore, it is becoming increasingly important to ensure that EPA and states maximize the impact of their respective limited resources. Because the states will increasingly play an important part in the cleanup program, it is essential that EPA and the states minimize their duplicative oversight efforts. Complex CERCLA/RCRA integration issues and concerns can be impacted by EPA's "Lead Regulator Policy." Therefore, the preceding guidance on CERCLA/RCRA integration should be consulted.

EPA endorses and encourages the identification of a single lead regulator to oversee the cleanup of Federal facility sites on the NPL. Through identification of a lead regulator, overseeing agencies should minimize, within the constraints of existing laws, multiple regulator review and comment, thereby reducing the number of redundant or competing oversight processes, such as reviewing response actions, that occur during cleanup. For purposes of EPA's policy, a lead regulator is defined as the primary regulatory agency (i.e., EPA or the state) that oversees cleanup work at an operable unit, an area of contamination, or an NPL installation under the applicable regulatory framework. For instance, this approach would enable states to oversee sites on a Federal facility using a state program authorized under RCRA or other state cleanup authority provided that: (1) at a minimum the CERCLA process is integrated with the applicable RCRA or other state law process to satisfy the requirements of both statutes; and (2) the results are protective of human health and the environment (i.e., a remedy that can be approved by EPA for eventual deletion from the NPL).

To the extent permitted by law, possible streamlined oversight arrangements for cleanup may include, but need not be limited to: state-lead for appropriate portions of the installation using the state program authorized under RCRA, or the appropriate state hazardous waste cleanup law as oversight authority, or EPA-lead under CERCLA. At installations where the lead regulator policy is applied, if the state acts as the lead regulator, EPA's involvement is expected to be minimal. Except as otherwise required by CERCLA, EPA will rely on the state to do all regulator oversight work necessary to develop a recommended remedial alternative with which EPA can concur under CERCLA with minimal review. Where EPA is lead, state involvement would be expected to be minimal. For either scenario, the timing and extent of involvement is expected to be tailored to the installation-specific situation.

EPA, the state, and the DoD should discuss how the lead regulator policy would be applied at particular NPL Federal facilities. EPA and the state, in consultation with the Federal agency, should enter into a "lead regulator agreement." This agreement, and any funding allocation between EPA and the state, should be documented in a manner that the Region and state find most appropriate (i.e., Memorandum of Understanding (MOU), partnership agreement, consensus statement, interagency agreement, letter between agencies, etc.). The agreement can cover an arrangement that suits the Region's and state's particular needs, such as: statewide; facility by facility; or even operable unit by operable unit. It is important to keep in mind that some contamination, such as certain radioactive contaminants, cannot be addressed under RCRA authorities. Likewise, certain contaminants, such as petroleum, cannot be addressed under CERCLA authorities.

States are generally in a better position to assume a lead regulator role if the state has RCRA program authorization including corrective action or otherwise has authorities under a state law to oversee cleanup activities. For a state to be eligible to assume the lead regulator role, the state hazardous waste management or remedial program should meet certain general criteria regarding statutory and administrative authority, and program capability.

Additionally, while the Federal lead cleanup agency (DoD) has responsibility for providing community involvement under CERCLA, states, where they are the designated lead regulator, should work to promote input from communities in a manner that fosters community participation in decisions regarding response actions at installations. The state should take appropriate steps to ensure that the affected community and other affected parties (e.g., communities downstream from the installation, Natural Resource Trustees, etc.), as appropriate, are kept informed of any differences in timetables or criteria that may result from integrating the Federal CERCLA process with a state program authorized under RCRA or other state cleanup law process, and other information relating to the cleanup. Where EPA, the state, and DoD are entering into a lead regulator agreement that is not currently captured in an existing IAG, adequate public notice must be provided concerning the lead regulator agreement.

# 6.0 BRAC REQUIREMENTS

At BRAC installations or other installations at which a transfer of property to a non-Federal entity is under consideration, there are additional requirements under CERCLA for site closeout. In particular, CERCLA § 120(h)(3) requires DoD to ensure that "all remedial action necessary to protect human health and the environment with respect to any [hazardous] substance remaining on the property has been taken before the date of such transfer." This provision has been amended over time to clarify the meaning of "has been taken," and to allow for leasing and transfer of property before all required remedial action has been completed, provided that an operating properly and successfully (OPS) demonstration has been made. In addition, provisions for "early transfer" have been added. These requirements add to the overall documentation required to complete closeout of BRAC environmental sites, and need to be considered by the BRAC Cleanup Team when developing project schedules and timelines.

## 6.1 Operating Properly and Successfully (OPS) Demonstration

All required remedial action "has been taken" under CERCLA § 120(h)(3) "if the construction and installation of an approved remedial design has been completed and the remedy has been demonstrated to the [EPA] Administrator to be operating properly and successfully."

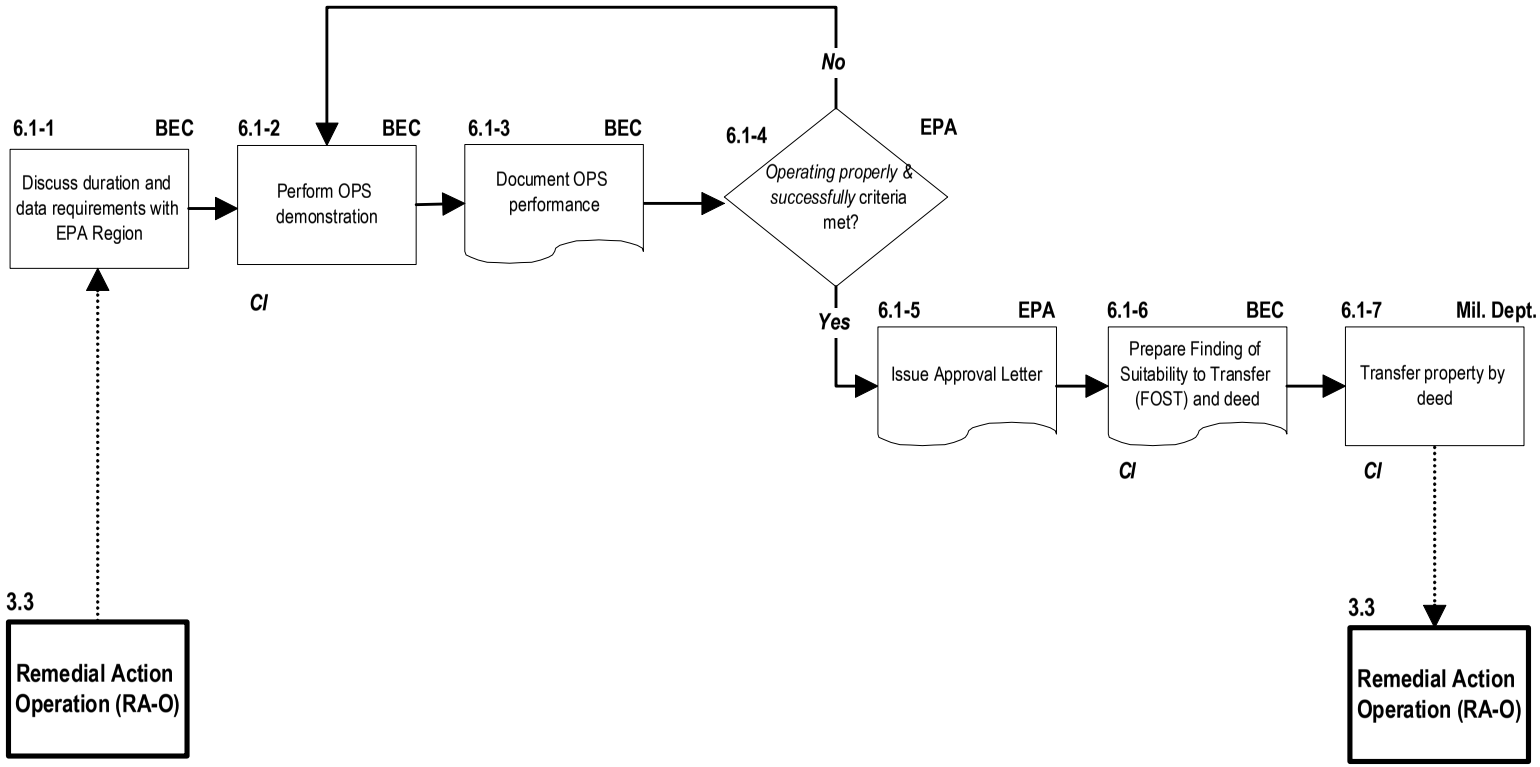
The phrase "operating properly and successfully" involves two separate concepts. A remedial action is operating "properly" if it is operating as designed. That same system is operating "successfully" if its operation will achieve the cleanup levels or performance goals delineated in the decision document. Additionally, in order to be "successful," that remedy must be protective of human health and the environment. For instance, a pump and treat system may be operating properly according to its design for pumping and extracting groundwater, but not operating successfully because one or more contaminant levels has not been reduced in the aquifer. The success of a particular remedial action will be evaluated based on whether it successfully addresses the particular contaminant(s) it was designed to remediate. Where more than one remedial action is required for a parcel, **all** such actions must operate properly and successfully, and EPA must evaluate the suite of actions comprehensively prior to transfer to determine that all remedial actions have been taken. Thus, EPA interprets the term "operating properly and successfully" to mean that the remedial action is functioning in such a manner that it is expected to adequately protect human health and the environment when cleanup is completed. At this point, it should be reiterated that much of EPA's current guidance is phrased in terminology aimed at fund-lead or PRP sites rather than Federal facilities. Therefore, it is important to exercise care in the application and usage of EPA's terminology in the context of a DoD facility's environmental restoration program.

