

NOTICE

All drawings located at the end of the document.

U. S. Department of Energy
Office of Environmental Management
Decommissioning Resource Manual

August, 1995



Note to recipients:

This initial version of the document is in three parts:

- This package of text material.
- A package containing the cover, a spine, and tabs (you won't need all of them provided for the appendices).
- A package containing the color fold-out sheets of Appendix C.

It is intended that you provide your own three-ring binder.

We hope the document is useful. Comments are welcome.

This Resource Manual is the successor document to the *Decontamination and Decommissioning Guidance Document, Draft 3, January 14, 1994*, which was widely distributed for comments. The comments received were incorporated and the document was revised to conform to the new Department of Energy (DOE) policy to perform decommissioning under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), where appropriate. This Resource Manual is released for general use throughout the DOE complex. Comments are welcome and should be addressed to Stephen Warren, EM-431, Office of Environmental Restoration, U.S. Department of Energy, Cloverleaf Building, 20400 Century Blvd, Germantown, MD 20874. Fax is 301-903-3479. E-Mail is stephen.warren@em.doe.gov. A revision to this Manual is planned in about six months.

**POLICY ON DECOMMISSIONING OF DEPARTMENT OF ENERGY FACILITIES
UNDER THE COMPREHENSIVE ENVIRONMENTAL RESPONSE,
COMPENSATION, AND LIABILITY ACT (CERCLA)**

PURPOSE

This Policy establishes the approach agreed upon by the Department of Energy (DOE) and Environmental Protection Agency (EPA) for the conduct of decommissioning projects¹ consistent with CERCLA requirements. This Policy creates a framework for the conduct of decommissioning of DOE facilities and provides guidance to EPA Regions and DOE Operations Offices on the use of CERCLA response authority to decommission such facilities. The principal objectives of this Policy are to ensure that decommissioning activities are protective of worker and public health and the environment, consistent with CERCLA and, where applicable, the Resource Conservation and Recovery Act (RCRA), ensure stakeholder involvement, and achieve risk reduction without unnecessary delay.

This Policy builds on the foundation established in the recent EPA/DOE/DOD "Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities" (August 22, 1994). Specifically, this Policy represents the next step in realizing the goal of that guidance to "develop decisions that appropriately address the reduction of risk to human health and the environment as expeditiously as the law allows." To achieve that end, this Policy endorses the use of removal action authority to conduct decommissioning, although DOE and EPA recognize that removal action will not necessarily be the final response action needed at a facility subject to decommissioning.

The DOE Office of Environmental Management (EM), and EPA Federal Facilities Restoration and Reuse Office (FFRRO) and Federal Facilities Enforcement Office (FFEO) have developed this approach for applying CERCLA authority to decommissioning activities to encourage streamlined decisionmaking in decommissioning activities.

¹ For purposes of this Policy, decommissioning includes those activities that take place after a facility has been deactivated and placed in an ongoing surveillance and maintenance program. Decommissioning can include decontamination and dismantlement. Decontamination encompasses the removal or reduction of radioactive or hazardous contamination from facilities. Dismantlement involves the disassembly or demolition, and removal, of any structure, system, or component and the interim or long-term disposal of waste materials in compliance with applicable requirements.

Deactivation is the process of placing a facility in a safe and stable condition that is protective of workers, the public, and the environment until decommissioning is completed. As the bridge between operations and decommissioning, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition.

BACKGROUND

Executive Order 12580 "Superfund Implementation" delegates from the President to the Secretary of Energy certain CERCLA response authorities for facilities under DOE jurisdiction, custody, or control. The EPA/DOE/DOD "Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities" (August 22, 1994) reaffirms this point, stating that "federal agencies, other than EPA, have jurisdiction for carrying out most response actions at federal facility sites. As EPA is not the lead agency at such sites, its role is different from that at other Superfund sites." Consistent with Executive Order 12580, the National Contingency Plan (NCP) designates DOE as the lead agency for responding to releases on, or where the sole source of the release is from, a facility under DOE's jurisdiction, custody, or control. As lead agency, DOE is authorized to conduct removal action, remedial action, and any other response measures consistent with the NCP. The exercise of such response authority must be in accordance with the requirements of section 120 of CERCLA. For facilities that are listed on the National Priorities List (NPL), section 120 of CERCLA requires DOE and EPA to enter into an Interagency Agreement (IAG), which establishes requirements for remedial action at the facility. Therefore, the roles and authority of DOE and EPA will be defined, in part, by the terms of such agreement. For non-NPL facilities, DOE may take response action subject to CERCLA, the NCP, and other applicable requirements.

DOE will utilize CERCLA response authority whenever a hazardous substance is released, or there is a substantial threat of release, into the environment, and response is necessary to protect public health, welfare, or the environment. DOE Order 5400.4 requires DOE to respond to any release or substantial threat of a release of a hazardous substance into the environment in a manner consistent with CERCLA and the NCP, regardless of whether or not the release or threatened release is from a site listed on the NPL.

The definition of "environment" includes all natural media under U.S. jurisdiction. CERCLA does not generally address releases which are entirely within buildings because the presence of hazardous substances within a building does not constitute a release of such substances into the environment. Hazardous substances within a building, however, may pose a substantial threat of a release that may require a CERCLA response. Determining whether a threat of a release is substantial will depend on the specific circumstances present at a facility.

Under the authority delegated by Executive Order 12580, DOE is responsible for evaluating site conditions to determine if conditions or anticipated activities at facilities subject to decommissioning pose a substantial threat of release. So that EPA can fulfill its

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF THIS RESOURCE MANUAL

1.1.1 Purpose

The purpose of this Resource Manual is to provide a reference resource for the Department of Energy (DOE) decommissioning program conducted by the Office of Environmental Restoration (EM-40). The manual provides information to assist in the effective implementation of the Decommissioning Framework specified in the *Environmental Restoration Program Decommissioning Implementation Guide*, May 22, 1995 (included as Appendix A of this manual). The *Implementation Guide* and the Framework it describes are consistent with the *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, May 22, 1995 (included as Appendix B of this manual). This manual provides background on the development of decommissioning policy and the framework, identifies decommissioning steps, suggests contents of documents, provides suggested decommissioning practices, describes the respective roles of DOE Headquarters and field organizations, and provides additional information on a variety of decommissioning functional topics.

The DOE decommissioning framework is modeled after the process for conducting CERCLA non-time-critical removal actions, as specified in the National Oil and Hazardous Substances Pollution Contingency Plan (40 *CFR* 300), commonly referred to as the National Contingency Plan (NCP). However, the basic framework is flexible enough to accommodate all DOE decommissioning projects, regardless of the statute, authority, or management decision which initiates the project. As discussed in various sections of this manual, a decommissioning project may be initiated by a variety of circumstances, including:

- Determination that a release or substantial threat of release to the environment is present, and a removal action under CERCLA is appropriate;
- Implementation of an NRC-approved decommissioning plan, with the objective of termination of an NRC license;
- Decommissioning in accordance with a RCRA permit or order; and
- DOE programmatic management decision to proceed with the disposition of a contaminated surplus facility (having determined that no release or threat of release warrants a response under CERCLA).

The flow charts contained in Appendix C of this manual illustrate that the basic decommissioning framework satisfies the requirements of these potential drivers. However, each

driver may raise specific environmental compliance issues which must be addressed within this uniform framework.

The reader of this initial release of the Decommissioning Resource Manual should be aware of a number of factors which may affect some features of the document. Principal among these factors are the potential reorganization or realignment of the Office of Environmental Management (EM); and the work in progress to consolidate a number of safety-related DOE orders (led by the Office of Environment, Safety and Health - EH) and orders related to the management of physical facilities (led by the Office of Field Management - FM).

The provisions of this manual are intended to replace the programmatic (non-technical) suggestions found in Chapters 2 through 5 of the *Decommissioning Handbook* (document number DOE/EM-0142; March, 1994).

A revision of the Resource Manual is planned for the near future after field decommissioning planners and managers have had an opportunity to work with the document and to provide comments.

1.1.2 Scope of the Resource Manual

This manual focuses on management and programmatic issues rather than technical decommissioning issues, which are treated in the *Decommissioning Handbook*. The scope of this manual is as follows:

Chapter 1 - Introduction, gives a history of the DOE decommissioning program, describes the current decommissioning policy and the conduct of decommissioning as a removal action when CERCLA applies, and describes the roles of Headquarters and the field organization.

Chapter 2 - The Decommissioning Framework, describes the actions taken in the various steps in the decommissioning framework, suggests certain practices to be employed, and gives suggestions on the contents of documents.

Chapter 3 - Facility Transition, describes the facility transition, deactivation, and acceptance processes and identifies other relevant sources of information, from the EM-40 point of view.

Chapter 4 - Surveillance and Maintenance (S&M), describes S&M program objectives and identifies roles of organizations, documentation, and other sources of information.

Chapter 5 - Closeout, Verification, and Release Process, describes the process for closeout, verification, and release of decommissioning removal action sites and identifies the documentation.

Chapter 6 - Environmental Compliance, describes the major statutes and regulations applicable to the decommissioning process and assesses the impact of these requirements on decommissioning removal action projects.

Chapter 7 - Health and Safety, describes health and safety priorities, responsibilities, and occupational safety and health (OSH) requirements.

Chapter 8 - Project Management, summarizes and outlines the basic project management approach and identifies other sources of information.

Chapter 9 - Waste Management, describes how decommissioning residue material is to be planned for, minimized, and disposed in compliance with DOE regulations.

The Appendices contain useful reference material pertaining to the decommissioning process.

1.2 DECOMMISSIONING PROGRAM BACKGROUND

1.2.1 Central Program - Surplus Facilities Management Program (SFMP)

Prior to 1979, DOE had no central decommissioning program. Focused programs had been established at Grand Junction, Colorado, at Uranium Mill Tailings Sites (UMTRA Program), and at Former Manhattan Project Sites (FUSRAP). In 1979, the Surplus Facilities Management Program (SFMP) was established in Richland, WA for the coordinated management of the decommissioning of surplus contaminated DOE facilities. The Richland Program Office issued the *SFMP Resource Manual* to serve as the management guide. The principal directive for the program was DOE Order 5820.2 *Radioactive Wastes Management*. Release criteria were established on a case-by-case basis in conformance with DOE Order 5400.5 *Radiation Protection of the Public and the Environment*. The legal precedent was the authority granted to the Atomic Energy Commission and successor organizations (i.e., DOE) under the Atomic Energy Act (AEA) of 1954 to protect the health and safety of the public against radiation while conducting the Department's programs.

1.2.2 Civilian and Defense Programs

In 1982 the single program was divided. The civilian (or nuclear energy) program continued to be managed by the SFMP, relocated to DOE Headquarters in Washington, D.C. For surplus facilities from the national defense programs, decommissioning was directed through the Defense Facilities Decommissioning Program Office located in Richland.

The *SFMP Resource Manual* continued to be the principal management guidance for the civilian program. The defense program issued the *Defense Decontamination and Decommissioning Program: Program Management Plan* (DOE/RL-89-23).

1.2.3 Office of Environmental Restoration and Waste Management

In 1989, the Office of Environmental Restoration and Waste Management was established and the two programs were again combined - now under Headquarters geographical area offices, which were responsible for both soil/water body environmental restoration (remedial action) and decommissioning. The two management documents remained in effect, with some updating by area offices. The current EM title is the Office of Environmental Management.

1.3 ENVIRONMENTAL MANAGEMENT DECOMMISSIONING POLICY

1.3.1 The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

CERCLA provides expansive authority to the federal government to protect human health and the environment from the risks posed by hazardous substances (including most radionuclides). Response actions are guided by the NCP, codified in the Code of Federal Regulations (*CFR*) at Title 40, Part 300 (or simply 40 *CFR* 300). The NCP outlines the steps federal agencies follow in responding to situations in which oil is discharged or there is a threat of discharge into the environment; or hazardous substances, pollutants, or contaminants, are released, or threatened to be released, into the environment. Under authority of CERCLA and the NCP, many DOE sites are on the National Priorities List (NPL) for long-term clean up programs.

1.3.2 Development of Policy

In 1994, the Secretary of Energy determined it was inappropriate for the Department to be self-regulating in the performance of decommissioning and that provisions of CERCLA should apply when appropriate.

A working group between DOE and the U.S. Environmental Protection Agency (EPA) was formed to establish the manner of applying CERCLA to decommissioning. Personnel from both Headquarters and the field in the two agencies participated. The result of this effort was the *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, signed on May 22, 1995, by the assistant administrators at EPA's Office of Enforcement and Compliance Assurance and Office of Solid Waste and Emergency Response, and by DOE's Assistant Secretary for Environmental Management. The policy is consistent with, and builds upon the EPA/DOE/DOD *Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities*, August 22, 1994, provided as Appendix D of this manual.

The policy establishes that decommissioning activities will be conducted as non-time-critical removal actions under CERCLA, unless the circumstances at the facility make it inappropriate (see the discussion of other drivers in Section 1.1.1 above). Use of non-time-critical removal actions for conducting decommissioning activities effectively integrates EPA oversight

responsibility, DOE lead agency responsibility, and state and stakeholder participation. The policy document is contained in Appendix B.

1.3.3 Application of CERCLA to Decommissioning

Facilities in the DOE decommissioning program contain nuclear material which is included in the CERCLA definition of "hazardous substances." While containment within the current structure is the most prevalent situation (and thus does not constitute a "release" to the "environment" as these terms are defined in CERCLA), some releases to the environment have occurred in the past and the "threat" of release is finite and subject to review and interpretation. Accordingly, it is appropriate that facilities in the decommissioning program be evaluated as a release or threatened release of hazardous substances into the environment and that appropriate response action be taken under CERCLA, if necessary.

1.3.4 Roles of Organizations

1.3.4.1 CERCLA Removal Actions

Subject to modifications and clarifications in local agreements, when decommissioning is conducted as a CERCLA removal action, the respective roles of DOE and EPA are generally as provided below:

DOE

- To exercise lead agency authority for responding to releases (or a substantial threat of a release) on, or where the sole source of the release or threat is from, a facility under DOE's jurisdiction, custody or control, in accordance with the NCP and Executive Order 12580 *Superfund Implementation*;
- To conduct removal action, remedial action, and other response measures consistent with the NCP;
- To evaluate, select, and implement the removal action that it determines is most appropriate to address potential risks posed by the release or threat of release, utilizing DOE expertise in devising and implementing appropriate solutions to decommissioning projects;
- To consult with EPA and share information as determined locally by the DOE Operations Office and the affected EPA Region. Specifically, DOE will consult with EPA when DOE conducts a removal site evaluation, will share information, and will consult again if it determines that a release or threat of release has not occurred;

- At NPL sites, to coordinate with EPA so that EPA can properly carry out its oversight and remedy selection (for remedial actions) responsibility;
- To make a good faith effort to resolve any disagreements between DOE and EPA; and
- To submit sampling and analysis plans for EPA approval, if environmental samples are to be taken and analyzed for a CERCLA removal action.

EPA

- To consult with DOE on various steps in the removal action process as determined locally by the DOE Operations Office and the affected EPA Region;
- To coordinate its oversight and remedy selection authority for remedial actions at NPL sites with DOE removal actions;
- To make a good faith effort to resolve disagreements between EPA and DOE
- To review and approve sampling and analysis plans, if environmental samples are to be taken and analyzed for a CERCLA removal action;
- To issue, with the concurrence of the Attorney General, an order to DOE under authority of CERCLA Section 106 to take appropriate action, if it deems such action is necessary; and
- To issue a "stop work" instruction under an applicable interagency agreement (IAG), if necessary and appropriate until EPA concerns are satisfactorily addressed.

1.3.4.2 Resource Conservation and Recovery Act - State Actions

Section 3006 of the Resource Conservation and Recovery Act (RCRA) creates a statutory mechanism whereby states can apply for, and the EPA can grant, authorization to carry out a state hazardous waste program in lieu of the federal program. If a state has been authorized a hazardous waste program, the state carries out all elements of the program. However, EPA exercises oversight of the State program. In addition to its oversight responsibilities, EPA implements federal hazardous waste program requirements promulgated pursuant to the Hazardous and Solid Waste Amendments of 1984 (HSWA) in all states, including authorized states, from the time they are effective until the time States have been authorized to implement them. Therefore, until authorized state program elements are in place to implement HSWA requirements, EPA will set standards, issue permits, monitor compliance, and pursue enforcement actions.

Based on the above, if a DOE facility is being decommissioned in a state that has an authorized hazardous waste program, the state will be the responsible regulatory agency with respect to all elements of the authorized program. Hence, for all hazardous waste generation, transportation, treatment, storage or disposal activities covered by the authorized state program, the state will set standards, issue permits, conduct compliance inspections and pursue enforcement actions while ensuring appropriate levels of public participation. Such regulatory activities conducted by the state will not be duplicated by EPA.

1.3.4.3 Nuclear Regulatory Commission Decommissioning - Federal Regulations

The Nuclear Regulatory Commission (NRC) has statutory authority under the AEA to regulate the processing and utilization of source, byproduct and special nuclear material in order to protect public health and safety. The NRC has interpreted this responsibility to include ensuring the safe and timely decommissioning of those nuclear facilities which it licenses. The Commission achieves such assurance through regulations requiring that a licensee who ceases licensed activities at a facility must decommission the facility before the license may be terminated. Any DOE facility licensed by the NRC or other NRC-licensed facilities for which DOE has decommissioning responsibility must abide by these regulations.

To confirm that a licensee has met the requirements of the approved decommissioning plan, prior to terminating the license, the NRC determines that a survey has been conducted which demonstrates that all land, including on-site burial grounds, buildings, and equipment involved in licensed activities has been decontaminated in accordance with established criteria. If low-level radioactive waste is transferred to an authorized recipient from an NRC-licensed facility during decommissioning, each shipment must meet the requirements of the NRC as set forth in 10 *CFR* Part 20, including requirements for manifesting, packaging, labeling, quality control and recordkeeping.

1.3.4.4 NRC Decommissioning - Agreement State Regulation

Section 274 of the AEA establishes a statutory framework under which the NRC and states can agree to cooperate in the administration of regulatory programs for the protection of public health and safety in the industrial, medical, and research uses of source, byproduct and special nuclear material in quantities not exceeding a critical mass. To implement the framework, the NRC establishes and maintains an agreement with a state which provides for discontinuance by the NRC, and assumption by the state, of responsibility for specified regulatory programs. States with which the NRC has such agreements are known as "Agreement States." In all cases, the NRC retains regulatory authority over the licensing of certain facilities and activities such as nuclear reactors, larger quantities of special nuclear material, and the export and import of nuclear materials.

If a DOE facility or a facility for which DOE has decommissioning responsibility is licensed by an Agreement State (in lieu of licensing by the NRC), then the Agreement State plays the same

role in decommissioning of the facility that the NRC would play in a non-Agreement State. Hence, a DOE facility planning decommissioning must submit a decommissioning plan to the Agreement State for approval. Generally, the decommissioning plan must provide for decontamination to levels that would allow release for unrestricted use of land, ground water, buildings and equipment, and the transfer to authorized recipients of all radioactive material. Prior to terminating the license, the Agreement State must confirm that the approved decommissioning plan has been properly implemented.

If low-level radioactive waste is transferred during decommissioning to an authorized recipient from a DOE facility or a facility for which DOE has decommissioning responsibility that is licensed by an Agreement State, each shipment must meet the shipping requirements of the NRC as set forth in 10 *CFR* Part 20, including requirements for manifesting, packaging, labeling, quality control and recordkeeping. Additionally, the particular Agreement State where the facility is located may require information on manifests that goes beyond that required by the NRC.

1.3.4.5 The Public and Other Stakeholders

The NCP requires specific steps in planning a removal action to inform the public, through the use of an administrative record and public notices, and to involve citizens and interest groups in the decision-making process. These steps are described in Chapter 2.

The Environmental Management program is committed to increasing meaningful involvement and input of stakeholders. In addition to the CERCLA process, and for decommissioning that is proceeding outside of the CERCLA process, the Operations Offices are encouraged to continue to employ ongoing local initiatives to inform and involve their stakeholders in decommissioning initiatives and priorities. These initiatives include workshops, public meetings, and Site Specific Advisory Boards. Information should be made available through fact sheets and information resource centers.

While a state role may be required for many RCRA actions, states are also often signatories to local tri-party agreements with DOE and EPA for environmental restoration programs. Effective and meaningful state involvement is vital to the effective implementation of the Department's Environmental Management program.

1.4 DECOMMISSIONING AS NON-TIME-CRITICAL REMOVAL ACTION

Removal actions are different from remedial actions in both goal and scope. Removal actions, authorized by CERCLA Section 104(d)(2), are designed to address immediate threats to human health and the environment. A removal action may be conducted during any point in the CERCLA response process at both NPL and non-NPL sites. Typical removal actions include dismantling and decontaminating of a building, stabilizing of structures, preventing migration of hazardous substances, or removing of barrels, drums, tanks, or other contaminated materials.

Remedial actions, by contrast, are long-term cleanup actions intended to permanently remedy the problems (including subsurface contamination) at sites (most of which are on the NPL). Generally, the remedial process requires significantly more characterization, evaluation, planning and public involvement. At an NPL site, a comprehensive characterization process takes place, and the most appropriate remedy is selected. These remedies, which are documented in a Record of Decision (ROD), typically encompass activities such as soil and groundwater restoration.

Unless facility circumstances require otherwise, the DOE policy provides that when CERCLA applies, decommissioning will be conducted as a non-time-critical removal action - actions with a planning horizon of six months or more. Non-time-critical removal actions are the appropriate CERCLA response actions for decommissioning projects for the following reasons:

- With very few exceptions, the contamination in DOE facilities being decommissioned is well stabilized and contained. Planning and execution may go forward in an organized, deliberate fashion with timing established by reasonable budget profiles and with a safe and satisfactory time table of six months or more.
- The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This usually will eliminate the need for the more detailed analysis of alternatives required for remedial action.
- Non-time-critical removal action requirements provide flexibility to develop decommissioning plans that are appropriate for the circumstances presented.
- Most importantly, non-time-critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions.

1.4.1 Jurisdictional Thresholds

CERCLA response authority is appropriate for decommissioning if four threshold criteria are met. These are:

- "Hazardous substances" are involved. CERCLA definitions include those from other environmental statutes and encompass most radionuclides as well as chemical hazards.
- There has been a "release" or there is a "substantial threat" of a release.
- The release or threat is into the "environment" (the term does not include the space within a building or other structure).
- Response is necessary to protect public health, welfare, or the environment.

1.4.2 Factors to be Considered

When considering the need for removal action, section 300.410(f) of the NCP provides for consideration of the following factors:

- Impact on nearby humans, animals, or the food chain;
- Contamination of drinking water supplies or sensitive ecosystems;
- Materials in drums, barrels, tanks, or other bulk container that pose a threat of release;
- Materials in soils at or near the surface that may migrate;
- Weather that may cause materials to migrate or be released;
- Threat of fire or explosion;
- The availability of other appropriate federal or state response mechanisms to respond to the release; and
- Other situations or factors that may pose threats to public health or welfare or the environment.

Note: NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording.

1.4.3 Nature of Removal Actions

When devising the type of removal action which is best for a decommissioning project, section 300.415(d) of the NCP lists the following, among others, that may be appropriate:

- Fences, warning signs, or other security or site control precautions;
- Drainage controls;
- Stabilization of impoundments or drainage of lagoons to maintain integrity;
- Capping of soils or sludges to reduce migration;
- Using chemicals and other materials to retard the spread of the release or to mitigate its effects;

- Excavation, consolidation, or removal of highly contaminated soils;
- Removal of drums, barrels, tanks, or other bulk containers;
- Containment, treatment, disposal, or incineration of materials; or
- Provision of alternative water supply until local authorities can satisfy the need for a permanent remedy.

Note: NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording.

The above listing is directed principally toward soil/water cleanup, but parallel actions related to decommissioning are evident.

1.4.4 Statutory Limits Do Not Apply

The statutory time and dollar limitations (12 months and \$2 million) on removal actions stated in Section 104(c) of CERCLA do not apply to decommissioning activities performed by DOE because the cost is not paid out of the Superfund.

1.4.5 Decommissioning Framework

The framework described in the Implementation Guide (included as Appendix A of this manual), is the basic process to be followed for all DOE decommissioning actions. While the steps originate from the requirements of the NCP for CERCLA responses, the framework applies across the DOE complex, regardless of the initiating driver for decommissioning. The framework is described in detail in Chapter 2. This section gives an outline of the provisions of the DOE decommissioning framework.

1.4.5.1 Stages of a Decommissioning Project

The various steps in the framework can be grouped into a series of stages that complete key elements of the process.

- *Pre-decision.*

Before the formal decommissioning process begins, the facility will have gone through certain defined activities that set the stage for decommissioning. Such activities center around the transition process as management of a facility transfers from the program office to the Office of Environmental Management. Work will include deactivating the facility and establishing an S&M program to care for the facility until decommissioning can be accomplished. In order to determine the

appropriate features of the S&M program, information must be available or obtained about the general nature and extent of contamination (termed preliminary characterization); and information must be available about the specific hazards present in the facility to ensure that they are properly addressed in the S&M program (termed preliminary hazards analysis).

- *Determination of action.*

When the decision is made to proceed with decommissioning, or if conditions should change at the facility (for example, a leak occurs or a structural weakness is discovered that could affect the containment of contamination), the decommissioning framework treats this as a "discovery" of a release or threatened release (300.405). Departmental action proceeds with the conduct of a removal site evaluation (and a formal site inspection, if needed). Whether CERCLA response is appropriate, the basic DOE framework applies. At this point, the scope of the project is defined and initial cost, schedule, and technical baselines are established by the preparation of a project plan. This stage of the process encompasses Steps 1 through 14 of the decommissioning framework. (See additional details in Chapter 2.)

- *Choosing the decommissioning alternative.*

This stage of the process involves collecting additional information, performing additional analyses, identifying the decommissioning alternatives, and then choosing the most appropriate alternative with meaningful input from the public. Steps 15 through 31 describe in more detail the actions to be taken to arrive at a formal decision.

If action is being taken as a CERCLA response, the NCP mandates action in two areas, subject to local agreements: the approval of the sampling and analysis plan by EPA, if environmental samples are to be taken and analyzed; and the conduct of a formal community information and input process. For non-CERCLA actions the alternative will be chosen in the National Environmental Policy Act (NEPA) process, with appropriate community input.

- *Engineering and planning.*

Steps 32 and 33 contain only a few words to describe what could be a major engineering effort, that must be performed in a tailored manner to address the specific risks present during decommissioning and to provide measures to mitigate the risks and protect workers, the public and the environment. Appendix G.5 describes the suggested contents of the decommissioning plan. In addition to describing the removal action, the decommissioning plan will specify the end-

condition (release) criteria which are to be achieved. An additional document that will be prepared is the project-specific health and safety plan (HASp). If an outside work force is to be used, appropriate contract documents will need to be prepared. An independent organization should conduct an appropriately graded readiness review to ensure that appropriate procedures are in place, workers are trained, and that the organization performing the decommissioning operations is otherwise prepared.

- *Performance of decommissioning operations.*

When the necessary documents are completed and approved and the performing organization has demonstrated its readiness, the decommissioning action can proceed. The decommissioning plan and HASp will provide for the appropriate safety measures to protect people and the environment. When the specified end condition criteria have been achieved and independently verified, the action is concluded. Steps 34 through 40 describe this process. While the actual decommissioning work is proceeding, the S&M program is phased out in a planned manner as areas and systems are completed, dismantled, or otherwise closed out.

- *Post-decommissioning action.*

It is recognized that the decommissioning action might not be the final action at a given site, particularly at NPL sites where follow-on remedial action for soils and water bodies may be required to complete the cleanup. When this is the case, follow up responsibilities will be included in ongoing remedial action programs. Another type of post-decommissioning action that might be appropriate is the long-term surveillance and maintenance of the site (whether additional remedial action is performed). This might be necessary, for example, if some sort of entombment option is chosen for a given facility. Steps 41 and 42 provide for post-decommissioning action.

1.4.5.2 The Graded Approach

The "graded approach," or the tailored application of requirements to a particular project, activity, or facility, has been in practice in DOE for a number of years. Its use has been recently mandated by the issuance of 10 *CFR* Part 830, *Nuclear Safety Management*. Section 830.4 applies the rule to decommissioning. Section 830.7 mandates the use of the graded approach to comply with the requirements of the rule and requires that the basis for selecting an action pursuant to the graded approach be documented. The application of the graded approach is appropriate in all steps of the decommissioning framework.

As defined in the rule, a graded approach is a process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with:

- The relative importance to safety, safeguards, and security;
- The magnitude of any hazard involved;
- The life cycle stage of a facility;
- The programmatic mission of a facility;
- The particular characteristics of a facility; and
- Any other relevant factor.

The preamble to the rule in the *Federal Register* of April 5, 1994 describes the intent of DOE with respect to the graded approach.

"...."graded approach" was developed to describe the process and factors used to determine which actions would be appropriate for a particular facility. DOE believes that this process should be sufficiently broad and flexible to take into account differences among various facilities. The intent of the graded approach is to permit DOE contractors the flexibility to implement activities and processes, as appropriate, to comply with the nuclear safety requirements for the individual facilities. The graded approach does not exempt a facility from a nuclear safety requirement. In applying a graded approach, however, a determination may be made that certain actions may not be appropriate for a particular facility," (59 *FR* 15844; April 5, 1994.)

Examples of opportunities to apply the graded approach include:

- *Safety Analysis Documentation.* The type and rigor of analysis should be appropriate for the facility and the conditions of the project.
- *Design Requirements.* Tailor requirements to consider modifications of existing structures that may be involved, or that the facility may be of temporary nature.
- *Characterization.* Limit the characterization work to information needed to help choose alternatives, safely plan the decommissioning, and estimate waste quantities. There is no need to determine liability or to allocate costs as for some non-federal remedial actions.
- *Regulatory Framework.* Eliminate duplicative and overlapping requirements when a RCRA or an NRC license may be involved.

- *Project Controls and Reporting.* Streamline the requirements, especially for small projects.
- *Conduct of Operations (CONOPS).* Tailor the applicability matrix to the facility and the decommissioning task.
- *Surveillance and Maintenance (S&M).* Minimize frequency of tours/inspections and maintenance of equipment, consistent with safety and economy. Rethink the need to keep systems operational for decommissioning far into the future. Trade off targeted and local cleanup effort/cost with potential reduced dressout requirements/cost for S&M personnel.
- *Readiness Reviews.* Make consistent with the category of facility and the actual hazards. Base the need on, and tailor the review to Best Management Practice, rather than exclusively on a perceived safety requirement.

Typical steps in the graded approach include:

- Reviewing the requirements as specified in DOE orders or other policies or guidance;
- Considering the facility and the project conditions;
- Applying the requirement in a graded manner pursuant to 10 *CFR* 830;
- Documenting the action to be taken and the basis for selecting it pursuant to 10 *CFR* 830, in the appropriate project-related document; and
- Approving the application of the graded approach as part of the routine approval of the document in which it is described.

Other opportunities to approve the application of the graded approach will be in the approval of Price Andersen Amendment Act Implement Plans containing the graded concept and the approval of Standards and Requirements Identification Documents (S/RIDs) containing graded applications of the requirements.

1.4.5.3 Differences Between CERCLA and Non-CERCLA Actions

Step 8 in the decommissioning framework provides for continuing with the process as described even if the determination is made that CERCLA does not apply. The purpose of this is to achieve uniformity and consistency throughout the DOE complex when disposing of surplus contaminated facilities. The paragraphs below describe the differences in programmatic

requirements and procedural actions between CERCLA and non-CERCLA actions. It should be recognized, however, that local agreements could modify the precise nature of these differences.

- *Permits.* Permits are not required if decommissioning is conducted as a CERCLA response, but legal provisions and other requirements that give rise to the need for permits will be included as applicable or relevant and appropriate requirements (ARARs). Otherwise, necessary permits must be obtained.
- *EPA Approval of Plans.* If environmental samples are to be taken, the sampling and analysis plans must be submitted to and approved by EPA if decommissioning is conducted as a CERCLA response. Otherwise, the sampling and analysis plan does not require outside approval.
- *State and EPA Involvement.* Decommissioning projects conducted under CERCLA jurisdiction should involve EPA and the state. Such involvement should be determined locally and focus on the steps in the removal process where EPA or state participation can be most helpful. Otherwise, involvement may depend on site agreements, or instances where shared information would be helpful, such as determining long-term land use plans.
- *NRC and RCRA Relationship.* Decommissioning projects conducted under NRC-approved decommissioning plans or RCRA permits or orders may need to meet requirements specific to those plans, permits, or orders, but will still follow the basic DOE decommissioning framework. Document titles may differ and some additional information may be specified under such plans, permits, or orders.
- *Environmental Review.* Separate NEPA documents are not required for decommissioning performed under CERCLA. DOE will address the environmental impact of decommissioning activities under CERCLA by incorporating NEPA values, such as analysis of cumulative, off-site, ecological, and socioeconomic impacts into CERCLA documents to the extent practicable. In the decommissioning framework, these activities should be documented in the analysis of removal alternatives (refer to Step 27 as described in Chapter 2). Non-CERCLA decommissioning will still require the appropriate NEPA review process.
- *Public Participation.* Decommissioning projects under CERCLA must adhere to the public participation and administrative record requirements of the NCP. Public participation requirements under NEPA can be satisfied by incorporating NEPA values in decisions and documents that meet CERCLA requirements. Consistent with the Environmental Management Program's strategic goal to strengthen relationships with stakeholders, public participation also is an essential part of the decommissioning framework for projects that are not CERCLA

responses. The decommissioning project manager still must ensure that stakeholders are informed about decommissioning decisions and activities. In this case, the NEPA process provides for public participation.

1.5 APPLICABLE DOCUMENTS

As managers and planners look for directives and other documents to guide their decommissioning activities, it is appropriate to recognize the variety of statutes and documents which provide requirements, guidance, and suggestions. The documents can be identified as follows:

The Law (e.g., AEA, CERCLA, RCRA).

DOE policy, DOE orders and official guidance such as the Implementation Guide.

Environmental Guidance for CERCLA Removal Actions (DOE/EH-0435); and the EM-40 documents, Management Policies and Requirements and Management Plans (DOE/EM/RM/03), Project Management Notebook, and Quality Assurance Requirements and Description Document.

Information sources such as this Resource Manual and the *Decommissioning Handbook (DOE/EM-0142P)*.

1.6 DECOMMISSIONING PROGRAM MANAGEMENT

The decommissioning program is managed through the three Environmental Restoration Area Program Offices, the divisions, the Headquarters program managers, and the field office program and project managers. The organization of this management structure is shown in Figure 1-1.

1.7 DOCUMENTS USED IN THE DECOMMISSIONING PROCESS

This Resource Manual describes a number of documents which are prepared, or information sources which are to be consulted, in carrying out a decommissioning project. As a reference aid, the documents are shown in Table 1-1 and the applicable Resource Manual section(s) are listed. Appendix E is a comprehensive list of reference documents that can be used as a starting point for determining the formal requirements for individual projects.

1.8 ROLES OF HEADQUARTERS AND THE FIELD

The following is extracted from the *EM Handbook on Roles and Responsibilities* and describes the roles of Headquarters and the field in the conduct of the decommissioning program.