EPA's approval of a Federal agency's demonstration under CERCLA § 120(h)(3) is solely for the purpose of allowing property transfer to occur and does not imply that all cleanup actions are completed. The completion of a remedial action is defined by the attainment of specific cleanup levels or performance goals that are specified in a decision document, such as a ROD, a Removal Action Memorandum, or RCRA decision document. Regardless of the timing of EPA's approval of a Federal agency's demonstration, Federal agencies remain obligated to complete remedial actions pursuant to those performance requirements specified by a ROD or other decision document, and comply with the terms of any site-specific Interagency Agreement or FFA, or similar agreement under RCRA or state RCRA/CERCLA-equivalent laws.

Figure 6.1 and Table 6.1 describe and discuss in greater detail the general considerations and requirements associated with an OPS demonstration. Where OPS demonstrations will be required, the BRAC Cleanup Team should confer well in advance in order to arrive at a consensus regarding site-specific requirements.

## Figure 6.1. Demonstration of Operating Properly and Successfully (CERCLA/BRAC)

***(For deed transfers; see Section 6.2 for those under Early Transfer Authority)***




***CI*** denotes Community Involvement

## TABLE 6.1. DEMONSTRATION OF OPERATING PROPERLY AND SUCCESSFULLY (CERCLA)

*This Table accompanies **Figure 6.1, Demonstration of Operating Properly and Successfully (CERCLA)***

| TASK NUMBER | TASK NAME | LEAD | COORD./ CONCUR | TASK GUIDANCE AND INFORMATION |
|---|---|---|---|---|
| | **OPERATING PROPERLY AND SUCCESSFULLY (CERCLA)** | | | |
| 6.1-1 | Discuss duration and data requirements with EPA Region | BEC | EPA | ❑ Both the length of time a remedial action should operate, and the amount of data that should be collected on system performance may increase with the uncertainty regarding continued protectiveness of a remedial action.<br>❑ The factors that should be considered for all OPS decisions are risk to public health and the environment, enforceability, technology reliability, and site characterization.<br>❑ For BRAC facilities or facilities where property ownership is transferred, a determination must be made on permit modification (see also Section 4.9). |
| 6.1-2 | Perform OPS demonstration | BEC | | ***Community Involvement***<br>❑ *For a list of activities you may want to consider, refer to Section 7.0, Community Involvement.* |
| 6.1-3 | Document OPS performance | BEC | | ❑ See Appendix A of the EPA guidance for specific information regarding documentation requirements for RA performance and how requirements may vary depending on the type of remedy (e.g., groundwater treatment vice natural attenuation). |
| 6.1-4 | Operating properly & successfully criteria met?<br>*[If Yes, proceed to task 6.1-5;*<br>*if No, return to task 6.1-2]* | EPA | | ❑ Two types of criteria should be considered for groundwater remedies. Core Criteria should be considered for all remedies for contaminated groundwater. Other Criteria to be considered will depend on the type of remedy selected and site/OU-specific conditions.<br>❑ For a discussion of Core Criteria, refer to EPA Guidance for Evaluation of Demonstrations that Remedial Actions are Operating Properly and Successfully under CERCLA Section 120(h)(3). |
| 6.1-5 | Issue Approval Letter | EPA | | ❑ The EPA Region's approval will be expressed in a letter to the facility which describes the rationale for the approval and includes the following:<br>❑ Include the Approval Letter in the Information Repository/Administrative Record. |
| 6.1-6 | Prepare Finding of Suitability to Transfer | BEC | | ❑ A FOST can be made only after the CERCLA 120(h)(3) criteria have been met. For cases in which the CERCLA Early Transfer Authority will be used, a FOSET is needed.<br>***Community Involvement***<br>*Required*<br>❑ Issue public notice of FOST.<br>❑ File in administrative record/information repository. |
| 6.1-7 | Transfer property by deed | DoD Component | | ❑ The DoD component will execute the deed transfer.<br>❑ For site transition activities, refer to Section 7.0, Community Involvement.<br>***Community Involvement***<br>❑ *For a list of additional activities you may want to consider, refer to Section 7.0, Community Involvement.* |

## 6.2 Early Transfer Authority

CERCLA was recently amended to include the authority to defer the CERCLA § 120(h)(3)(A)(ii) covenant that all remedial actions necessary to protect human health and the environment have been taken, and to transfer property by deed, subject to certain additional statutory requirements. DoD intends to use this "Early Transfer Authority" (ETA) to assist communities in expediting reuse of former defense facilities. By enabling an LRA and other stakeholders to obtain full ownership of property earlier, those parties gain greater control over the future of their community. One major benefit of ETA is that it allows for the productive reuse of property right away rather than delaying final implementation of a reuse plan until cleanup is completed.

The ETA is a deferral, not a waiver, of the CERCLA covenant requirement. DoD (or any other Federal agency) is still required to issue the warranty required under CERCLA, when all response actions necessary to protect human health and the environment have been taken, or when there has been a demonstration to EPA that the approved remedy is "operating properly and successfully." The timing of this warranty will depend on the selected remedy and can only occur when one of these two conditions can be met. At that time, the transferring Federal Agency shall execute and deliver to the transferee an appropriate document containing the warranty that all remedial action has been taken.

The ETA is self-implementing and can be used right now. Although no additional authority or regulations are required, the DoD, EPA, and the states have guidance to implement the process. The EPA guidance only addresses property on the NPL, while the DoD guidance extends to property not on the NPL.