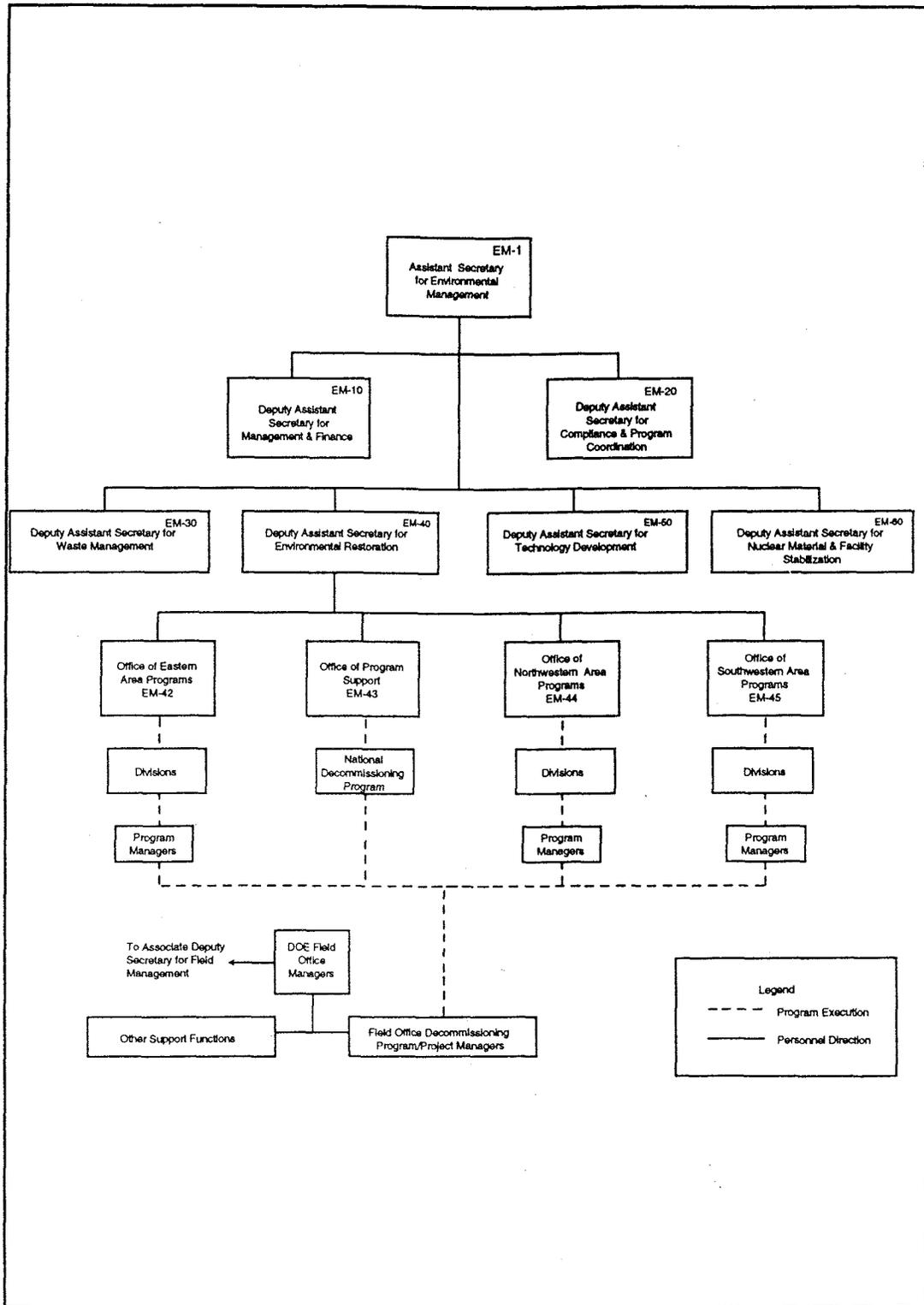
The role of Headquarters is to:

- Prepare and issue requirements and guidance for worker and facility safety;
- Develop decommissioning policy and strategy;
- Provide guidance to the field organization;
- Establish general principles and policy on interaction with stakeholders;
- Ensure consistency between decommissioning programs and Headquarters programs, policies, and priorities;
- Interact with EPA Headquarters and other federal agencies, Governors, and Heads of Tribal Nations;
- Review accomplishments of field activities against planned progress and commitments;
- Issue budget formulation guidance and act as advocate with Congress, the Office of Management and Budget, and others to obtain the resources required for field decommissioning programs; and
- Approve program/project baseline documentation, as appropriate.

The role of the field is to:

- Prepare and approve safety analysis and evaluation documents and conduct readiness reviews for the start of decommissioning projects;
- Implement programs within framework established by Headquarters;
- Provide guidance to contractors;
- Interact with and serve as a point of contact for site-specific issues with the general public, citizen's groups, and other review groups and stakeholders;
- Operate facilities and manage contractors to carry out decommissioning programs;
- Interact with local EPA Regional Offices, state and local officials, and Tribal Nation staffs;
- Prepare necessary documents and interact with regulators and the public;

**FIGURE 1-1
ENVIRONMENTAL MANAGEMENT ORGANIZATION**



**Table 1-1
Typical Documents for
Decommissioning Projects**

Name of Document	Section in this Document
Safe Shutdown and Deactivation Report	Section 2.1, Step 4
Surveillance and Maintenance Plan and Periodic Reports	Section 2.1, Step 4
Preliminary Characterization	Section 2.1, Step 4
Preliminary Hazards Analysis	Section 2.1, Step 4
Report of Removal Site Evaluation	Section 2.1, Step 11
Project Plan	Section 2.1, Step 14; Appendix G.1
Project Management Plans	Appendix G.1, last page
Sampling and Analysis Plan (Characterization Plan)	Section 2.1, Step 16; Appendix G.2
Characterization Report	Section 2.1, Step 19
Risk Assessment	Section 2.1, Step 20
Hazards Analysis	Section 2.1, Step 21
Analysis of Removal Alternatives	Section 2.1, Step 27; Appendix G.3
NEPA Document and Decision	Appendix G.3, Section 5
CERCLA Decision Document (Action Memorandum)	Section 2.1, Step 31; Appendix G.4
Decommissioning Plan	Section 2.1, Step 32; Appendix G.5
Health and Safety Plan	Section 2.1, Step 32
Readiness Review Report	Section 2.1, Step 33; Appendix G.6
Final Project Report	Section 2.1, Step 40
Record of Completion	Chapter 5
Certification Docket	Chapter 5
Project Data Package	Chapter 5
Waste Management Project Plan	Chapter 9
Waste Analysis Plan	Chapter 9

Note: Copies of documents should be forwarded to the Remedial Action Program Information Center (RAPIC), P.O. Box 2003, Oak Ridge, TN 37831-7298 by the issuing organization when finalized/completed. Phone: 615-574-7764. Fax: 615-576-6547.

- Provide timely information to Headquarters on status and performance of field activities;
- Identify resource needs; and
- Develop technical, schedule and cost baseline documentation.

1.9 CLOSING

This Decommissioning Resource Manual is intended to be useful and helpful, not prescriptive. Within the confines of the Law, DOE Orders, delegation of authority from Headquarters, and local agreements with regulators, decommissioning project managers should be efficient and innovative; and comply with the spirit and intent of the "graded approach", in preparing decommissioning documents and managing the work. Suggestions on the contents of this manual are encouraged. Comments should be addressed to the National Decommissioning and Recycling Programs Coordinator (EM-431), Office of Program Integration, Office of Environmental Restoration, at DOE Headquarters.

2.0 DECOMMISSIONING FRAMEWORK

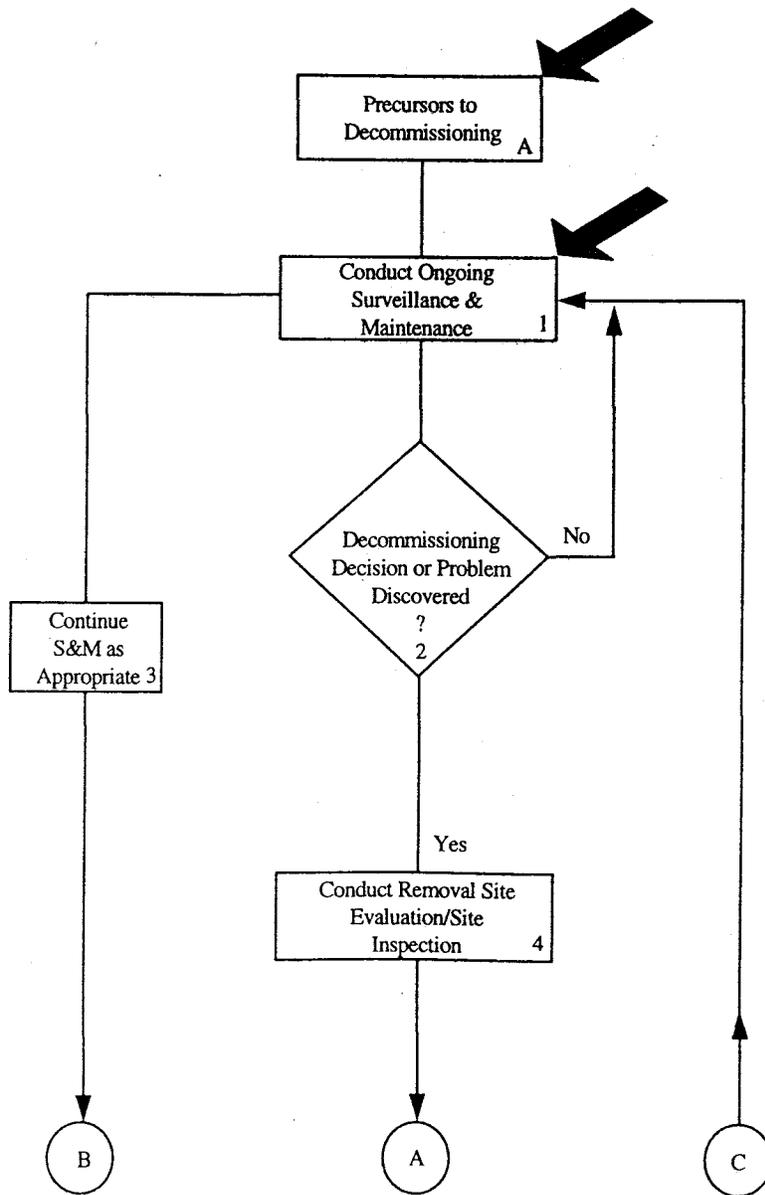
2.1 STEPS IN THE DECOMMISSIONING FRAMEWORK

This section is an expansion of the description of the decommissioning framework in the *Decommissioning Implementation Guide*, May 22, 1995, which is provided in Appendix A. This section gives additional suggestions on actions to be taken and makes references to appendices of the Manual which contain additional details. Step numbering is consistent with the *Implementation Guide*. Where appropriate, reference is made to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as specified at 40 *CFR* 300. (References will be cited as "300.xxx(y)(z)" in this chapter.) Sections of the guide flowchart are shown on the left-hand page, with text comments on the right-hand page.

Symbols: Matching circled letters, (A), show continuity from one chart to the next. The heavy arrow, , identifies the step being discussed on the opposite page.

A description of the steps starts on the next page.

U.S. Department of Energy
Decommissioning Framework
Figure 2-1
1 of 17



Step A - Precursors to Decommissioning.

The Office of Nuclear Material and Facility Stabilization (EM-60) is responsible for deactivating surplus facilities and, following deactivation, for transferring management responsibility to the Office of Environmental Restoration (EM-40) for actual decommissioning work. When transferred to EM-40, the facility will be in a safe and stable condition in conformance with a deactivation end state agreed upon between EM-60 and EM-40. An active and cost effective Surveillance and Maintenance (S&M) program will be in effect, consistent with the DOE orders that address environment, health and safety, and radiation protection (principally the 5400 and 5480 series). Chapter 3 contains a discussion of the Facility Transition process. Chapter 4 addresses S&M.

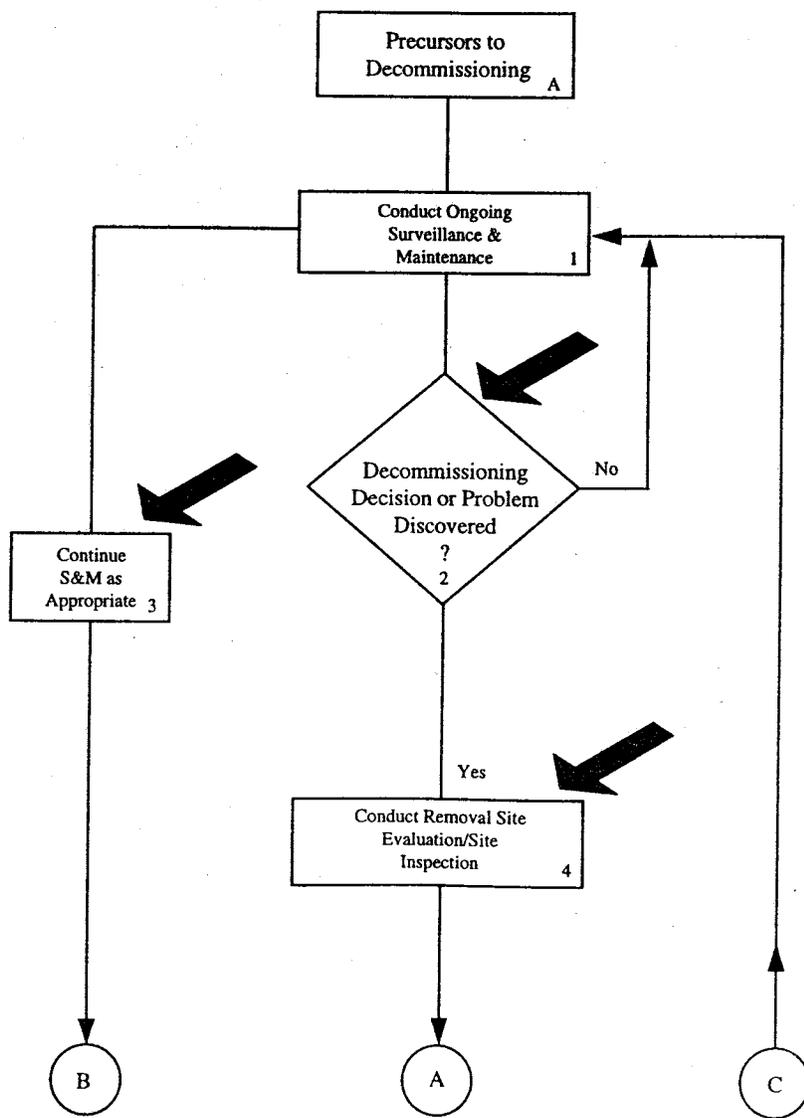
During the transition a preliminary characterization and preliminary hazards analysis (in accordance with DOE Orders 5481.1B, 5480.6 and 5480.23, as appropriate) typically has been performed to identify the threats and hazards that need to be addressed in the S&M program.

The typical decommissioning candidate facility will be in an S&M mode, the budget process will be proceeding, and decommissioning will be targeted for a future date. Step 1 reflects this situation. S&M should be guided by a written program, prepared according to the principles described in Chapter 4. The S&M program will have been prepared by EM-60 in close consultation with EM-40.

The time interval between Steps 1 and 2 can vary greatly. For noncomplex, low risk situations, a number of years can elapse before budget priority considerations make funds available for decommissioning. For high risk, urgent situations, and for some NRC-mandated schedules, the decommissioning process will need to proceed promptly.

There are exceptions to the approach described above. The typical example is when an operating facility was shut down with expectations of restarting. Time passes, the restart expectations were not realized, the facility contains process residue, is beginning to deteriorate, and it is now necessary to proceed with disposal action. These facilities are generally now in an S&M mode and deactivation is proceeding "after the fact." EM-40 has responsibility for a number of facilities in this condition. Examples include the N-Reactor at Hanford, Fernald, and K-25 at Oak Ridge.

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Decommissioning Framework
Figure 2-1
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Step 2 initiates the decommissioning framework. It corresponds to the "discovery" step described in 300.405. If an actual release of hazardous material is involved, it will typically be revealed through routine action of government (or government contractor) employees. However, it might be reported directly to DOE officials by the public or through a report to the National Response Center. A programmatic decision to proceed with decommissioning also could initiate the process.

Step 3 depicts the continuation of S&M as planning and programmatic actions go forward, until phased out in the manner planned during decommissioning operations (Steps 35 and 36) or converted to a long-term, post-cleanup situation (Step 42).

Step 4 is the removal site evaluation (300.410) which includes a removal preliminary assessment and, if needed, a removal site inspection (300.410 (d)). A preliminary assessment will include a review of existing documents (particularly those prepared during transition which describe the deactivation process), the status of the facility, and the measures being taken in the S&M program to avoid risks to people and the environment. Information examined can be grouped as follows:

- *Facility History.*

Facility history consists of the operating history of the facility to obtain process knowledge of the nuclear and chemical materials that were handled and potential spills or leaks that might have occurred. Interviews with former operating and maintenance personnel can be very useful. Knowledge of facility modifications and the presence of as-built drawings also are important.

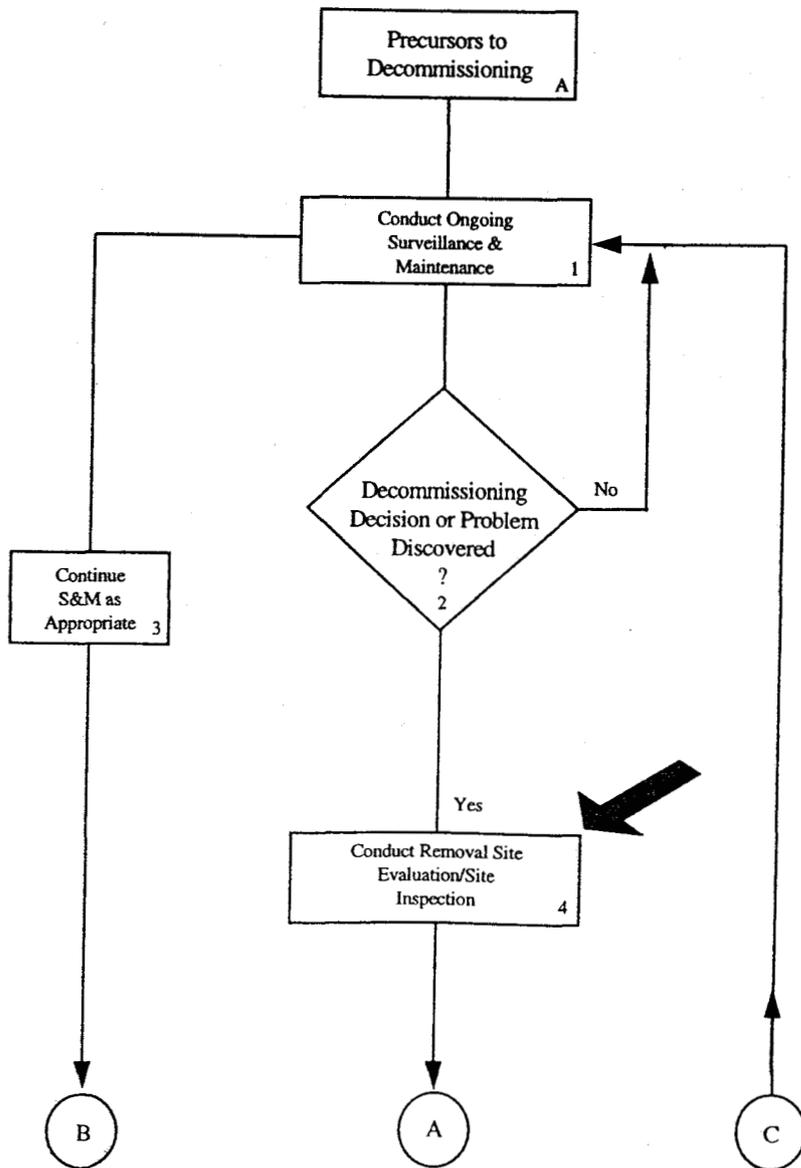
- *The Deactivation Process.*

The deactivation process is the manner in which the facility was taken out of active service and placed in a stable shutdown configuration, in compliance with the appropriate 5480-series DOE order. The "safety envelope" should be defined in a Safety Assessment or a Safety Analysis Report (SAR). Technical Specifications or a Limiting Conditions Document may exist and should be reviewed. The presence of any unresolved safety issues should be identified and plans developed to address these situations. A Safe Shutdown and Deactivation Report or an equivalent document should be available for review.