Successful implementation of this authority requires that the DoD, the purchaser, the community, and the regulatory agencies work very closely together. Not only is this partnership in the spirit of the BRAC process, but it is mandated by statute. The Governor and EPA Administrator have approval authority to determine if the protections and response action assurances required by statute are in place to allow the property transfer to go forward.

# 7.0 COMMUNITY INVOLVEMENT DURING SITE CLOSEOUT

This section addresses community involvement during each of the key milestones in the environmental site closeout process. The proposed activities are designed to help installations plan and implement an ongoing community involvement program that will inform interested citizens and local officials about the progress of remedial activities at DoD installations. Table 7.1 lists required and suggested community involvement activities during the site closeout process.

Community involvement is a critical element of the overall environmental site closeout process, promoting understanding and building trust in DoD Component environmental stewardship initiatives. CERCLA defines the process and timetables for community involvement. It is the main planning tool for community outreach activities. The IRP process, as regulated by CERCLA, defines program goals and initiatives to be undertaken for each phase of the IRP process. It also defines the vehicles to be used for communicating site activities and timetables for accomplishing goals.

Past installation restoration program experience has shown that community involvement beyond that strictly required by law is often appropriate and beneficial. In fact, numerous EPA and DoD guidance documents describe suggested public participation activities (see Section 9). In most cases, however, these documents do not address community involvement activities beyond remedy selection.

Appropriate public participation activities are necessary to fulfill the spirit and the statutory goals of CERCLA and RCRA, and to ensure that the public remains adequately informed during completion of environmental response actions. However, relatively few statutory and regulatory requirements exist that specify community involvement activities that should be undertaken after remedial action decisions. Where such requirements exist, they have been incorporated into the environmental site closeout process described in the preceding Sections 3 and 4. These required activities are also referenced in the text box to the right.

**Community Involvement Activities within the Site Closeout Process**

- Public Notices
- Fact Sheets
- Restoration Advisory Boards
- Briefings
- Public Comment Periods
- Notices of Availability of Documents
- Information Repository/Administrative Record
- Technical Assistance

A successful community outreach program and its legally-driven subset, community involvement, extend environmental stewardship beyond the dictates of regulatory requirements. The goals and objectives of the program are to:

- Ensure public understanding that human health and the environment are of paramount interest to DoD.
- Understand and be concerned about community attitudes and information needs. Address these needs through prompt release of factual information utilizing media and other dissemination mechanisms.
- Create and maintain a climate of understanding and trust in DoD environmental initiatives to protect and clean up the environment.
- Use strategies that are suited to engage the public and ensure a two-way communication process is maintained.
- Maintain a reputation as a good neighbor, as well as a respected professional organization charged with part of the responsibility for protecting national security.

## Table 7.1 Public Participation Activities during the Site Closeout Process

| Public Participation Activities | Remedial Action Construction | Remedy in Place | Remedial Action Operation | Operating Properly and Successfully | Response Complete | Long-Term Monitoring | Site Closeout | Installation Completion | EPA NPL Delisting | EPA Five-Year Review |
|---|---|---|---|---|---|---|---|---|---|---|
| Contact State/Local Officials | ■ | | ■ | | | | ■ | ■ | | ■ |
| Maintain Community Dialogue | ■ | | ■ | | ■ | ■ | | | | |
| News Release | | | | | ■ | ■ | | ■ | ■ | |
| Press Briefing | ■ | | ■ | | ■ | | | | | |
| Workshops | ■ | | | | | | | | | |
| Public Exhibits, Open Houses | ■ | | | | ■ | | | | | |
| Community Interviews | ■ | | | | | | | | | |
| Revise/Review CRP | ■ | | | ■ | | | | | | |
| File in Admin. Record/ Info. Repositories | | | ■ | ■ | ■ | ■ | ■ | | | |
| Publicize T/A | | ■ | ■ | | | | | | | |
| Maintain Mailing List | | | ■ | | | | | | | |
| Fact Sheet/News | ■ | ■ | ■ | | ■ | ■ | | | | |
| Public Notice | | ■ | ■ | | | | | ■ | ■ | |
| Public Meeting/Brief | | ■ | ■ | | ■ | ■ | ■ | ■ | | ■ |
| Public Input | | | ■ | | | | | | | |
| Comment Period | | | | | | | | | ■ | |

| | |
|---|---|
| ■ | Suggested Activity |
| ■ | Required Activity |

- Identify issues and potential areas of concern, and develop and implement objective means to avoid or resolve conflict.

DoD Components use various mechanisms to communicate the progress of environmental programs. These tools can be:

- Meetings: Public, Small Groups, RAB
- Public Information Sessions: Workshops, Tours, Exhibits
- Direct Mailings: Fact Sheets, Newsletters, Progress Reports

The activities contained in this section are suggestions; each installation should tailor its community involvement program to the specific requirements of that location. In some cases, outreach activities beyond those listed here may be appropriate; in other cases, a much more limited program may be adequate. Communities vary from place to place. Each community or geographic area has its own character, structure, personalities and problems.

The suggested activities include guidelines regarding the types of locations for which the particular activities might be suited, with more elaborate activities suggested for installations with higher levels of public involvement.

A high level of community interest can be anticipated if a selected remedy is no longer protective of human health and the environment, contaminants migrate off base/site, the remedy fails to perform as expected, or new contamination is discovered. The local redevelopment authority may change its land use plan, lessees or sublessees may disturb a remedy in place, or an institutional control may be proven ineffective. These changes may trigger strong community reaction.

Community interest can heighten or diminish at any time during the site closeout process. Concern for the environment most frequently arises when environmental activities are perceived as a threat to health or property value. The most passive community member can become an activist if any of these conditions are met.

As site closeout approaches, the public may have concerns about risks to health, safety, environment and even aesthetics of surrounding landscape. Appropriate public participation activities are necessary to fulfill the spirit and the statutory goals of CERCLA and RCRA, and to ensure that the public remains adequately informed during completion of environmental response actions. It will be important to incorporate potential concerns into community outreach programs.

Installations will need to keep abreast of community sentiments and concerns of special populations in order to respond appropriately. Wherever there is DoD/community interaction, public attitudes and opinions about the DoD are formed – good or bad. For example, a previously adjourned RAB's decision to reconvene or apply for technical assistance for other community activities may suggest a shift in public interest. At regionalized operating locations, it will be important to assure communities that departure of a DoD presence does not equate to abandonment of our environmental responsibility.

In all cases, these activities should be considered recommendations. Only those who are familiar with a particular installation can tailor an appropriate community involvement strategy.

## 7.1 Restoration Advisory Boards

The community's interest in the cleanup program will likely continue throughout site closeout. Their role on the RAB is prescribed by law and environmental conscience. It is a role that will increase before it diminishes.

By the time RA-C is reached, all remedial action decisions are made, and the RAB's mission has been met, and its advisory role into the decisionmaking process is fulfilled.

Beginning with the **Remedial Action Construction (RA-C***)* phase, members of the RAB may want to review the plan for what happens after the last remedy is put in place, including when key milestones occur, and the process for reviewing future documents. In developing the work plan, consider the role of the RAB if remedies fail to achieve the results intended and RAB input is required to select a new remedy.

This would also be an opportune time to poll for RAB consensus on their future status. RAB options are to:

- Convert to an inactive status
- Meet less frequently
- Meet at key milestones
- Plan to dissolve after a 2-year waiting period, agreeing to reconvene for the Five-Year Review.
- Establish a phaseout or inactivation date
- Transition to a Community Advisory Board or a Technical Review Committee (active bases)

Sound judgment in how to approach this subject is critical to avoid creating the impression that any decision has been made in advance of the RAB's opportunity to participate in the decisionmaking process. Keep in mind that the RAB is representative of the community's demographics and serves as the liaison between the community and the DoD Component. RAB members are the continuity for our environmental programs, and as such, inject a "common sense" approach into a highly technical government process. In some cases, RAB meetings are usually the only forum that exists for ongoing dialogue with communities.