- *Surveillance and Maintenance*

The S&M Plan will describe actions which were planned to maintain and inspect the facility in order to contain the contamination present, protect health and safety of workers and the public, and avoid impact on the environment (in general, maintain the "safety envelope" specified for the facility). Routine S&M records and annual reports will serve as records of events during the S&M period of the facility.

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Decommissioning Framework
Figure 2-1
3 of 17



- *The Physical Condition of the Facility.*

S&M records will indicate the physical status of the facility and can be useful for detecting trends that might indicate impending problems. Other sources of information about the facility include:

- Facilities Aging Management Program (FAMP);
- Capital Asset Management Process (CAMP);
- Surplus Facilities Inventory Assessment (SFIA); and
- Other local databases.

- *Preliminary Characterization Data.*

This information focuses on identifying the nature of the contamination (nuclides, chemical constituents) in the facility and the general locations within the facility. General mapping of dose rates and airborne contamination (rad and non-rad) should be available. If these data are not available, they should be collected in a Site Inspection. If information about quantities is available, it should be examined. However, quantitative information is not a primary interest in this preliminary assessment.

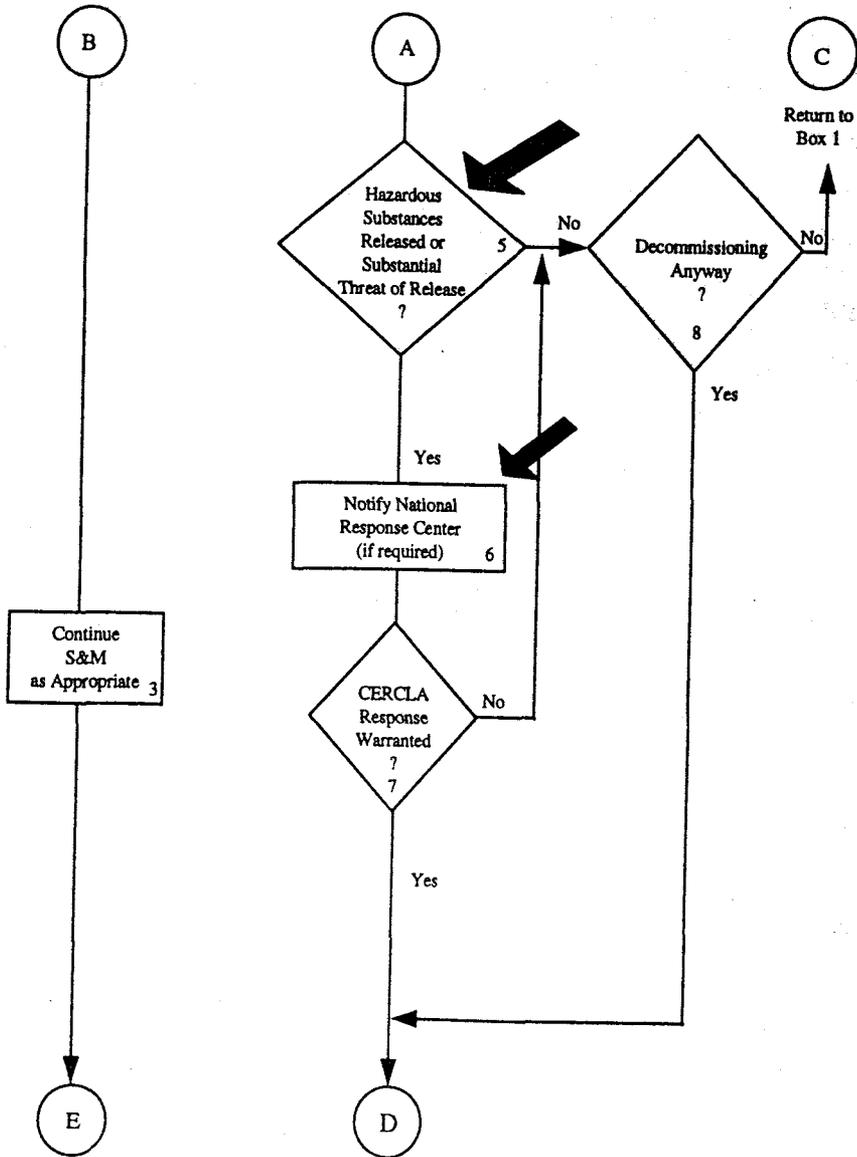
- *Preliminary Hazards Analysis.*

It is anticipated that the hazards present in the surplus facility and the risks presented by those hazards will have been identified so that appropriate features can be incorporated into the S&M program to keep impact on people and the environment at a low and acceptable level. This information should be reviewed to confirm status and determine if any additional hazards are present.

If a removal site inspection is necessary, it may include perimeter or on-site inspections. Any physical inspection will be planned to protect the health and safety of workers, the public, and the environment. The S&M health and safety program should be used as a foundation and augmented as necessary to ensure protection during the inspection. Where applicable, local agreements may describe the manner in which DOE will consult with EPA or the state when a removal site evaluation is conducted.

Step 4 is necessary for all decommissioning projects. It allows for an evaluation of any threat; and it supports the determination of the applicability of CERCLA. See Step 11 regarding documentation of this evaluation.

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Step 5 constitutes the key decision as to whether CERCLA applies. CERCLA applies when hazardous substances (including radionuclides) are released to the environment or when there is a substantial threat that such a release will occur, and response to protect health or the environment is warranted. In either case, DOE will consult with EPA and the state in a manner consistent with local agreements.

Whether a release from a facility is "actual" or "threatened" depends primarily upon temporal considerations. Actual releases should be observable or detectable by instruments. A "threat" of release involves judgements concerning events that have not occurred, yet may occur. Appropriate matters to consider include:

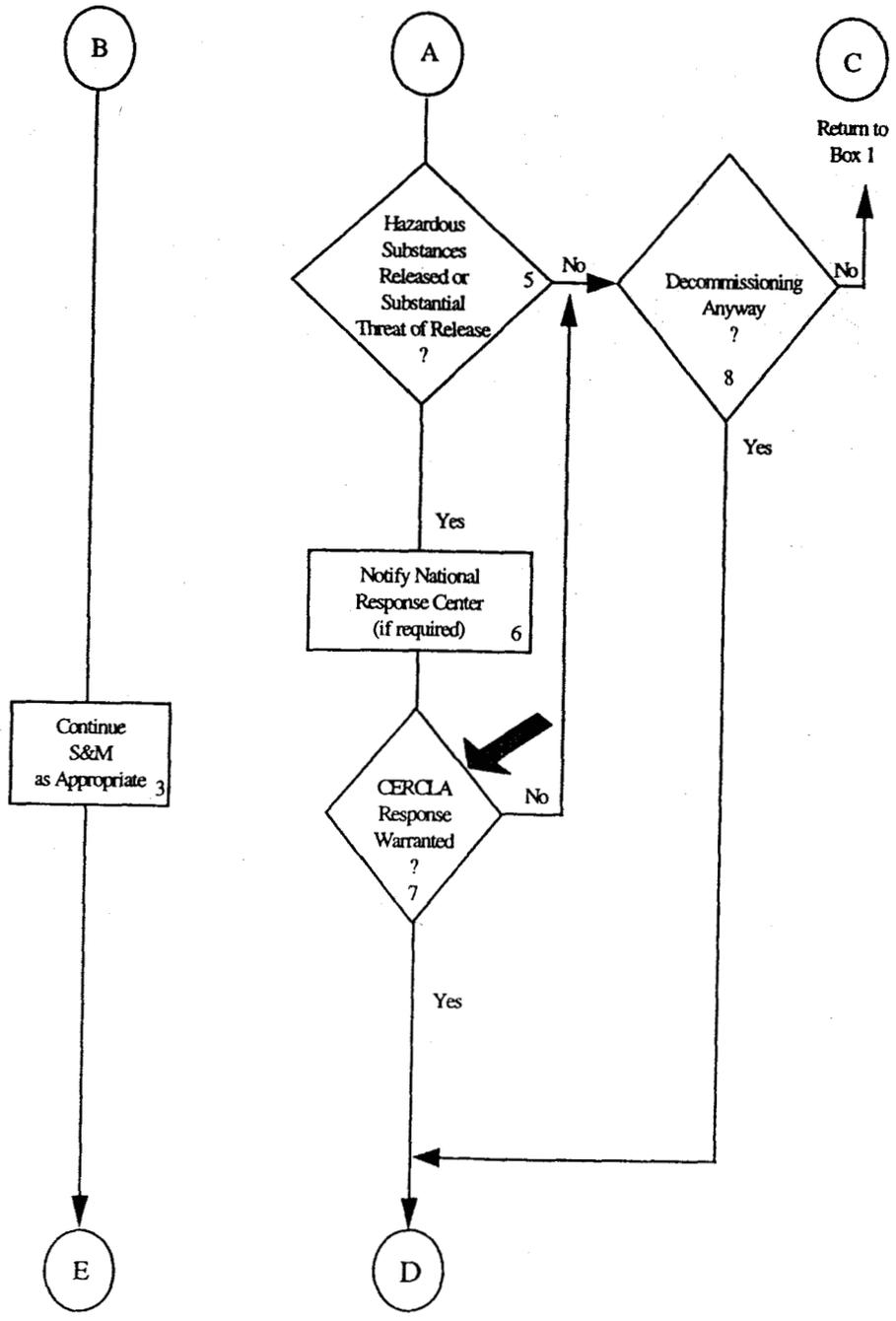
- Condition of storage containers or areas containing contamination
- Evidence of structural failure
- Condition of roofs, windows and doors
- Evidence of human, animal, wind, or water intrusion.

By their nature, facilities in a decommissioning program are aged and surplus. Some degree of deterioration will have occurred. The determination of whether a "substantial threat of release" exists is a decision to be made on a case-by-case basis in consultation with regional EPA, state, Tribal, and/or local officials as provided for in local agreements.

A YES determination continues the action path to Step 6; NO to Step 8.

Step 6 provides for notification of the National Response Center (300.405), if required. Such notification may not be required, for example, if quantities do not exceed the Reportable Quantities of 40 *CFR* 302 or if the release is authorized by a federal permit. In addition, under 40 *CFR* 350, 355, 370, 372, Community Right-to-Know Requirements, the State Emergency Response Commission and the Local Emergency Planning Committee must be notified when an amount exceeding established thresholds of an extremely hazardous substance (EHS) exists or is released into the environment that could result in exposure to persons outside the facility boundaries.

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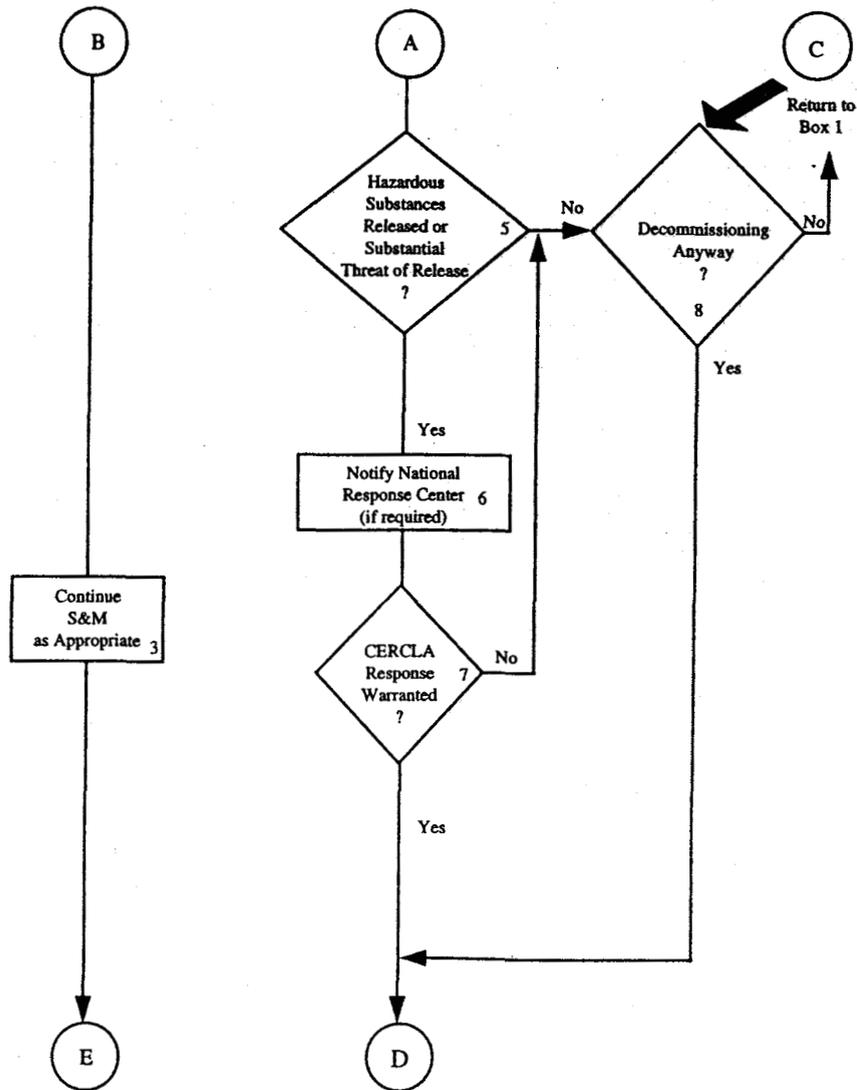


Step 7 provides a decision point to evaluate whether a CERCLA response is warranted. The removal site evaluation process provides flexibility to determine whether CERCLA response is warranted or another appropriate federal or state response is available. CERCLA response may not be necessary for a facility licensed by the NRC and being decommissioned in conformance with an NRC-approved decommissioning plan, for a facility being decommissioned in compliance with a RCRA permit or order, or if a release or substantial threat of release is not present at the facility or the amount of hazardous substances present does not warrant federal response (300.410(e)(5)). DOE should consult with EPA and the state concerning this decision in accordance with applicable site agreements.

In considering whether a CERCLA response is appropriate, additional factors should be examined, including:

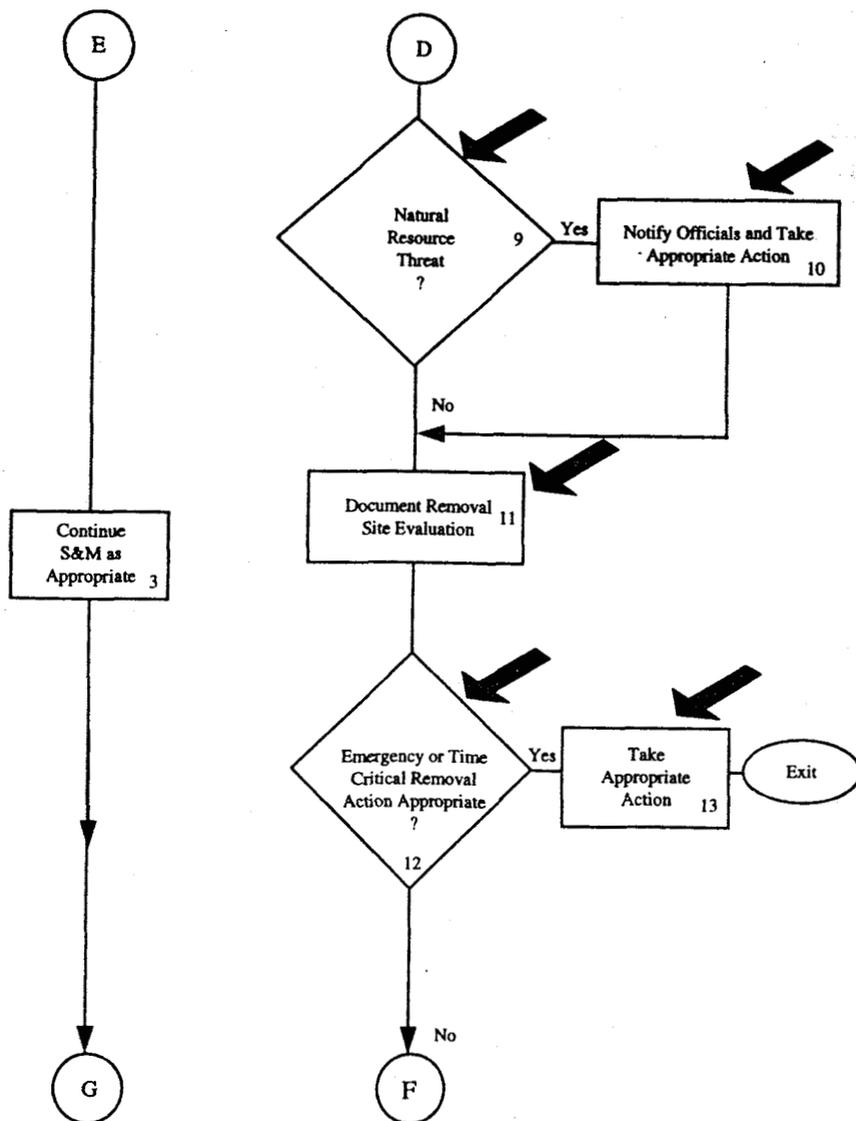
- *Nuclear Incidents.* Section 101(22)(C) of CERCLA excludes from the definition of release any source, by-product, or special nuclear material from a nuclear incident when that release is covered by the financial protection requirements (emphasis added) as established by the NRC.
- *Uranium Mining Sites.* Section 101(22)(C) of CERCLA provides an additional exclusion from the term release. If a release of source by-product or special nuclear material from any processing site designated under Sections 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act (UMTRCA) occurs, a response action under CERCLA is not necessary.
- *Federally Permitted Releases.* CERCLA Section 101(10) defines a federally permitted release in terms of releases permitted under specific environmental statutes. If a release occurs from a vessel or facility that is permitted under an environmental statute listed in CERCLA Section 101(10), a response action may not be appropriate. EPA proposed regulations to clarify the scope of the federally permitted release exemption on July 19, 1988 (53 FR 27268). A Supplemental Notice of Proposed Rulemaking appeared on July 11, 1989 (54 FR 29306) providing additional clarification on the Section 101(10)(H) exemption for air releases.
- *Petroleum.* Hazardous substance, as defined in CERCLA Section 101(14), excludes the term petroleum, which includes crude oil or any fraction thereof that is not specifically listed or designated as a hazardous substance. EPA issued a memo to clarify this exemption on July 31, 1987 (OSWER Directive Number 9838.1). It states that the exclusion applies to petroleum products or derivatives, natural and synthetic gases, or mixtures of natural and synthetic gases. The exclusion, however, does not cover contaminants present in used oil or in any other petroleum substance. Contaminants are substances not normally found in refined petroleum fractions or present at levels which exceed those normally found in such fractions.
- *Underground Storage Tanks (USTs).* The remediation of USTs is governed by RCRA, as specified at 40 CFR 280 (refer to Section 6.4.3 of this Manual).
- *Other Considerations.* Workplace exposures, fertilizer applications and engine exhaust emissions are excluded from the definition of "releases," under CERCLA Section 101(22).

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Step 8 is the decision whether to proceed with decommissioning even if response under CERCLA is not required. This could apply to a decision to decommission a facility under an NRC-approved plan or a RCRA permit or order. In addition, DOE may consider other factors to make a decision to decommission a facility under its authority from the Atomic Energy Act (e.g., a building may be more costly to maintain than to dismantle). In all cases, when decommissioning does proceed, the same basic process outlined in this framework is followed. If the determination to proceed with decommissioning is YES, the process should continue with Step 9; if NO, S&M should be continued until a future date when Step 2 may be considered again.

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Steps 9 and 10. If natural resources are or may be injured by the release, the appropriate state and federal trustees of the affected natural resources are to be notified. While DOE is the federal trustee for natural resources located on land administered by DOE, the Department may share trustee responsibility with other federal agencies, the states, or affected Indian Tribes. Other actions may be required to assist the trustees in assessments, evaluations, investigations, and planning (300.410(g)). Where possible, such action should be incorporated into other CERCLA actions and documents for the removal action.

Step 11 documents the removal site evaluation including the decision resulting from the evaluation, consistent with 300.410(f). In this step, the site evaluation will be reviewed, the evaluation factors¹ of 300.415(b)(2) will be assessed, and any other data will be collected as necessary to determine if removal action is appropriate. Documentation should include the facility description, threats to workers or public health or the environment, and the basis for proceeding with decommissioning either as a CERCLA action or as a programmatic decision. DOE should consult with EPA and the state concerning this determination in a manner consistent with applicable local agreements.

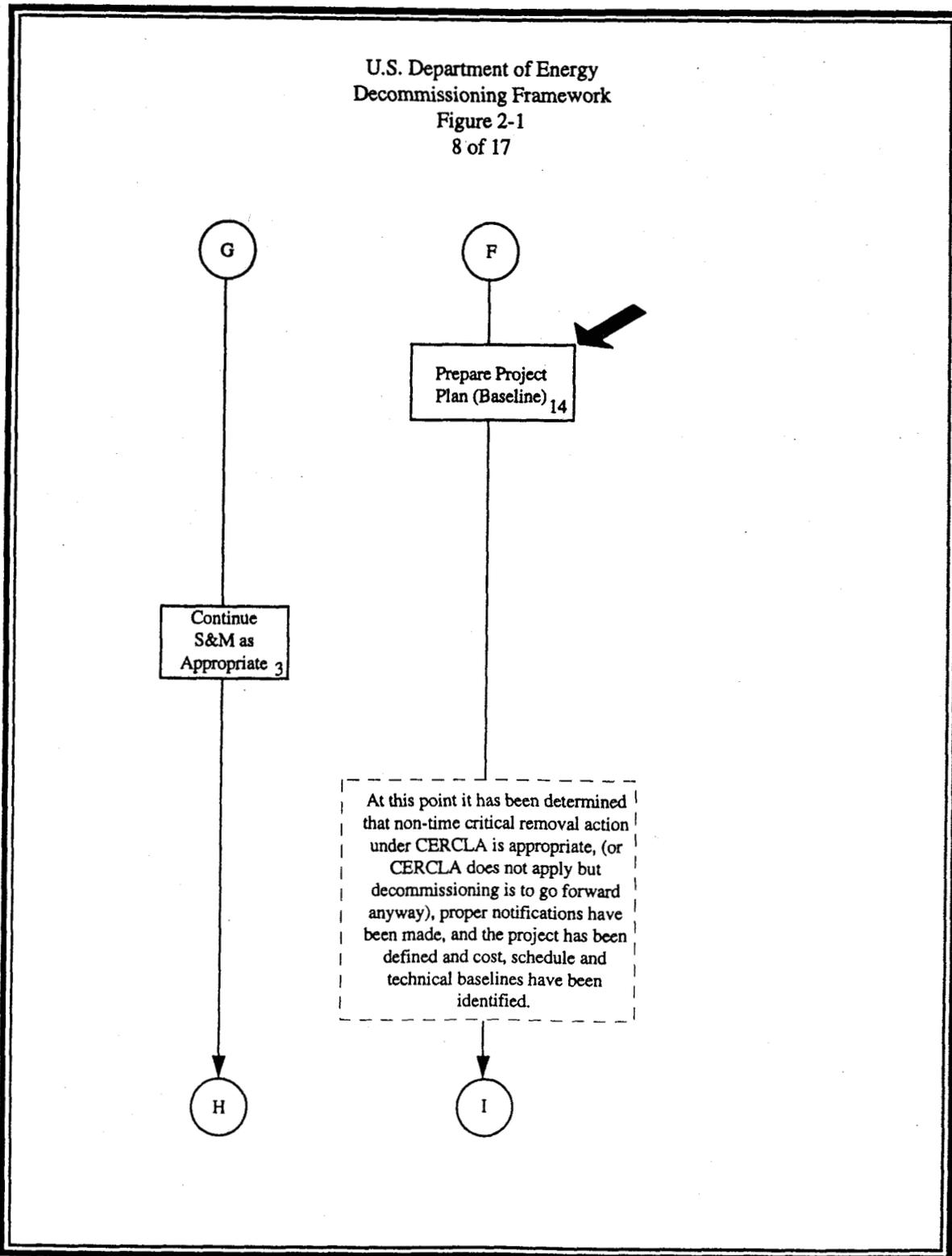
Step 12 is the assessment of the presumption that a non-time-critical removal action under CERCLA is appropriate, by asking if any other responses are more appropriate. If NO, proceed with the framework. If YES, proceed to Step 13 for other types of responses. Step 13 actions might include an emergency removal action, for example, to respond to a spill or leak; a time-critical removal action, of less urgency than an emergency but where response is required in less than six months; or a final or interim remedial action, if circumstances warrant. It is possible that, after some of the responses described above, the logic flow would lead back to Step 1 for continuing S&M.

¹ Evaluation Factors include: (i) impact on nearby humans, animals or the food chain; (ii) contamination of drinking water supplies or sensitive ecosystems; (iii) materials in drums, barrels, tanks or other bulk container that pose a threat of release; (iv) materials in soils at or near the surface that may migrate; (v) weather that may cause materials to migrate or be released; (vi) threat of fire or explosion; (vii) the availability of other appropriate federal or state response mechanisms to respond to the release; and (viii) other situations or factors that may pose threats to public health or welfare or the environment. (NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording.)

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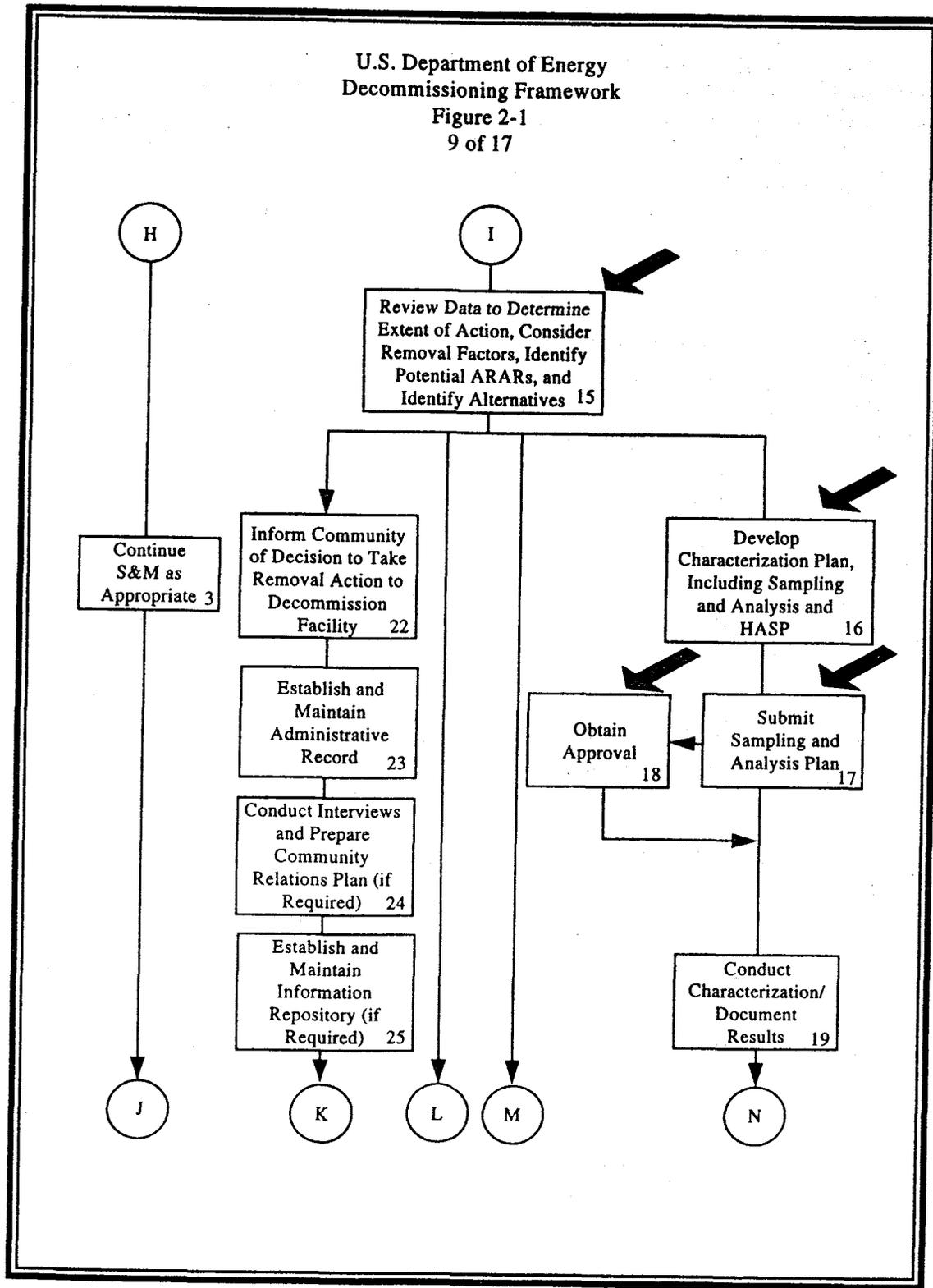
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Step 14 is the preparation of a decommissioning project plan. The plan will conceptually define the project and establish the initial technical, cost, and schedule baselines for the project. The plan should describe the general approach to be taken to protect the safety and health of workers and the public, and to protect the environment, to the extent such matters can be determined at this early stage of the project. Appendix G.1 provides suggestion on the contents of a decommissioning project plan.

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Step 15 starts the process of selecting and evaluating the decommissioning alternatives for the facility. The obvious starting point for selecting potential alternatives is the project plan prepared in Step 14. However, if some number of years have elapsed since the project plan was prepared, it will be appropriate to review and update the list of potential alternatives, considering the factors of 300.415(b)(2) and the types of actions described in 300.415 (d)², among others. Following the identification of the candidate alternatives, four parallel yet interrelated paths of actions will lead to the selection of the appropriate alternative. Local agreements will specify the manner of coordinating with EPA in determining what type of response action is appropriate for facilities on NPL sites.

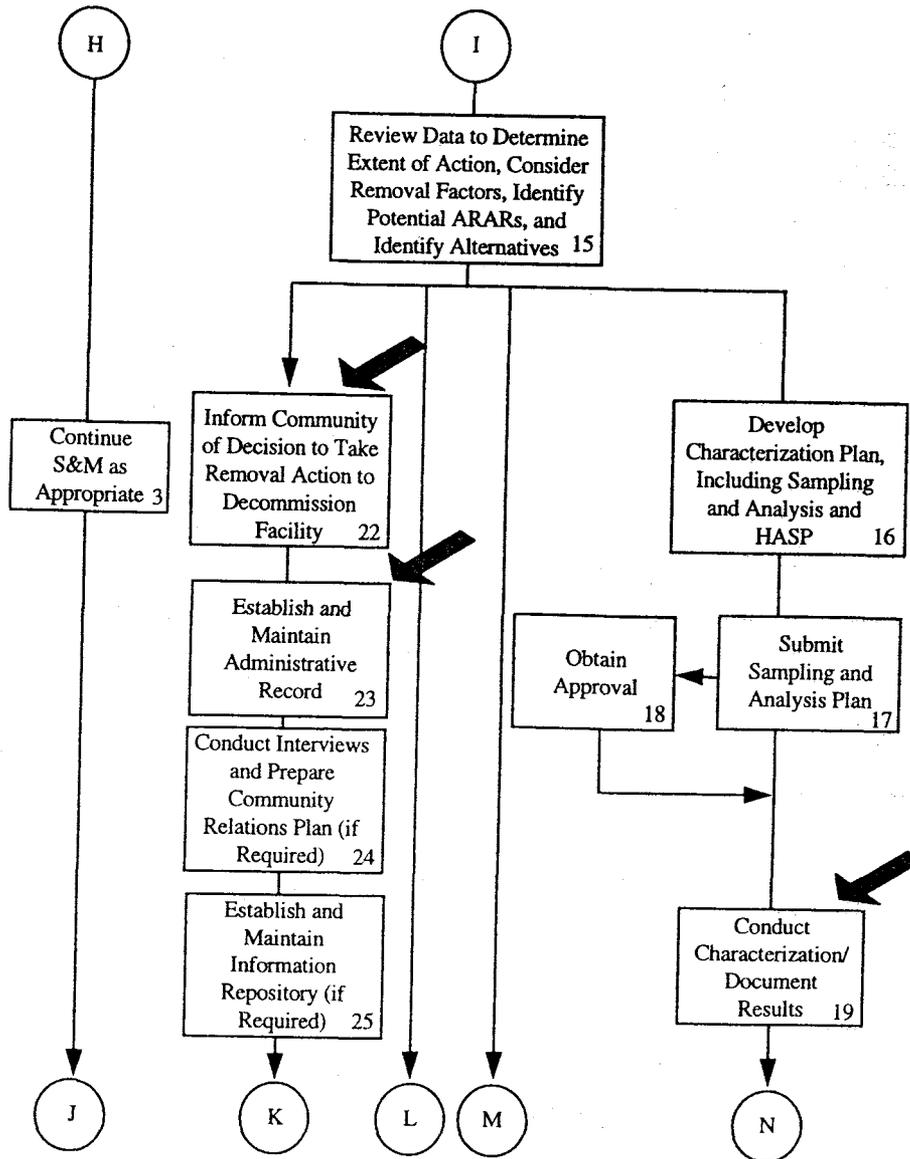
Note: If the decommissioning is not proceeding under CERCLA, managers should give attention at this point to the need to obtain long-lead permits. Many complex factors must be considered in identifying, applying for, and obtaining the necessary environmental and other permits for the removal action. Permitting requirements of a decommissioning project must be evaluated early and frequently so that the time requirements for permits are not an impediment to timely completion of the work.

Step 16 starts the process of characterizing the facility so that the nature of contamination is known and appropriate removal action can be taken. This first step is the preparation of the characterization plan. Appendix G.2 contains suggested contents of this plan. The plan satisfies the requirements of 300.415(b)(4)(ii) for a field sampling plan and a quality assurance (QA) project plan (referred to collectively as the sampling and analysis plan). It will include a Health and Safety Plan (HASP) for the field sampling work and will include an assessment of the physical condition of the DOE facilities involved and other DOE programmatic requirements. The HASP ensures that the characterization work is performed in conformance with the general safety requirements of DOE Order 5480.4, and, in particular, the radiation protection standards and procedures, and the ALARA concept, as embodied in Order 5480.11 and the DOE *Radiological Control Manual* (DOE/EH-0256T).

Steps 17 and 18 satisfy the requirement of 300.415(b)(4)(ii) to submit the sampling and analysis plan to EPA for review and approval (for CERCLA actions only), if environmental samples are to be collected.

² The following types of removal actions may be appropriate, among others: (1) fences, warning signs, or other security or site control precautions; (2) drainage controls; (3) stabilization of impoundments or drainage of lagoons to maintain integrity; (4) capping of soils or sludges to reduce migration; (5) using chemicals and other materials to retard the spread of the release or to mitigate its effects; (6) excavation, consolidation or removal of highly contaminated soils; (7) removal of drums, barrels, tanks or other bulk containers; (8) containment, treatment, disposal or incineration of materials; or (9) provision of alternative water supply until local authorities can satisfy the need for a permanent remedy. (NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording)

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Step 19 involves conducting the field characterization work and documenting findings in a characterization report.