Following are specific milestones in the IRP process where the RAB could have an integral role in reaching environmental site closeout.

**Last Remedy in Place (RIP):** When the last remedy has been put in place, a RAB meeting could be the vehicle used in the IRP process to:

- Update the progress of remedial actions;
- Explain the scope and impact of site activities;
- Address and discuss site-related health and safety issues, future site management strategies, the state's role after completion of remedial actions, who will be responsible for O&M activities, and emergency contacts; and
- Answer questions.

At this time, the RAB may be interested in reviewing the interim remedial action report, and if it has not been discussed previously, determine the future status of the RAB, including deactivation or reduced frequency of meetings.

**Remedial Action Operation (RA-O):** *During submittal of an amended ROD or permit (see task numbers 3.3-7.1 and 4.3-7.1)*, a RAB meeting is an appropriate venue for discussing any new remedial alternatives, following guidance for the IRP Remedial Design phase.

**Response Complete (RC):** *After issuance of the letter accepting the RA Report (under CERCLA; see task number 3.4-3), or preparation of a response to comments and issuance of a permit modification (under RCRA; see task number*

*4.4-6)*, the RPM/BEC could convene a RAB meeting to discuss the Remedial Action (RA) Report, Long Term Monitoring (LTM) Plan, and final Closeout Report or RCRA Corrective Action Complete report.

**Long Term Monitoring (LTM):** Plan opportunities for RAB members to observe sampling data and tour sites where remedial action equipment is in operation.

**Site Closeout (SC):** Upon *completion of reports*, a RAB or public meeting would be appropriate to discuss the RA Report, LTM Plan and Final Closeout Report or RCRA Corrective Action Complete document. When the site closeout phase is reached, highlight the accomplishments of the installation's environmental program and the contributions made by the RABs, LRAs. Consider thanking them for their efforts at a ceremony, appropriately planned for this occasion.

**Installation Completion (IC):** When *every site/OU at the installation has reached site closeout*, issue letters to disband in accordance with the prescribed schedule, and certificates of appreciation. Encourage the RAB to prepare a closeout report.

*For CERCLA closeouts only, during conduct of* **Five-Year Review(s)** *(see task number 3.8),* a RAB (if it exists) meeting may be convened.

**Operating Properly and Successfully (OPS):** Notify RAB members when you reach this milestone.

## 7.2 Additional Outreach

*Installations with major findings or high levels of interest may require more frequent contact than those bases with small programs and minimal public interest.* You must decide whether you will need more or less. **External Affairs or Public Affairs representatives can assist you in determining if any of the following strategies and activities are best suited to your situation for fostering an understanding of site activities.**

- A hot line or toll-free number for residents to call with questions and/or concerns about site activity
- Public tours of the site or operable unit, including a demonstration of the equipment to be used
- Viewing platforms, if appropriate, to allow the community and media to monitor the progress at sites/OUs and better understand the work being done
- Workshops or other public forums to explain highly technical or complex information to the community, involving pictorial exhibits
- Status reports through regular meetings with community groups, interested parties and public representatives
- Exhibits in convenient public locations to allow the community to follow activities and progress occurring at sites/OUs
- Direct mail news bulletins
- Media symposiums
- Access by residents to monitoring data
- Translation services for communities with multinational demographics

At BRAC installations, in particular, the community's role and involvement in the successful transition of their communities from DoD use to civilian reuse are vitally important. Communities not only have a need to know, but a right to have input into the decisions that will affect them and their communities.

## 7.3 Suggested Activities

Sections 3 and 4 described community involvement activities required by law or regulation. The following sections outline additional, suggested activities that may be appropriate for inclusion in an installation's public participation program.

### 7.3.1 Remedial Action Construction (RA-C)

A significant amount of activity takes place during the construction phase. As this phase begins and activities increase, the installation should continue implementing an effective community relations program.

This would be the best time to establish a point of contact at the installation to ensure that community concerns are addressed in a timely and accurate manner by a person who is knowledgeable about the project. The presence of an on-site contact is especially important during the first week of remedial action construction, since citizens and the media may have questions and concerns about site activity and its effects. These concerns will focus primarily on visible activities during this time, and community outreach activities will need to respond to a broad scope of community concerns and questions. Citizens may have questions about traffic, equipment, noise and dust in the air. They may also have concerns about the need to temporarily relocate and the impact of property easements and acquisitions, or the need to take safety precautions for short periods of time. The installation may address these concerns and questions through some of the activities described below.

- Before work begins, consider sending letters to adjacent residences and businesses to notify them of impending activities.
- Brief key groups, such as the Restoration Advisory Board, Local Redevelopment Authority, community leaders and key elected officials, of impending activities.
- Press briefings will ensure the media has accurate and timely information for dissemination to the public.
- Revise the Community Relations Plan (referred to as a Post Remedial Action Update) based on interviews with community members about their concerns and how they would like the DoD to communicate with them through site closeout.
- Produce a fact sheet or newsletter summarizing activities
- Develop a fact sheet on the Final Field Engineering Design for dissemination to the community relations mailing list.

### 7.3.2 Remedy in Place (RIP)

Once the remedy is demonstrated to be functioning properly, public notification of this milestone is advisable. Furthermore, when the last remedy is in place (LRIP), RAB, public, and/or small group meetings could be conducted to: (a) update the progress of remedial actions; (b) explain the scope and impact of site activities; (c) address and discuss site-related health and safety issues, future site management strategies, the state's role after completion of RA, who will be responsible for O&M activities, and emergency contacts; and (d) answer

questions. Installations may prefer to conduct additional meetings at least annually. Finally, if it has not been discussed previously, determine the future status of the RAB, including deactivation or reduced frequency of meetings.

*For CERCLA closeouts only, during preparation and submittal of the interim RA Report* , the RAB may be interested in reviewing the interim remedial action report. The general public may also be notified that the report is available. At the last remedy in place (LRIP), consider future management strategies (e.g., regionalization) and how to coordinate with the various interested stakeholders.

### 7.3.3 Remedial Action Operation (RA-O)

Outreach efforts during this phase are likely to be less intense than in the earlier phases of a remedial response when the public is more likely to express its concerns. However, public concerns do not necessarily vanish with the placement of the remedy. The public may continue to have health concerns, or questions about site safety or long-term use of the site. There should be a continuation of efforts to monitor community concerns, exchange information and meet with community residents to discuss their concerns, where appropriate. When the remedial response shifts from remedial action construction to remedial action operation, you may anticipate the following events.

- *Planned and unplanned shutdowns*. Unplanned shutdowns of remedies may be disconcerting to those living near the site; they may fear a new danger at the site. To prevent the pubic from becoming alarmed that a new danger has been discovered, they should be informed well in advance of scheduled shutdowns of remedies for maintenance, to the extent possible.

- *Changes in the appearance of the work site due to weather conditions*. If, for example, the weather suddenly becomes much cooler, the water vapor above an air-stripping tower may condense into a visible plume. Some citizens may fear that an explosion has occurred. To prevent or address these fears, the public should be told in advance, and reiterated periodically in writing, what to expect.

- *Organizational changes*. To some citizens, changes in and/or the departure of DoD Component staff and contractors from the installation may be disconcerting. Staff should ensure that the community understands the long-term plans for the installation and knows which state and local officials will be ultimately responsible. Assure residents that the sites may be restored to other uses within the community, as appropriate.

The final remedial action operation plan (O&M plan, sampling & analysis plan [SAP]) could be filed in Administrative Record/Information Repository.

*During performance of the RA, conduct of routine sampling and analysis, and implementation of institutional controls* , ensure that the administrative record/information repository is updated at least quarterly. It will be important to maintain mailing lists so that all local residents, elected officials and media can receive information and remain informed about activities. Installations will need to maintain a dialogue with the community to keep them apprised of any significant changes in plans, i.e., updated technical decisions resulting from new developments and changes if the remediation does not work. Conducting press briefings throughout RA-O will help to ensure the media has accurate and timely information for dissemination to the public.

*During submittal of an amended ROD/permit*, a RAB/public meeting could be convened to discuss new remedial alternatives, as appropriate (following guidance for the IRP Remedial Design phase). If a fact sheet or newsletter is used to update the public with new information or to report progress, be sure to send it to the community involvement mailing list.

*For CERCLA closeouts only, during conduct of Five-Year Review(s),* the following activities could be conducted. Confirm site/OU status with local officials and/or community members, followed by documentation of the content of those discussions. Note that the performance reporting requirements under RCRA fulfill the functional requirements for Five-Year Reviews.

After the remedy has been implemented, community involvement activities may include educating citizens about the state's role after completion of remedial action. Some of the following activities may be considered:

- Public ceremony and site tour to highlight accomplishments
- Fact sheet highlighting the completion of remedial action; upcoming LTM activities; who will be responsible for LTM; contacts for unexpected events or health emergencies
- Public information session to allow citizens to discuss concerns about the site and related issues and to describe what will happen next.

### 7.3.4 Response Complete (RC)

*After issuance of the letter accepting the RA Report, or preparation of a response to comments and issuance of a permit modification (under RCRA)*, convene a RAB/public meeting to discuss the Remedial Action Report, Long Term Monitoring Plan, and final Closeout Report or RCRA Corrective Action Complete report.

*During modification, optimization, and/or maintenance of institutional controls*, provide information and continued outreach to community members, schools, and local organizations on site/OU-related health and safety issues via fact sheets, signs posted at sites/OUs, notification to news media, etc. A strategy for ensuring public awareness of institutional controls through signage, etc. is also recommended.

*During preparation and approval of the Long-Term Monitoring Plan or preparation and submittal of the post-closure monitoring and maintenance plan (under RCRA)*, the following activities could be conducted. A RAB/public meeting could be convened to review the long-term monitoring and maintenance plan (for CERCLA closeouts), or to review the post-closure monitoring and maintenance plan (for RCRA closeouts). Maintenance schedules could be published annually. Also, a fact sheet could be prepared to explain monitoring procedures.

*During decommissioning of RA equipment and wells as appropriate, or demonstration of clean closure (for each regulated unit under RCRA)*, a public tour of clean closure and/or remedial action equipment decommissioning could be conducted *[for high public involvement].*

*After Final COR signature; and once the signed COR has been forwarded to EPA HQ (under CERCLA)*, the following activities could be conducted. Site personnel could gauge public concerns at each site/OU, including conduct of site/OU tours and availability sessions to let community members see/hear about response completion. A news release could be prepared and/or a press conference held to announce remedy completion, and preview long-term monitoring and site/OU closeout activities. Community questions/concerns about property values and future use could be addressed, including how they may have been affected by remedy implementation. Information could be provided to address questions about long term monitoring and associated costs.

Upon completion of reports, a RAB or public meeting would be appropriate to discuss the Remedial Action Report, Long Term Monitoring Plan and final Closeout Report or RCRA Corrective Action Complete. A press information update and fact sheet/newsletter summarizing those reports may also be appropriate. Finally, appropriate reports could be filed in the administrative record/information repository.

### 7.3.5 Long-Term Monitoring (LTM)

*Upon implementation of LTM or post-closure care in accordance with permit/plans,* the activities described below could be conducted. The administrative record/information repository could be updated quarterly. A press release could be issued to announce the availability and implementation of a Long-Term Monitoring Plan, including any associated institutional controls. Community involvement tools could be prepared and released at regular intervals as required, including fact sheets, public meetings, newsletters, etc.

*While monitoring to determine the continued effectiveness of the remedy,* long-term monitoring data and site status could be made available. Sites should also consider electronic vehicles, written materials (flyer to each house), and updates to local governments and organizations.

### 7.3.6 Site Closeout (SC)

Moving from Remedial Action to the Site Closeout phase is a major achievement in the Installation Restoration Program process. *As DoD personnel terminate active management of a site,* the community involvement activities described below should be considered.

The information repository could be updated to guarantee that the public has access to up-to-date information about activities; this could include a conversion to CD-ROM. A POC for ongoing maintenance could be established at this time. Public affairs/community relations support needs could also be determined. A toll-free telephone hot line could be established to ensure immediate public input on site activities and efficient response to questions and concerns.

*During initiation of a long-term site-management transition, as appropriate*, meetings with LRA, elected officials and key community groups could be conducted to inform them of the DoD Component's impending actions.

This is an ideal time to seek additional outreach opportunities to enhance DoD's image and promote positive interaction with the community and the media as we clean up areas of historical contamination. A passing grade from the regulators at this milestone is a success story waiting to be broadcast. Now is the time to write those stories. Highlight the accomplishments of your environmental program and the contributions made by regulatory agencies, RABs, LRAs and elected officials and community groups. Thank them for their efforts. This can also be done at a ceremony, appropriately planned for this occasion. These stories deserve to be told so that the media will also laud the DoD's environmental good news.

### 7.3.7 Installation Completion

The public could be notified that the requirements of the FFA have been met, including issuance of a press release. Letters to RAB members to disband could be prepared in accordance with any prescribed schedules. Certificates of appreciation could be issued, and the RAB may prepare a closeout report.

*While completing long-term site management strategies,* affected stakeholders (LRA, RAB, media, elected officials, police and emergency response units) could be notified of DoD Component points of contact for questions, concerns, or emergencies prior to public announcement and actual closure. Meetings with LRA, elected officials and key community groups could be conducted to inform them of the DoD Component's impending actions.

This is an ideal time to seek additional outreach opportunities to enhance the DoD's image and promote positive interaction with the community and the media as we clean up areas of historical contamination. A passing grade from the regulators at this milestone is a success story waiting to be broadcast. Now is the time to write those stories. Highlight the accomplishments of your environmental program and the contributions made by regulatory agencies, RABs, LRAs and elected officials and community groups. Thank them for their

efforts. This can also be done at a ceremony, appropriately planned for this occasion. These stories deserve to be told so that the media will also laud the DoD's environmental good news.

### 7.3.8 Five-Year Reviews

When waste is left in place at a site, a review of the remedial action under CERCLA must take place at least every five years.

*During conduct of site/OU visits, inspection(s), and interviews,* the RPM/BEC is encouraged to confirm the site/OU status with local officials and/or community members, contact appropriate official(s)/persons, and document the content of those discussions.

A RAB (if it exists) and/or public meeting could also be convened at this time. The Five-Year Review should be filed in the administrative record and information repository. The EPA fact sheet on Five-Year Reviews could be made available to RAB members and interested citizens.

### 7.3.9 Operating Properly and Successfully (OPS) Demonstrations

*Upon performance of an OPS demonstration,* the activities described below should be considered.

Update the Community Relations Plan to include activities that will increase the community's awareness of site/OU transition(s) to other uses and to other agency oversight, if appropriate. Affected parties could consider joint participation to raise visibility of new owners and regulators (new caretakers). The above activities could also be conducted *upon property transfer by deed.* Finally, any OPS determination could be filed in the administrative record/information repository.