Step 22 initiates the process to involve stakeholders in the selection of the removal action alternative. This initial step satisfies the requirement of 300.415(m)(1) to designate a spokesperson, inform the community of the actions taken, respond to inquiries, provide information concerning the release (or threat of release), and to notify affected citizens and officials, when appropriate.³

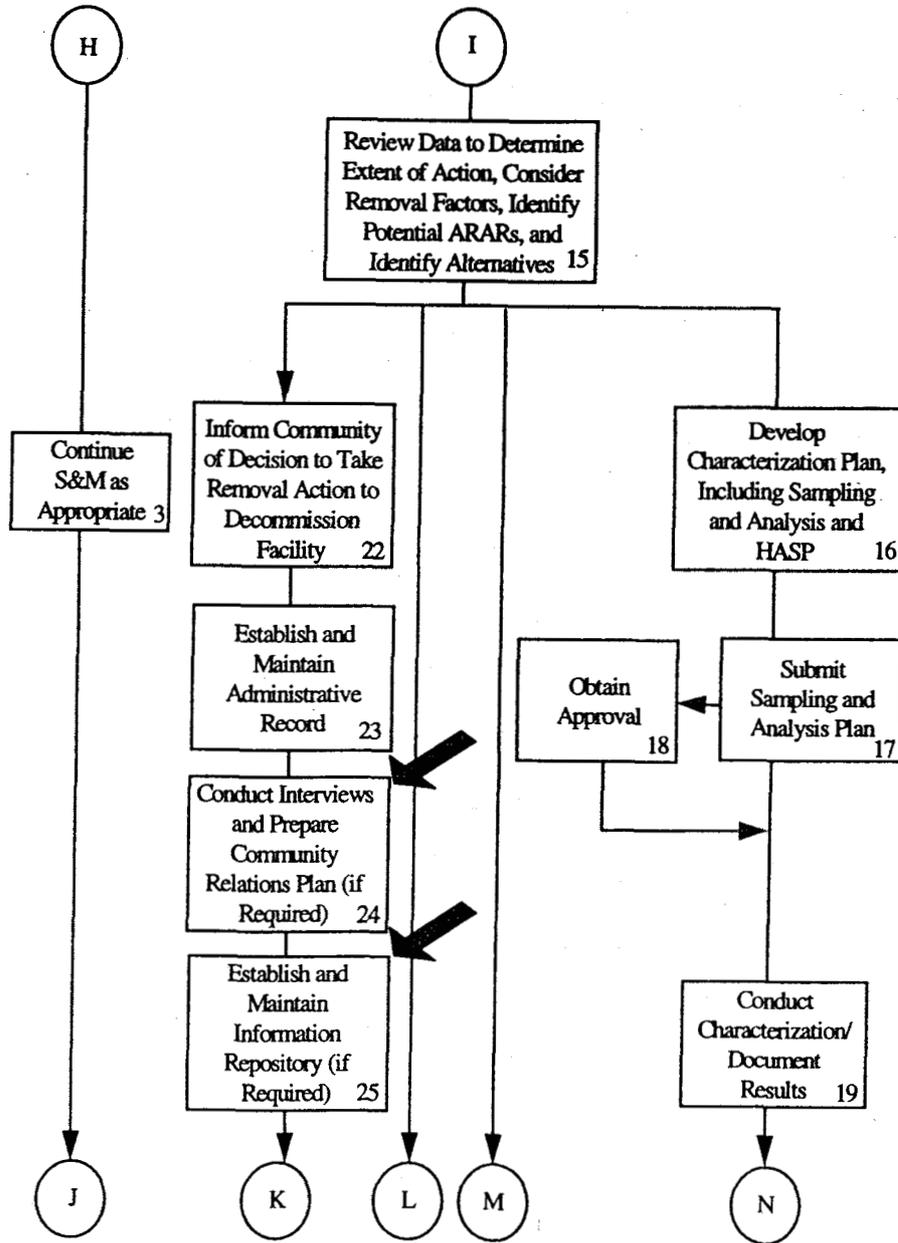
DOE field offices are responsible for developing and implementing comprehensive public participation plans and programs for environmental restoration activities and may have established public participation programs. (Guidance was provided in DOE/EH-0221, [*Public Participation in Environmental Restoration Activities*], U.S. DOE, Office of Environmental Guidance, RCRA/CERCLA Division, EH-231, November 1991. This guidance was supplemented by the EM-1 memorandum dated June 19, 1992, on roles and field office liaisons, and public participation policy and guidance⁴.) An established program that provides for the activities in Steps 22-25 and 28-30 may be followed in lieu of these specific steps. For private cleanups, this responsibility lies with the company. In the NEPA public review process, of the document is issued by DOE.

Step 23 is the establishment of the Administrative Record for the removal action (see Part 300, Subpart I - 300.800). The Administrative Record is to be established as soon as possible after the decommissioning project plan is prepared (Step 15) and no later than the issuance for public comment of the document which analyzes removal alternatives (Steps 27 and 28). It is to be located at a DOE office or other central location available to the public, and is to be made available for public inspection at or near the site at issue (Step 25, Information Repository). Most DOE sites on the NPL have already established facilities to maintain the Administrative Record. In addition, most other DOE facilities have public reading rooms or information resource centers which will serve satisfactorily as the information repository for the Administrative Record. The Record is to contain the results of the removal site evaluation and other factual information and analyses upon which the decision to conduct response action was based. As additional information is developed that forms the basis for selection of the response action, such information is to be included. Public comments, and DOE's response, will be included in the Administrative Record. (See 300.810 and 300.820 for more detailed information on contents of the Administrative Record.)

³The *Secretarial Policy on the National Environmental Policy Act*, U. S. Department of Energy, June 1994, emphasizes the importance of early public involvement in the CERCLA process and making CERCLA documents available to the public as early as possible (as provided for in this Decommissioning Framework) in keeping with the NEPA process. If decommissioning is not proceeding as a CERCLA response, the public participation requirements of NEPA will apply. In this case, the NEPA public participation activities would replace Steps 22, 23, 24, 25, 28, 29, and 30.

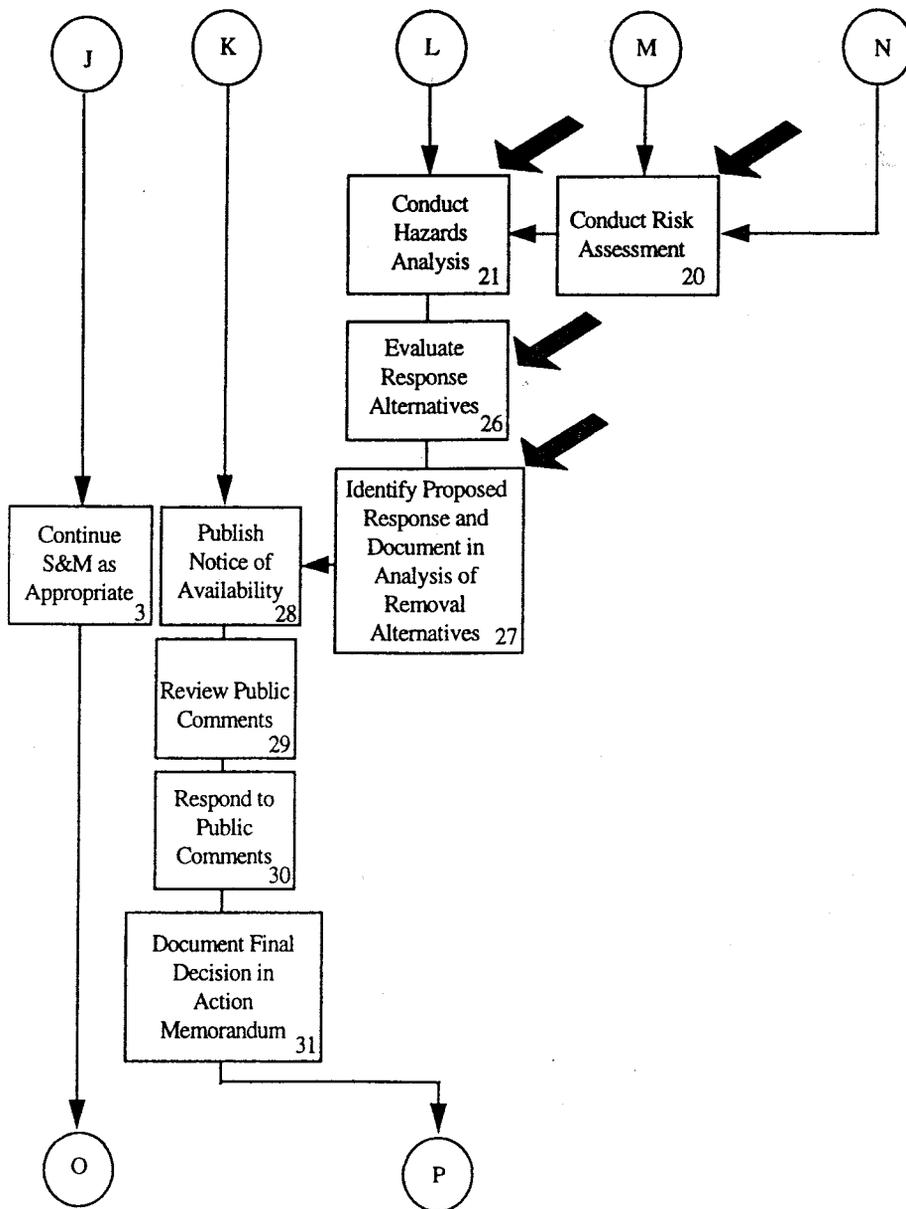
⁴In addition, staff should be aware of DOE's *Public Participation Guidance for Environmental Restoration and Waste Management (EM)*. The EM Guidance does not replace or duplicate the EH Guidance. The EM Guidance was developed to provide general programmatic direction to EM organizations for participation planning and documentation.

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Steps 24 and 25 respond to the requirement in 300.415(m)(3) to conduct interviews and prepare a formal community relations plan (CRP) and establish and maintain an information repository for removal actions where on-site action is expected to extend beyond 120 days from the initiation of on-site removal activities. Section 300.415(m)(4)(I) requires that these actions be completed prior to the completion of the analysis of removal alternatives (Step 27).

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Step 20 is the preparation of a risk assessment to support the hazards analysis and the evaluation of the decommissioning alternatives. The focus should be on the environmental safety and health risks associated with the alternatives, using the graded approach. The scope and depth of the assessment should be in proportion to the potential threat resulting from actual conditions at the facility.

Step 21 is an analysis, performed in graded conformance with DOE Order 5481.1B (or Order 5480.23), to focus on the alternatives for the decommissioning removal action itself and the potential hazards that are present. Hazards and risks should be identified, and mitigation measures that are to be provided for in the decommissioning plan described.

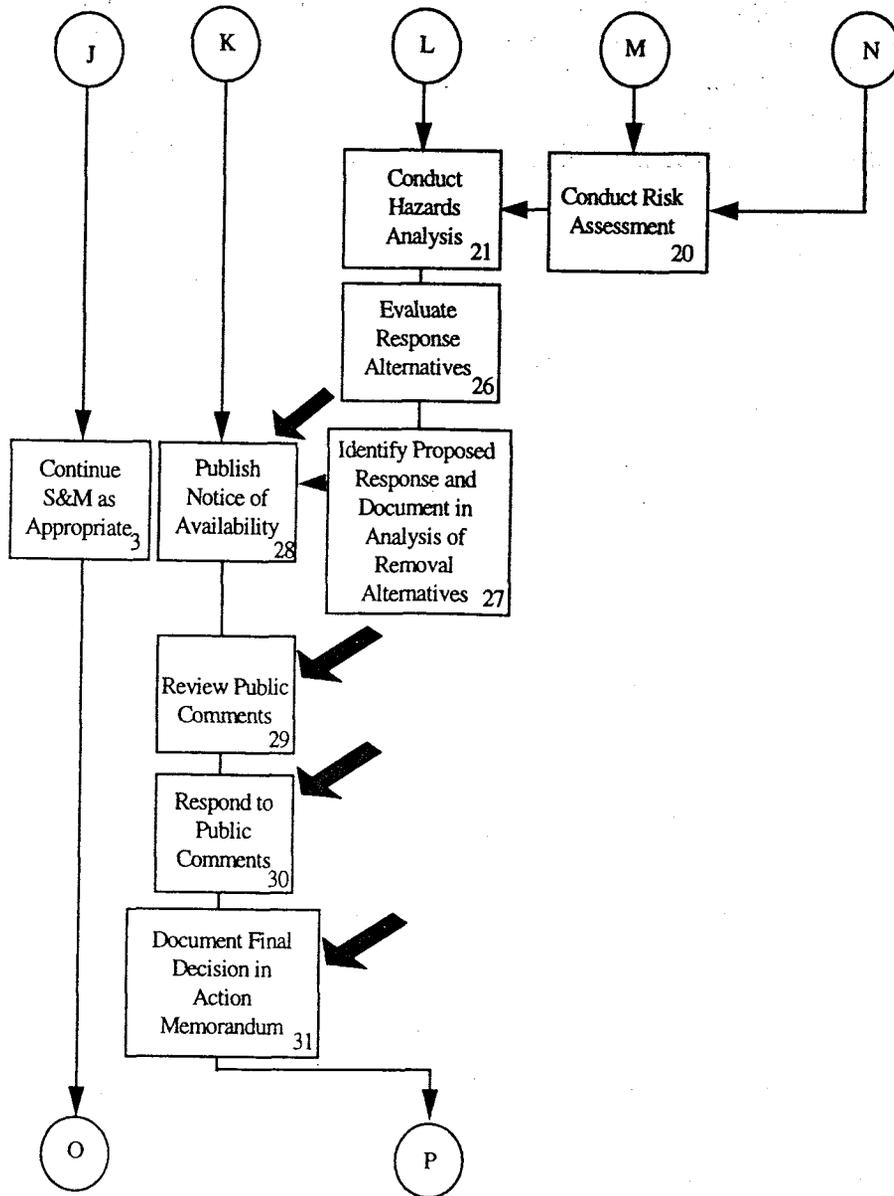
Step 26. Using the information from the steps preceding, DOE will evaluate the response alternatives and select and identify the preferred alternative in the Analysis of Removal Alternatives, Step 27⁵ (Appendix G.3 gives suggested contents).

As an example of the graded approach, a single document might contain the results from Steps 19, 20, 21, 26 and 27.

⁵The manner of incorporating NEPA principles in DOE planning and decision making for CERCLA actions can be found in the *Secretarial Policy on the National Environmental Policy Act*, U.S. DOE, June 1994. The policy provides for incorporating NEPA values into CERCLA documents, such as analysis of cumulative, off-site, ecological and socioeconomic impacts, to the extent practicable. If decommissioning is not performed as a CERCLA response, NEPA evaluation is required.

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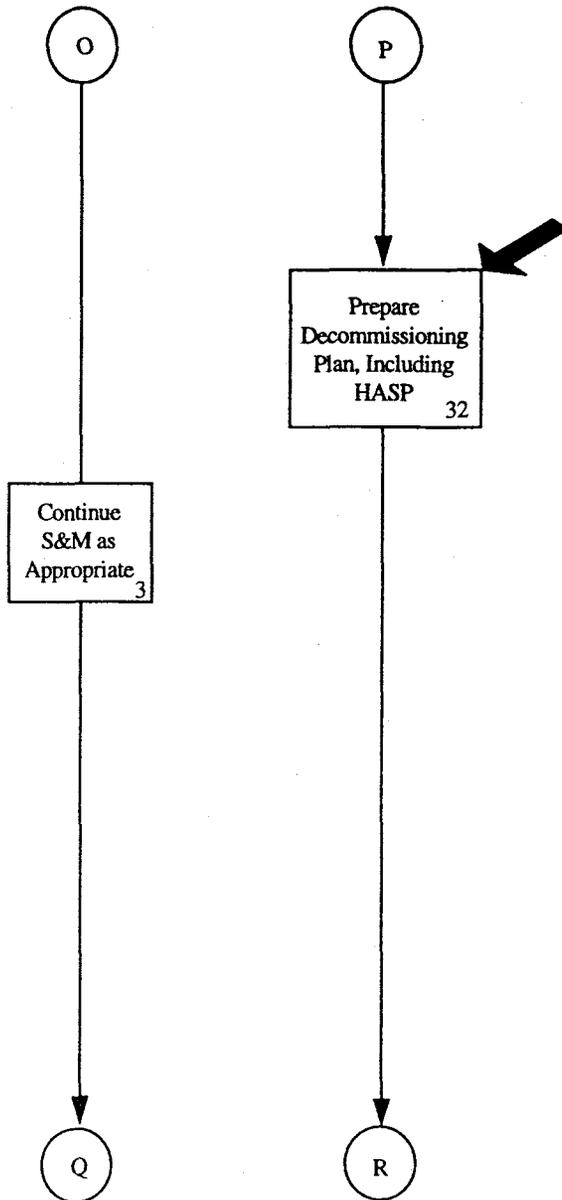


Step 28 involves publication in a major local newspaper of a notice of availability of the Analysis of Removal Alternatives and provides 30 calendar days (45 or more, upon timely request) for submission of written and oral comments on the analysis, in compliance with 300.415(m)(4)(ii) and (iii). The public comments are reviewed in Step 29 and written responses are made to significant public comments pursuant to 300.820(a) in Step 30.

In Step 31, the final decision in the selection of the removal action alternative is documented. The decision takes into account the Analysis of Removal Alternatives, the comments received on the analysis, and, if appropriate, comments received prior to the analysis comment period. The determination in this step must be documented. Appendix G.4 describes applicable portions of the EPA Action Memorandum format which might be used to document the determination. DOE should consult with regulators concerning this decision in a manner consistent with applicable local agreements, NRC-approved decommissioning plans, or RCRA permits or orders.

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In Step 32, engineering and planning work is performed to prepare a decommissioning plan. Consistent with the graded approach, the scope and detail of the decommissioning plan should be commensurate with the scope and complexity of the decommissioning project. Part of the plan will be a HASP for the removal action. The decommissioning plan should incorporate the measures necessary to protect the health and safety of workers and the public and to prevent the spread of contamination during decommissioning operations. The planning work should consider ALARA in the decision-making process and reference studies and other supporting documents used in ALARA analyses. At NPL sites, the work described in the plan must be consistent with long-term remedies at the site.

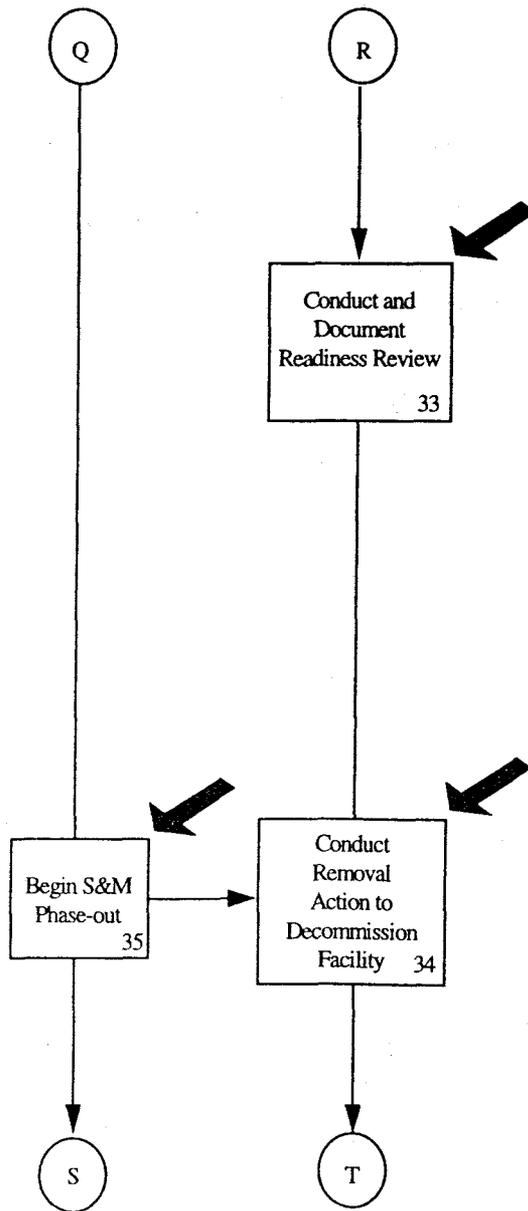
A waste management project plan is also included in the decommissioning plan to manage wastes generated from decommissioning.