This is an ideal time to let the local community know of our joint success and mark this milestone with appropriate recognition of its significance.

# 8.0 EVOLVING ISSUES

During development of this guide, several important issues were identified for which there is currently limited information. Strategies and guidance for addressing these issues will evolve as more installations encounter them and additional experience is accumulated in their management. Among these are:

- Institutional controls
- RA-O/LTM optimization (including remedy updates)
- Records management
- CERCLA natural resource injury and damage assessments

While these issues are not addressed in detail in this, important considerations associated with them that relate to the site closeout process are discussed in the following sections.

## 8.1 Institutional Controls

Institutional controls (ICs) as described in the NCP are non-engineering methods used to prevent human exposure to contaminants remaining at hazardous waste sites above health-based screening levels. ICs are generally used to supplement treatment or engineering remedies. IC is not a term used in real property law. The term was originally used in the context of environmental cleanup activities. Currently, the term IC is applied broadly to describe land use restrictions in many contexts. This broad usage is reflected in some state and Federal guidance. It is important to note that as used in this document the term IC is the same as described in the NCP.

The comparative analyses section of the FS should analyze the IC supporting or complimenting each alternative including, to the extent practicable, the relative cost of implementation and monitoring of the proposed IC. Once remedial alternatives, including ICs, have been identified, the remedy selection process is applied to evaluate the alternative as a whole, including any ICs involved. For example, using the remedy selection process under CERCLA, the restoration project team will develop a proposal on which the public and regulatory agencies will be invited to comment both in writing and at a public meeting. A response to those comments will be prepared, and a response action selected. Throughout the remedy selection process, the ICs will be evaluated in the same manner as all other components of a potential remedy, as required by statute and Executive Order 12580.

Two situations commonly occur in which ICs play an important role: (1) to protect the integrity of an engineering control intended to contain contamination, reduce its mobility, and minimize exposure, such as a landfill cap; and (2) to limit the exposure of individuals to residual contamination by limiting the reuse activities associated with that portion of the installation. For a remedy that leaves waste in place or does not allow for unrestricted use, five-year reviews are required to evaluate continued protectiveness, including the effectiveness of ICs.

Implementation of institutional controls can vary significantly depending on the type of property involved. At active installations, the ICs can be incorporated into installation master planning documentation by civil engineering or other installation management personnel where appropriate. For off-base property or BRAC installations (where property is transferred to a new user), other mechanisms are employed, such as deed restrictions. It is important to retain flexibility in implementing ICs. DoD has issued "A Guide to Establishing Institutional Controls at Closing Military Installations" (February 1998) that describes an approach in which various tools (such as permits and zoning) are used to implement and accomplish the goals and objectives of the ICs.

The USEPA and DoD have separately developed guidance for the use of ICs at active installations and BRAC installations. The DoD Components are developing management, implementation and documentation guidance for ICs. In addition, states are also addressing some aspects of ICs such as monitoring and enforcement through state laws and regulations. This is an evolving area. It will be critical for the environmental restoration team to integrate the applicable guidance into the ongoing response action process.

## 8.2 Remedy Performance and Optimization

The RA-O and LTM phases offer significant opportunity to optimize remedy performance through ongoing reviews of the two phases. For many sites, no LTM is expected to be necessary, whereas more complex sites may require both long-term RA-O and LTM. Since LTM may not always be required, emphasis should be placed on optimization of the RA-O remedy performance as early in the process as possible, and as cleanup progresses. Significant cost savings may be achievable through an aggressive RA-O optimization effort.

LTM programs are intended to track contamination in various media including surface water, ground water, soil, and sediment. They are an essential part of the environmental restoration process where waste remains in place. LTM programs are commonly designed to run for long periods of time, and in some cases may need to be undertaken indefinitely (e.g., at landfills or other sites with waste left in place). The effort and cost associated with this monitoring can, in the aggregate, represent a very substantial investment on the part of the DoD. For this reason, it is vital that RA-O and LTM programs be examined closely and be revisited periodically to identify opportunities for optimization through performance reviews.

Recent guidance (e.g., the Air Force Center for Environmental Excellence (AFCEE) *Long-Term Monitoring Optimization Guide*) advocates establishment of an ongoing LTM optimization program to maintain maximum monitoring effectiveness. This guidance is currently being broadened for applicability to an RA-O optimization program. In addition, EPA guidance on data quality objectives (DQOs) should be used in the development of the RA-O and LTM programs.

To ensure optimum efficiency of remedy performance, the RA-O and LTM programs should be reviewed and updated periodically using optimization guidance principles. Every program is unique and the optimization process must be tailored to the installation's specific conditions and needs. Five-Year Reviews offer a convenient vehicle for optimization; however, this process should be ongoing rather than just at five-year intervals. If the evaluation team discovers during the optimization process that the remedy performance program is inadequately designed and inefficient in meeting program objectives, modifications may be required. Such modifications may have immediate costs, but they may avoid the potentially greater costs of collecting and processing irrelevant data.

An EPA Superfund reform initiative **("Superfund Reforms: Updating Remedy Decisions," Directive # 9200.0-22)** encourages lead agencies to take a close look at, and modify as appropriate, past remedy decisions where those decisions are substantially out of date with the current state of knowledge in remediation science and technology, and thus are not as effective from a technical or cost perspective as they could be.

Modification of RODs generally is appropriate where significant new information has become available that substantially supports the need to alter the remedy. This approach is in keeping with the general expectation that updates will be based on program experience and new scientific information. Remedy updates will generally consist of three principal types, which are listed below.

- Changes in the remediation technology employed, where a different technology would result in a more effective or efficient cleanup;
- Modification of the remediation objectives due to physical limitations posed by site conditions or the nature of the contamination; and

- Modification of the monitoring program to reduce sampling, analysis, and reporting requirements, where appropriate.

Refer to EPA Directive #9200.0-22 for more information on remedy updates. It should be reiterated at this point that much of EPA's current guidance is phrased in terminology aimed at fund-lead or PRP sites, rather than Federal facilities. Therefore, it is important to exercise care in the application and usage of EPA's terminology in the context of a DoD facility's environmental restoration program.

The remedy update process may consist of three phases: 1) identification and prioritization of RODs for review (which may occur during the Five-Year Review process); 2) technical review (to determine whether changes to the remedy are warranted); and 3) implementation of the remedy update (changes documented in the post-ROD file, an Explanation of Significant Differences, or a ROD Amendment; or where the remedy selected in the ROD is not altered, by revision of a work plan or other relevant document). Community preferences are particularly important regarding any proposed changes to the remedy. Communities must be involved in the remedy update process and should be provided an opportunity for public comment whenever the change will result in a ROD amendment.

States also play a role in the modification of remedy decisions. CERCLA §§ 120 (f) and 121(f) and 10 USC § 2705(a) and (b) provide that the states be given the opportunity to review and comment on specified steps in remedy selection. A tribe that is Federally-recognized, has a governing body that is currently performing governmental functions regarding environmental protection, and has jurisdiction over a CERCLA site, can be treated substantially the same as states under CERCLA §104 (see NCP § 300.515).

## 8.3 Data and Records Management

CERCLA, the NCP, and Executive Order 12580 require the development and maintenance of an Administrative Record when conducting environmental restoration activities at DoD installations. The primary purpose of this record is to document the decision process used in selecting the remedy or remedies for a particular installation, and to provide a lasting record supporting the decisions made for the site.

Closeout of environmental restoration activities requires consideration of applicable data and records management requirements, including not just those under CERCLA and RCRA, but also the Federal records maintenance and disposition requirements under other Federal statutes. This is an area that needs further attention and consideration of how to most effectively maintain environmental restoration information, particularly over time.

Guidance is not only needed to address management of administrative records, but also general restoration information repositories. An integrated approach with common terminology is needed to address overall management of the information that supports the environmental restoration program. Such an approach would support informed decision-making during the post-RIP period, promote creation of systems for efficient and effective information handling, and minimize efforts required to progress through the site closeout process. Support information should include both data (e.g., chemical sampling to evaluate remedy effectiveness during RA-O and remedy protectiveness during LTM) and records (documentation that supports overall environmental restoration program management and decision-making).

## 8.4 CERCLA Natural Resource Injury and Damage Assessments

Under CERCLA, DoD is a "trustee" on behalf of the public for natural resources in connection with natural resources that it owns or controls. DoD may also be a potentially responsible party liable to address and/or compensate for natural resource injury at its own and third-party sites. Lead agencies are required under CERCLA § 104(b)(2) and implementing provisions of the NCP "to promptly notify appropriate federal and

state natural resource trustees of potential damages to natural resources resulting from releases under investigation pursuant to this section and shall seek to coordinate the assessments, investigations, and planning under this section with such federal and state trustees." (See also 40 CFR § 300.430(b)(7) and Subpart G.) At some installations, environmental contamination and/or the associated remedy may injure natural resources. Natural resource injury refers to harm, and more specifically a measurable adverse change in a natural resource caused by the release or threatened release of a hazardous substance. Natural resource damages, on the other hand, refer to (among other things) the compensation that may be sought by a natural resource trustee for injury to natural resources.

In accordance with the *DERP Management Guidance*, DoD Components should evaluate risk to ecosystems presented by contamination at component installations. In selecting a remedy at component installations, the impact on ecological receptors of the contamination and of restoration activities should be considered and, where appropriate, a plan for restoration or rehabilitation of injured natural resources should be carried out (40 CFR 300.615). The restoration project team at component installations should coordinate with appropriate other Federal and State natural resource trustees and, where appropriate, Indian tribes, to perform natural resource injury assessments.

At NPL or federal facilities, natural resource damage claims must be filed within three years after completion of the remedial action. With many remedies expected to last for 20–30 years or more, there remains a significant period of exposure to such damage claims.

DoD anticipates developing policy and guidance on natural resource injury and damage assessments.

# 9.0 REFERENCES

The guidance in this document has been based on existing sources of site closeout guidance from DoD and EPA. The major sources used are listed in Table 9.1. The Environmental Site Closeout Web site (*http://www.afbca.hq.af.mil/closeout*) contains a full document library of all environmental site closeout guidance and related documents that were used in the development of this guide.

Despite the fact that many of the EPA guidance documents listed in Table 9.1 were developed specifically for the Superfund program and contain terminology unique to that program, they should also be utilized in determining, in collaboration with the entire restoration project team, the requirements applicable to DoD sites and installations undergoing other closeout. However, users of this guide should recognize that EPA is expected to release revised guidance documents in the very near future, with potential impacts to the requirements applicable to an installation's restoration program. In accordance with CERCLA, each installation's program will need to be examined and, if necessary, updated for consistency with these revised EPA guidelines. To that end, this guide will be updated periodically to reflect changes in future site closeout guidance and to provide lessons learned from applicable experiences.

**Table 9.1 Major Sources of Site Closeout Guidance**

| DEPARTMENT OF DEFENSE | ENVIRONMENTAL PROTECTION AGENCY* |
|---|---|
| *Guidance on Finding of Suitability to Transfer for BRAC Property,* DoD Memorandum, June, 1994 | *Structure and Components of Five-Year Reviews,* OSWER Directive 9355.7-02, May 1991 |
| *Practical Guide to NPL Completion and Deletion Procedures*, Army Environmental Center, December 1994 | *Guidance for Evaluating the Technical Impracticability of Ground Water Restoration*, OSWER Directive 9234.2-25, September 1993 |
| *Air Force No Further Response Action Planned (NFRAP) Guide*, June 1995 | *Supplemental Five-Year Review Guidance,* OSWER Directive 9355.7-02A, July 1994 |
| *DoD Institutional Controls Fact Sheet*, Spring 1997 | *Closeout Procedures for National Priorities List Sites,* OSWER Directive 9320.2-09, August 1995 |
| AFBCA/AFCEE *Long-Term Monitoring Optimization Guide*, October 1997 | *Second Supplemental Five-Year Review Guidance*, OSWER Directive 9355.7-03A, December 1995 |
| *Air Combat Command Installation Restoration Program Site Closure Guidance Manual*, December 1997 | *Procedures for Partial Deletions at NPL Sites,* OERR Directive 9320.2-11, April 1996 |
| *Air Force Operating Properly and Successfully Guidance*, December 1997 | *Guidance for Evaluation of Federal Agency Demonstrations that Remedial Actions are Operating Properly and Successfully under CERCLA Section 120(h)(3),* Federal Facilities Restoration and Reuse Office, August 1996 |
| *A Guide to Establishing Institutional Controls at Closing Military Installations*, March 1998 | *Lead Regulator Policy for Cleanup Activities at Federal Facilities on the National Priorities List*, EPA Memorandum, November 1997 |
| *Management Guidance for the Defense Environmental Restoration Program*, DoD, March 1998 | *Risk-Based Clean Closure,* EPA Memorandum, March 1998 |
| | *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, OSWER Directive 9200.1-23P, July 1999 |
| | *Superfund Reforms: Updating Remedy Decisions*, EPA Directive 9200.0-22 |

***Note:** Much of this guidance contains Superfund-oriented terminology that does not translate straightforwardly to a Federal facility's program.*

Sections 3 and 4 discuss in detail the documentation requirements for the CERCLA and RCRA site closeout processes. Listed in Table 9.2 are some examples of where documents have been prepared during the site closeout process at selected DoD installations. Many of these example documents can be found on the Environmental Site Closeout Web site.

**Table 9.2 Example Documentation for Site Closeout Process**

| Document Type | Example Documents/Installations |
|---|---|
| Remedial Action Operation Plan | *Holloman AFB* Implementation Plan for Optimization of LTM and Long-Term Operations |
| OPS Demonstration and Approval Letter | Approval Letter for *Cameron Station, VA* |
| | *Pease AFB* Landfill 5 |
| Remedial Action (RA) Report | *Schofield Army Barracks* |
| Long-Term Monitoring Plan | *Holloman AFB* Implementation Plan for Optimization of LTM and Long-Term Operations |
| Final Close Out Report (FCOR) | *Schofield Army Barracks* |
| | *Riverbank Army Ammunition Plant* |
| Five-Year Review Report | *McClellan Air Force Base* |
| | *Wildcat Landfill* |
| [Partial or Full] Notice of Intent to Delete (NOID) | *US Army Fort Lewis* Landfill No. 5 |
| | *Whidbey Island Seaplane Base* |
| | *Naval Security Group Activity at Sabana Seca, Puerto Rico* |
| Notice of Partial or Full Deletion | *US Army Fort Lewis* Landfill No. 5 |