The decommissioning plan can be considered to be Title II, Detailed Engineering, for the project. In some respects, the engineering work needed to prepare the Assessment of Removal Alternatives, the hazards analyses, and the risk assessments can be considered Title I Engineering.

When it is completed and approved, the decommissioning plan will replace the project plan, constituting the new technical, cost, and schedule baselines for the project, and will become the technical specifications for performing the work. Formal change control may be appropriate. Additional suggestions on the functions, purposes, and contents of a decommissioning plan may be found in Appendix G.5.

The manner of coordinating action with regulators during this step will be the subject of local agreements, NRC-approved decommissioning plans, or RCRA permits or orders.

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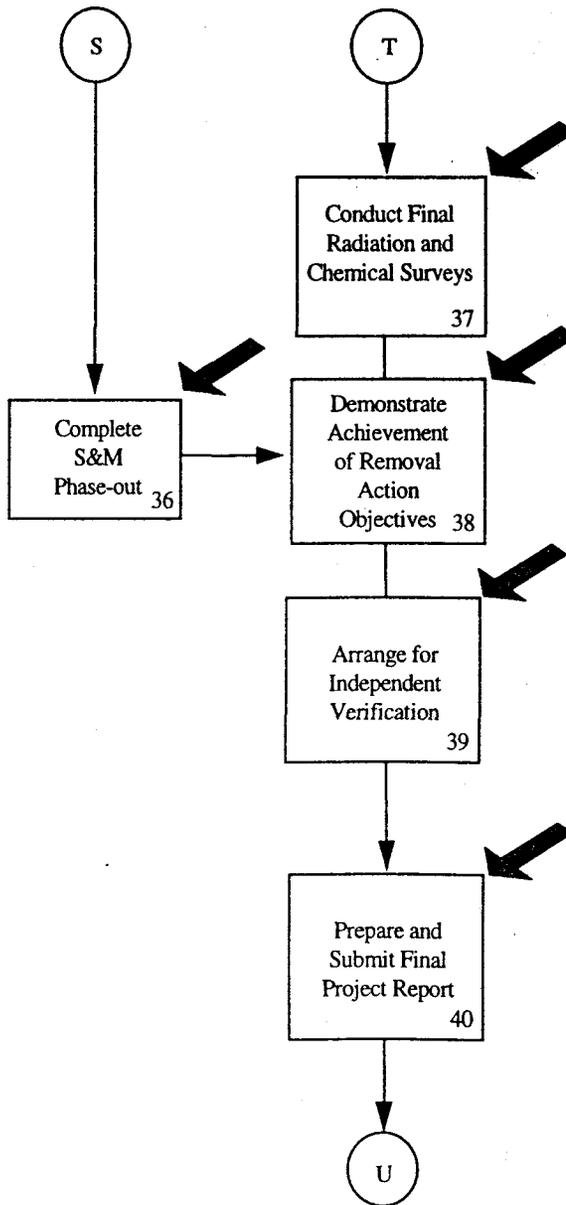
As preparation for Step 33, the organization that will perform the decommissioning will be identified and/or acquired. It may be an independent contractor or an in-house resource (especially for small projects). The performing organization will make preparations for the field work, such as completion of appropriate detailed procedures, manuals and additional plans, and the training of personnel.

When the performing organization is fully prepared, an appropriately graded readiness review will be performed in compliance with DOE Orders 5481.1B and 5480.31 and documented, as shown in Step 33. (Appendix G.6 provides a suggested readiness review checklist.)

Step 34 is the performance of the field work to carry out the decommissioning to achieve the end criteria (decommissioning objectives) stated in the decommissioning plan. During field operations, the S&M activities will be phased out in the manner planned (Steps 35 and 36). During decommissioning operations, provisions of the HASP and the technical specification of the decommissioning plan will be followed to ensure that the field operations protect workers, the public, and the environment, consistent with the graded approach. During decommissioning operations, all wastes generated must be handled in compliance with all applicable regulatory requirements.

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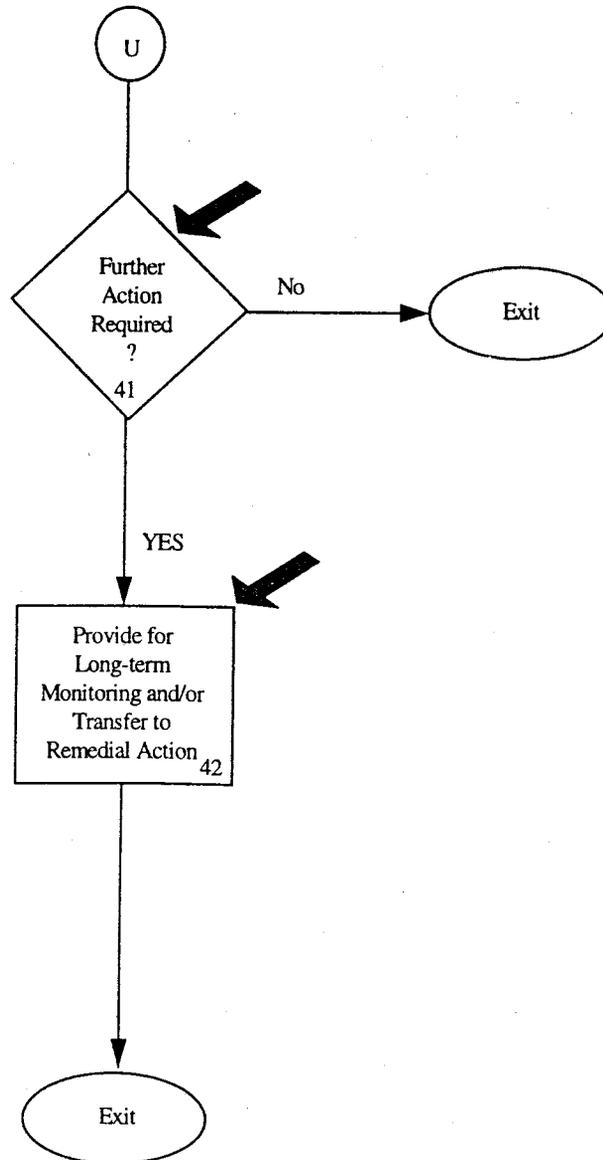


Decommissioning will be completed by conducting final radiation and chemical surveys (Step 37) to demonstrate that the project objectives (which should be consistent with DOE Order 5400.5 and appropriate non-radiological contamination criteria) have been achieved (Step 38). S&M activities will cease with the achievement of decommissioning objectives (Step 36), unless required for long-term remedial action.

Step 39 consists of actions that may be necessary for verification that decommissioning objectives have been met. A qualified Independent Verification Contractor (IVC) may be retained to review records and take additional samples as required to verify that the objectives have been achieved.

Step 40 is the preparation of the final project report. (Chapter 5 provides suggested contents of the final report.)

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Further action will be considered in Step 41. Such additional action may include long-term monitoring, if appropriate; transfer to site remediation action for final cleanup of, adjacent soil or groundwater; or administrative action to declare surplus or transfer property or facilities to another government agency or private enterprise.

Such follow-on activity is depicted in Step 42.

2.2 SUGGESTED PRACTICES FOR DECOMMISSIONING PROJECTS

2.2.1 Project Planning

In defining, organizing, and planning a decommissioning project, program or project managers should consider a number of factors. Aspects of project planning will be found in the various documents specified in this Resource Manual. Some other factors to be considered are discussed below.

Normally, individual decommissioning projects (generally called true subprojects, or sub-subprojects under the field organization Major Systems Acquisition (MSA) structure) will be established at the 6th or 7th level of the DOE formal work breakdown structure (WBS). The scope of the projects should be selected based on a number of relevant factors. Such factors will vary from site to site and may include:

- Physical proximity,
- Continuing operational requirements,
- Land use requirements,
- Logical groupings of facilities and activities,
- Similarities in structures and nature of contamination,
- Realistic forecast of available funding, and
- Relationship and proximity to soil/groundwater remedial action projects.

The DOE Environmental Restoration WBS and a WBS for a typical decommissioning project are provided in Chapter 8.

If the site is licensed by the NRC, it will be necessary to organize the cost estimate, schedule, work plan, and WBS into a decommissioning plan which meets the NRC requirements (refer to 10 CFR 30.36, 40.42, 50.82, 70.38, 72.54 and NRC NUREG documents), rather than in the format specified. Appendix H provides additional information.

2.2.2 Organization of the Decommissioning Plan

It is recommended that the entire technical scope of the project be divided into functional or area groupings and an Activity Specification (AS) be written for each such grouping. An AS also should be prepared for such overall support functions as waste management (separate ones may be appropriate for liquid waste and solid waste) and operations support (if ventilation or other plant or temporary systems will be operated in support of the decommissioning work, in which case the Conduct of Operations concepts of DOE Order 5480.19 should apply). Examples of typical titles of activity specifications are:

- Solid Waste Management,
- Liquid Waste Management,

- Systems Operational Support,
- Site Preparation,
- Asbestos Removal,
- Decontamination of individual facility units, by system, by building, by room, etc., as appropriate,
- Removal of Primary System Components, and
- Dismantlement of Building ABC.

Whenever possible, especially for large projects, Activity Specifications should be prepared in a format and in sufficient detail to permit solicitation of fixed-price or unit price bids for the work to be performed under a construction manager. (Section 2.2.7 explains the intended differences between the AS and detailed procedures to be prepared by the performing contractor.)

2.2.3 Site Release Criteria

The release criteria to be used for the decontamination of equipment, structures, and the environment (i.e., soil, air, groundwater) are to be established in the planning process for a decommissioning project. The criteria must be established early in the project, because these will have a significant effect on the technical approach, schedule, and cost for the project. The radiological criteria to be used will depend on regulatory requirements that may be imposed and on whether the decontaminated facility or site will be released for use with or without radiological restrictions.

For facilities or sites to be released without radiological restrictions, the release criteria should be developed on the basis of the guidelines found in Chapter IV of DOE Order 5400.5, *Radiation Protection of the Public and the Environment*. This order is being codified as 10 CFR Part 834.

The process of establishing release criteria starts with the guideline values for residual radioactive material. Generic guidelines for thorium and radium in soil, airborne radon decay products, external gamma radiation, surface contamination, and residual radionuclides in air and water are specified in the guidelines. Guidelines for radionuclides in soil other than thorium and radium must be derived on a site-specific basis.

To derive site-specific guidelines for soils and remaining structures, a contribution to the basic radiation dose limit of 100 mrem/yr is applied to a member of a critical population group, using the DOE material code RESRAD, and employing a realistic pathway analysis. The radiation dose is defined here as the effective dose equivalent from external radiation plus the committed effective dose equivalent from internal radiation. It should be recognized that this limit applies to all routine DOE activities, not just the decommissioning project. The radiation dose limit is based on radiation protection standards and requirements specified in DOE Order 5400.5.

There may be situations in which residual radioactivity can be reduced to levels below guideline values at reasonable cost. "Authorized limits" are introduced in the DOE guidelines in order to

provide for these situations. Authorized limits are defined as concentrations of radionuclides and levels of radioactivity that must not be exceeded if the remedial action or decontamination effort is to be considered complete and the site is to be released for use without radiological restrictions. Authorized limits are set equal to guideline values unless (1) variations (supplemental limits or exceptions) specified in DOE Order 5400.5 apply, in which case an authorized limit may be set above the corresponding guidelines value for the specific location or condition to which the exception applies; or (2) it can be clearly established that limits below the guideline values are reasonable and that the use of such limits are cost beneficial and comply with appropriate requirements (DOE Order 5400.5).

In addition to requiring that residual radioactivity be below guideline values, DOE also requires, as a matter of policy, that residual radioactivity be reduced to ALARA levels before a site is released, regardless of the guidelines. Socioeconomic considerations, as well as technical feasibility, are taken into account in implementing this policy. The ALARA requirements apply to all DOE actions, as described in Chapter IV of DOE Order 5400.5, including establishment of the "authorized limits."

The ALARA process must be applied throughout the project from planning to operations. Application of the ALARA process in planning occurs in the project-specific application of the guidelines. The ALARA process also is applied during operations to reduce, where reasonably achievable, the contamination to levels below the release criteria.

Guidance for the development of project-specific release criteria is provided in *A Manual for Implementing Residual Radioactive Material Guidelines* (DOE/CH/8901). The manual and copies of the RESRAD computer code may be obtained by contacting the Environmental Assessment Division at the Argonne National Laboratory. For facilities or sites to be released with radiological restrictions, the appropriate release criteria should be developed on a case-by-case basis.

Decommissioning planners also must be aware of coincident non-radioactive contaminants and their possible impacts. When non-radioactive contaminants are present coincident with residual radioactive materials, decontamination or remedial measures should be rational and effective, considering the hazards of both materials, and should comply with other applicable regulations governing such material.

The release criteria for all projects should be clearly set forth in the decommissioning operations plan and approved before the start of decontamination operations. It is suggested that an organization with experience or an Independent Verification Contractor (IVC) be consulted during the establishment of site release criteria to consider verification measures to be employed and the practicability of achieving and verifying the proposed end criteria.

The NRC is in the process of issuing a rule on decommissioning. It is likely the rule will provide for a release dose limit of 15 mrem/year to the targeted population individual (through a pathway

analysis), with ALARA considerations below that limit. Provisions are planned for a restricted release of sites with imposed controls that achieve the 15 mrem/year. However, the dose must not exceed 100 mrem/year if the controls fail. NRC also has plans for a rule on recycling. EPA is working on a cleanup rule (comparable with the NRC decommissioning rule) and one on waste management that will include recycling. The two agencies are coordinating their rulemaking efforts.

Documents available at RAPIC, the Remedial Action Program Information Center in Oak Ridge, can be a source of additional guidance which will include examples of release criteria applied to previous decommissioning projects and sites.

2.2.4 Restoration Guidelines

The objectives of a decommissioning project do not always include the restoration of decontaminated facilities for unrestricted reuse. However, it is desirable to restore the site or facility to as near to unrestricted reuse condition as possible, provided that the restoration is cost-effective, considering the long term (e.g., 100 years, 200 years) as well as the short term. Restoration is particularly desirable in the case of land areas as compared to buildings; however, land use planning and future use studies will specify this on a site-by-site basis. Restoration could include all actions needed to place the facility or site in a safe condition to ensure the basic health and safety of the public or future workers. This condition would not necessarily be the same as for the original use of the facility. The degree of restoration that will be accomplished should be established on a case-by-case basis and should be considered in the early stages of project planning. It should be documented, if practicable, in the decommissioning project plan and in the subsequent decommissioning plan.

The Office of Public Accountability (EM-5) has prepared guidance (in conjunction with the Office of Field Management (FM)) on planning for future use of environmental restoration sites and facilities. The guidance includes topics such as incorporating stakeholder interests, local land use plans, and other factors that will influence the selection of the most appropriate future use for a particular cleanup site or facility. While EM-40 may clean up a facility for future use by the Office of Waste Management (EM-30) or others to store waste materials, for other non-nuclear use within DOE, or for transfer to another agency or the public, it is not the policy of EM-40 to clean up facilities or sites for another radioactive use by various program offices.

2.2.5 Readiness Reviews

Upon completion of the decommissioning operations plan, the acquisition of the performing contractor, and the completion of appropriate preparations by the contractor, an appropriately graded readiness review should be conducted to ensure that all the necessary activities have been completed and documented prior to the start of cleanup operations. The purpose of the review is to minimize the possibility of halting the progress of decommissioning operations due to incomplete planning and preparation and to ensure safety during decommissioning operations.

The readiness review should include an evaluation of compliance with the applicable safety analysis and review requirements of DOE Order 5481.1B, *Safety Analysis and Review System*. The requirements identified below should be integrated with any project-specific requirements of the operations office.

The topics to be covered in the readiness review are suggested in Appendix G.6. A successful review will result in the conclusion that each of the items listed has been completed to the extent required for the start of physical work on the project. Alternatively, the review may conclude that there are a number of specific items yet to be completed, and that, upon their completion, work can be started. Another option is that certain activities are allowed to proceed immediately, while others are put on hold pending completion of certain specified items.

It is possible that a project may have more than one readiness review to cover portions of the project that are separated in time (e.g., acquisition of the performing contractor and the completion of its manuals and training programs, followed by the acquisition of a specialty subcontractor and the completion by it of the detailed procedures applicable to its work.) It also is possible that not all of the items identified in Appendix G.6 need to be complete before work can start. For example, operating procedures for one group of activities may be needed for the start of the work while others may not need to be prepared until later in the course of project activities. It should be the judgement of the review group as to which items need to be complete for a particular stage of readiness for the project. In any case, the decommissioning project plan (and subsequently, the decommissioning plan) should identify the specific approach to readiness reviews that will be followed for the project.

The readiness review should be conducted by the field office. The results and conclusions of the review should be documented by the field office, and include a list of open items that must be completed before and after the start of decommissioning operations, as well as a list of open items that must be completed after the start of decommissioning operations.

In scheduling the project activities, a period of time (approximately one month) should be considered between the readiness review and the start of decommissioning operations. This will allow for the completion of any open items identified in the readiness review and, if appropriate, for review by the HQ Program Manager.

EM-1 memo of August 8, 1994, Subject: *Delegation of Review and Approval Authority for Safety Documentation and for Start up/Restart for Environmental Management Field Activities*, provides in Attachment 2 guidance on applying the graded approach to readiness reviews.

2.2.6 Contracting Approaches

Consideration should be given to the benefits of the decommissioning plan being prepared by an engineering organization different from the decommissioning operations contractor. Work packages (activity specifications) should be prepared in biddable format to the extent feasible and

practical and in sufficient detail, for competitive bidding and award on a basis with maximum degree of fixity (e.g., lump-sum, fixed price preferred; fixed unit prices next in preference).