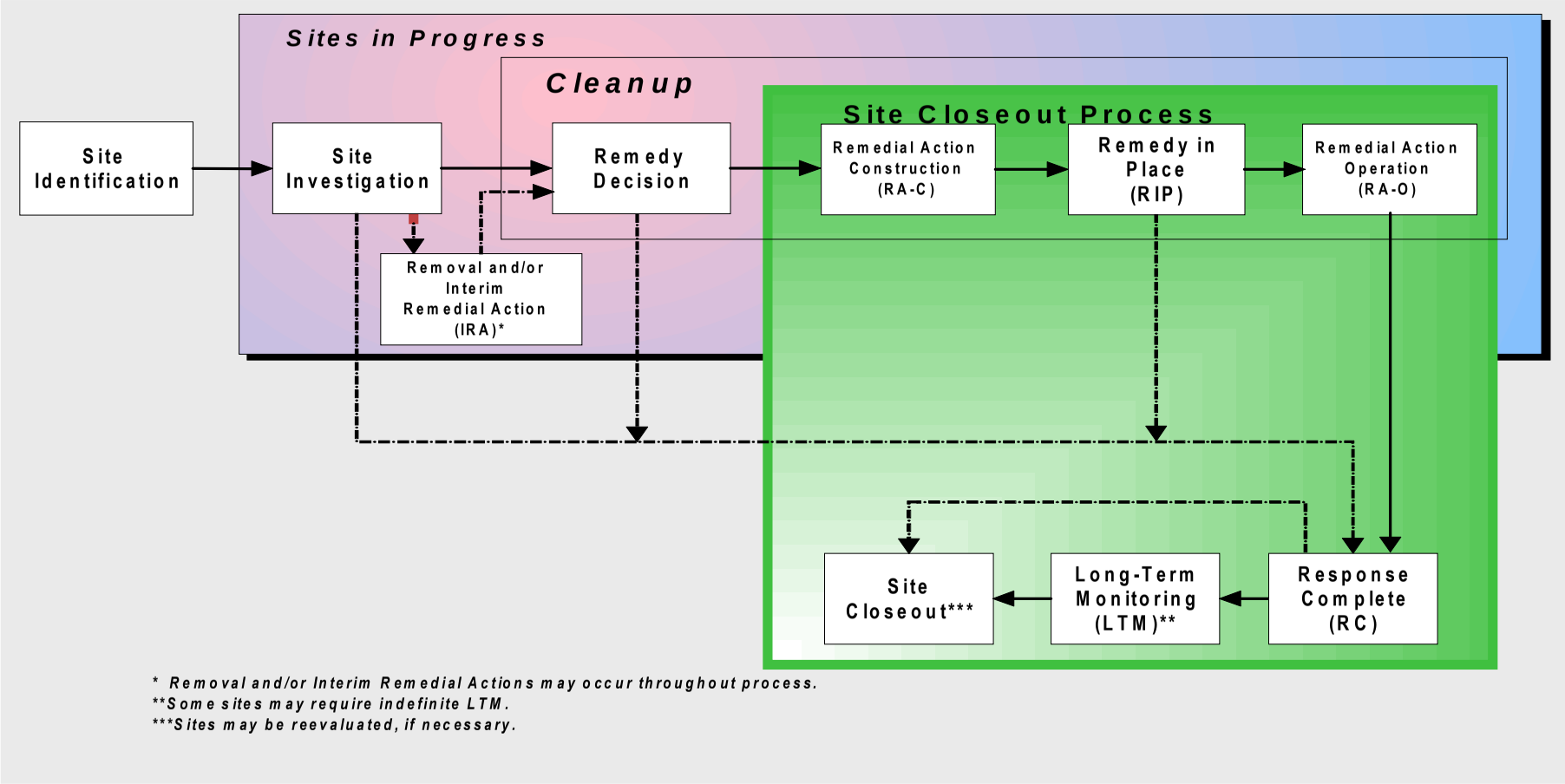



Figure 1. Defense Environmental Restoration Process. (Figure adapted from FY 1997 Restoration Program Annual Report to Congress, as presented in the 1999 DOD Environmental Site Closeout Process Guide.)

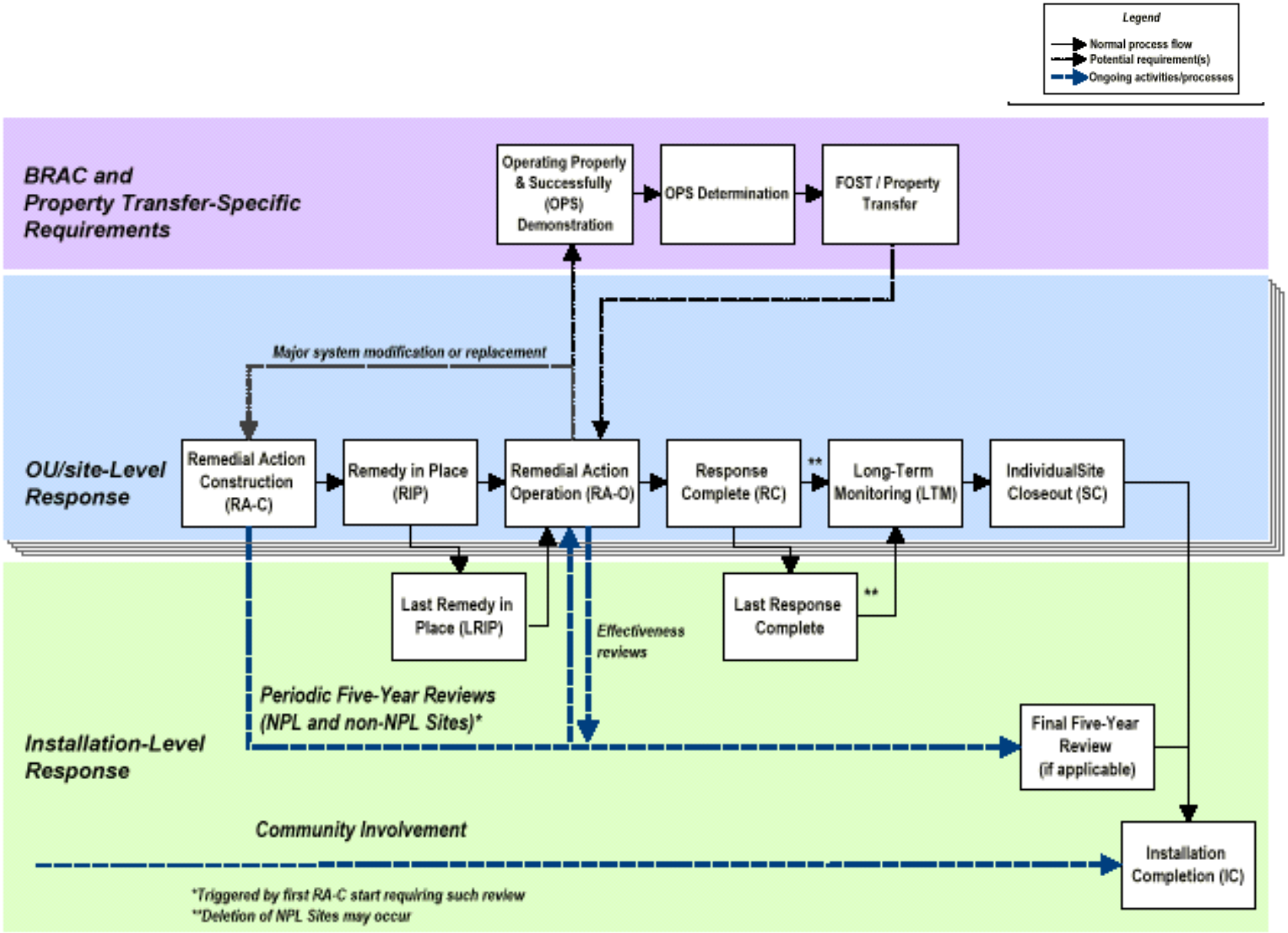



Figure 2. General Environmental Site Closeout Process. (Modified from 1999 DOD Environmental Site Closeout Process Guide.)