For large projects, decommissioning operations may be managed by a construction management-type organization which should subcontract as much of the work as possible to specialty firms experienced in the various functional areas. The management contractor should perform directly only those site-wide functions which are most efficiently accomplished in this manner. For medium and small projects, the subcontracting approach is considered feasible and desirable in many cases. This approach is encouraged, as determined by the Operations Office.

In making decisions concerning the contracting approach, managers will need to consider a number of factors. Some of these factors are:

- *Funding availability.* Are sufficient funds available for a meaningful contracting effort or is it prudent to plan the work and/or the flexibility of performance by in-house labor forces?
- *Size of Project.* Larger projects may be more successfully contracted out than smaller projects.
- *Uncertainty of Scope.* If, despite a reasonable level of investigation, uncertainty exists about the scope of certain work (e.g., extent of contamination in cracks, under slabs), unit prices may be more appropriate than a fixed price contract, or performance by in-house labor may be appropriate.
- *Labor Source.* At some DOE sites it may be appropriate to use retrained or otherwise qualified ex-production workers to perform decommissioning work. This will need to be weighed against potential economics of competition bidding and award to contractors with their own labor sources. If Building and Construction Trades labor is to be used, local jurisdictional practices related to demolition need to be considered.
- *Department of Labor (DOL) Determinations.* At the Shippingport Station Decommissioning Project, DOL made the determination that the lower wage rates of the Service Contract Act applied to the decommissioning work, rather than the construction wage rates of the Davis-Bacon Act. This type of decision can have a major effect on the cost of larger projects and may affect the contracting approach.

2.2.7 Detailed Procedures vs. Activity Specifications

It is intended that activity specifications focus on **WHAT** is to be done and **WHO** will do it (what AS) and what management and safety constraints must be imposed. Specifications should constrain organizations as little as possible, leaving the means, methods, and techniques

to the performing organization. That performing organization should prepare detailed procedures that describe **HOW** the work will be performed. It is crucial that all of these activities should be performed under the umbrella of site-wide safety and health and quality assurance programs.

3.0 FACILITY TRANSITION

PREFACE

This chapter presents the perspective of the Office of Environmental Restoration on the process by which facilities are transferred into the Office of Environmental Management (EM). As of this writing, the Office of Environmental Restoration (EM-40) and the Office of Nuclear Material and Facility Stabilization (EM-60) are finalizing the details of the transition process.

The final transition process will be established in a forthcoming policy document issued jointly by both organizations. Therefore, the reader is cautioned that changes may be made and it is recommended that current transition requirements be confirmed with EM-40 and EM-60 points of contact.

3.1 BACKGROUND

As surplus facilities are transferred to the Office of Environmental Management (EM), close coordination between the Office of Environmental Restoration (EM-40) and the Office of Nuclear Material and Facility Stabilization (EM-60) is essential. To achieve a seamless facility transition process, a joint EM-40/EM-60 Transition Working Group has been established at HQ as a permanent body to formulate transition policy and address topical transition issues. Transition policy rests on three guiding principles:

- Teamwork -- within and between EM-40 and EM-60 and within and between field and HQ staff and managers.
- Effective communication.
- Appropriate mechanisms to promote prompt issue identification and resolution and provide mutually acceptable results.

EM may accept for transition surplus, process-contaminated facilities and ancillary facilities that directly support that primary facility. Program managers from both EM-40 and EM-60 are expected to work together to develop the details of facility transitions. Transition details include date of transfer, facility condition, resource requirements, and budget formulation. Appendix F.1, Suggested Topics of Review, discusses transition details that EM-40 program manager may need to address when planning transitions with EM-60. Program managers in both organizations are expected to resolve transition issues to the extent possible. Program managers are

encouraged to document issue resolution within existing documents rather than generating special memoranda or other new documents. In rare instance, program managers may be unable to resolve an issue. They should refer such issues to their respective managers.

Appendix F.2 contains the following reference material developed by the Transition Working Group to present the transition process:

- Office of Environmental Management *Surplus Facility Transition Policy*. The Policy defines terms pertaining to transition and establishes the framework for accomplishing facility transitions including the facility transition process.
- Draft Office of Environmental Management *Surplus Facility Transition Memorandum*. The Transition Memorandum will be issued twice a year to identify transitions from Cognizant Secretarial Offices (CSOs) to EM, from EM-60 to EM-40, and completed transitions.

A *Deactivation End-Point Determination Process Handbook* is being developed by EM-60 with input from EM-40 to describe the process by which deactivation end points are identified and certified when complete. Additional documents will be developed that further qualify the transition process as necessary and appropriate.

3.2 ORGANIZATIONS

The following organizations are involved with facility transitions:

- The Office of Environmental Restoration (EM-40) is responsible for the decommissioning (including S&M activities) of surplus facilities and remedial action at contaminated properties. In some instances, EM-40 assumes landlord responsibilities at sites that are predominantly funded by EM-40.
- The Office of Nuclear Material and Facility Stabilization (EM-60) was created in 1992 to accept surplus contaminated facilities for the Office of Environmental Management and preside over the transition of these facilities from an operational status through deactivation. EM-60 is also responsible for the stabilization of nuclear materials no longer needed by DOE. EM-40 deactivates facilities placed in the EM-40 program prior to the creation of EM-60.
- The Office of Field Management is responsible for determining whether surplus DOE facilities can be reused within the DOE complex or be dispositioned by the General Services Administration.

- The General Services Administration is responsible for dispositioning surplus DOE facilities that do not require action from EM.

3.3 DEFINITIONS

The following terminology, also found in Appendix Q, has been developed to help describe the transition process:

Deactivation

The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public, and the environment until decommissioning is complete. Actions include the removal of fuel, draining and/or de-energizing of nonessential systems, removal of stored radioactive and hazardous materials and related actions. As the bridge between operations and decommissioning, based upon facility-specific considerations and final disposition plans, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition.

Decommissioning

Takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken at the end of the life of the facility to retire it from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted release or restricted use of the site.

Decontamination

The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition.

Dismantlement

The disassembly or demolition and removal of any structure, system, or component during decommissioning and satisfactory interim or long-term disposal of the residue from all or portions of the facility.

Facilities

Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Surveillance and Maintenance (S&M)

A program established during deactivation and continuing until phased out during decommissioning to provide in a cost effective manner for satisfactory containment of contamination; physical safety and security controls; and maintenance of the facility in a manner that is protective of workers, the public, and the environment.

3.4 FACILITY TRANSITION PROCESS

Figure 3-1 presents the draft EM Surplus Facility Transition Process.

3.4.1 Transferring Surplus Facilities to EM

DOE Order 4330.5, Surplus Facility Transfer, defines the conditions under which facilities may be transferred to EM. The Order is presented in Appendix F.3.

Cognizant Secretarial Officers (CSOs) identify facilities surplus to their needs to the Office of Field Management (FM). FM determines whether the facilities can be reused within the DOE complex. If so, the new DOE owner(s) takes responsibility for the facilities. If the surplus facilities cannot be reused within the DOE complex, FM determines if the facilities qualify for disposition through the General Services Administration (GSA) in a manner consistent with DOE Order 4300.1C, Real Property Management. GSA handles the disposition of such facilities.

Surplus facilities that cannot be reused within the DOE complex or dispositioned through GSA may be transferred to EM by executing a Facilities Transfer Agreement between the CSO and EM-1 in accordance with the Surplus Facility Transfer Order. FM will convene a board of arbitration to resolve any outstanding issues between the CSO and EM. EM-60 will have the lead in developing EM's position in a proposed transfer.

EM-40 program managers should participate in the process of developing the Facilities Transfer Agreement to make sure such aspects as compliance status and manpower planning are consistent with the EM-40 decommissioning program. Facilities expected to be transferred to EM should be identified in the Transition Memo.

Figure 3-1 - Draft EM Transition Process for Facilities Believed to be Suitable for Eventual Decommissioning

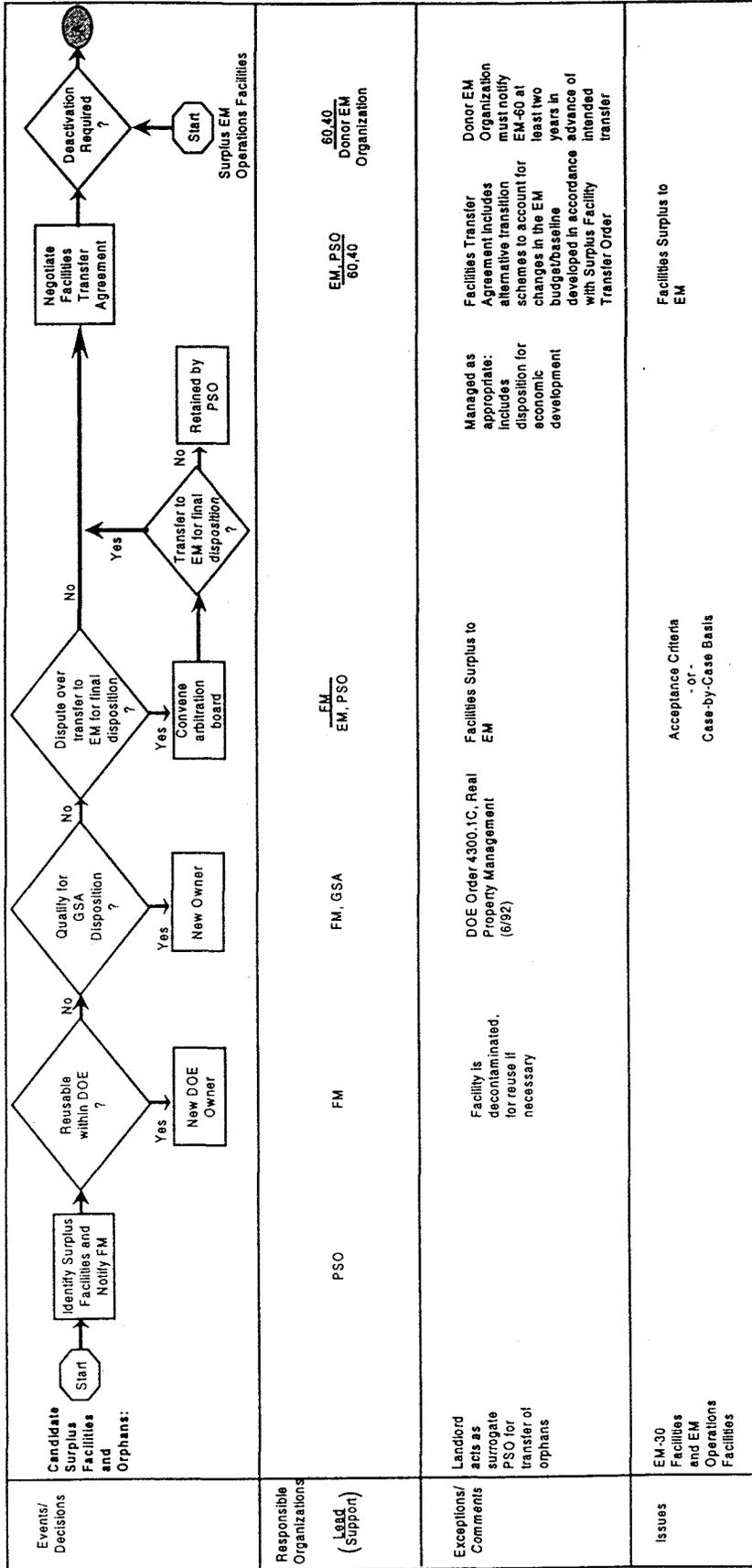
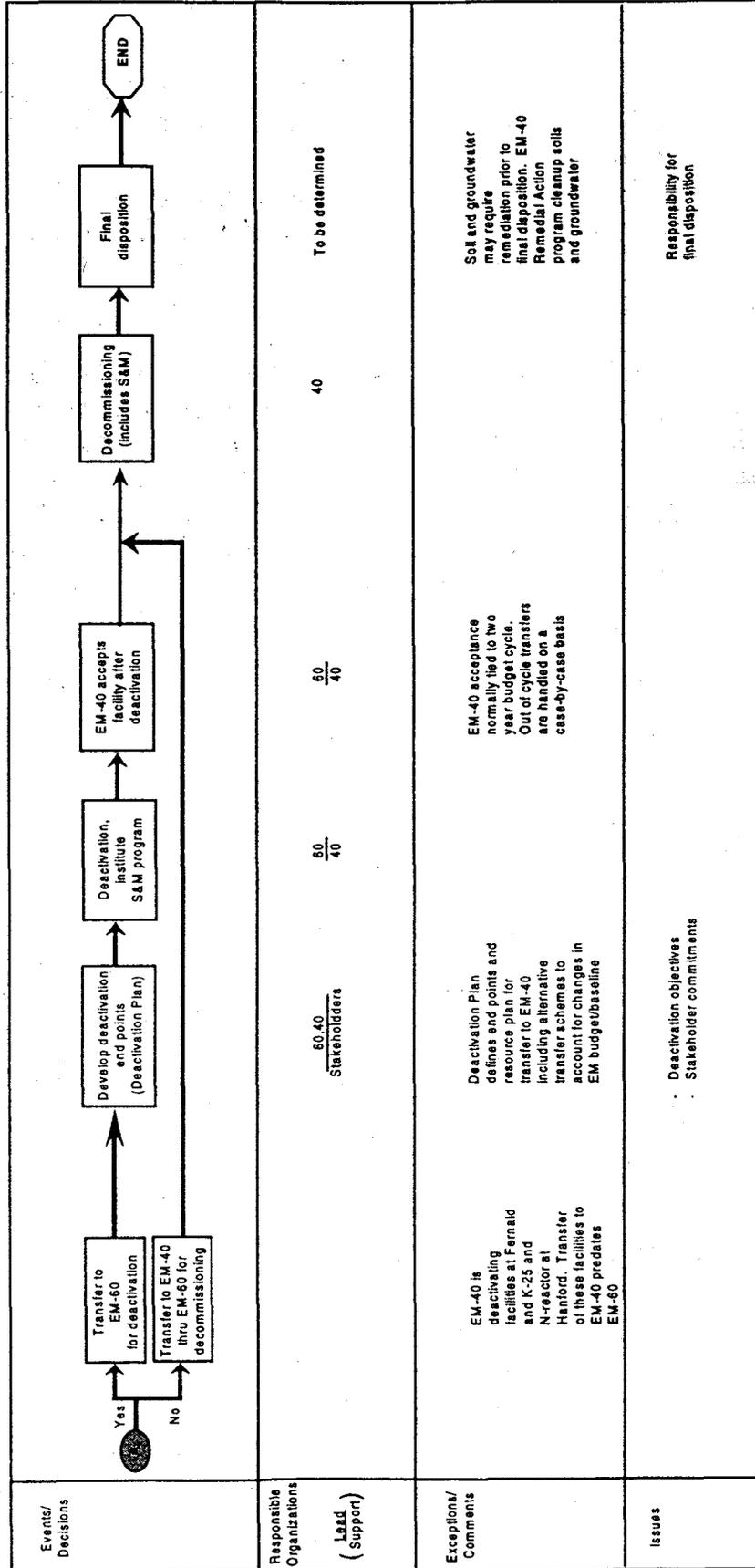


Figure 3-1 - Draft EM Transition Process for Facilities Believed to be Suitable for Eventual Decommissioning (continued)



Events/ Decisions	60/40 Stakeholders	60/40	40	To be determined
Responsible Organizations Lead (Support)	60/40 Stakeholders	60/40	40	To be determined
Exceptions/ Comments	EM-40 is deactivating facilities at Fernald and K-25 and N-reactor at Hanford. Transfer of these facilities to EM-40 predates EM-60	Deactivation Plan defines end points and resource plan for transfer to EM-40 including alternative transfer schemes to account for changes in EM budget/baseline	EM-40 acceptance normally tied to two year budget cycle. Out of cycle transfers are handled on a case-by-case basis	Soil and groundwater may require remediation prior to final disposition. EM-40 Remedial Action program cleanup soils and groundwater
Issues	Deactivation objectives Stakeholder commitments			Responsibility for final disposition

Facilities surplus to EM's needs (primarily those belonging to the Office of Waste Management and the Office of Technology Development) are not screened by FM.

Note: DOE is currently developing a Corporate Facilities Management Order that may supersede the Surplus Facility Transfer Order and the Real Property Management Order.

3.4.2 Planning the Deactivation of Surplus Facilities

The objective of deactivation is to protect the health and safety of workers, the public, and the environment at the lowest possible annual surveillance and maintenance cost (that is, the "mortgage") of the facilities. EM-60 works with EM-40 in developing deactivation end points to reach this objective. The process by which deactivation end points are determined will be detailed in the forthcoming *Deactivation End Point Determination Process Handbook*. The deactivation end points and projected date of transfer are documented in the deactivation plan. In assisting EM-60 in the development of deactivation end points, EM-40 program managers should pay particular attention to the following conditions:

- Presence of spent fuel, special nuclear material, stored wastes and hazardous materials.
- Compliance status.
- Status of utility systems required for S&M and decommissioning.
- Access control, security systems and procedures.
- Structural, chemical, and radiological conditions.
- Manpower and financial resources for, and the nature of the S&M Program necessary to maintain the health and safety of worker, the public, and the environment following deactivation.

Facilities that may already be in a condition acceptable to EM-40 may be transferred immediately to EM-40 (via EM-60) if EM-40, EM-60, and the donor organization are all in agreement. EM-40 and EM-60 program managers should work together to identify such facilities so that EM-40 can allocate the necessary resources at the time they are needed.

3.4.3 Transfer of Deactivated Facilities from EM-60 to EM-40

Deactivated facilities can be transferred to EM-40 when deactivation is successfully completed (this includes the establishment of a S&M Program). The manner in which completion of

deactivation is agreed upon will be presented in the forthcoming *Deactivation End Point Determination Process Handbook*.

EM-40 program managers are responsible for developing budgets for new facilities and certifying the successful completion of deactivation. The proposed date for transferring facilities from EM-60 to EM-40 should closely follow the completion of deactivation. Facilities expected to be transferred to EM-40 should be identified in the EM Transition Memorandum at least two years prior to the expected date of transfer. This notification, which coincides with the budget process, is necessary for EM-40 to budget for the resources necessary for S&M.

3.4.4 Decommissioning

EM-40 conducts S&M until decommissioning is complete. Responsibility for the final disposition of any remaining structures and/or residual property is under discussion by the Transition Working Group and will be spelled out when the transition process is finalized.

3.5 SUMMARY

Table 3-1 breaks down transition responsibilities.

**Table 3-1
Transition Responsibilities**

RESPONSIBILITY	FM	EM-40	EM-60
Screen Surplus Facilities for Reuse	X ¹		
Transition Planning/Acceptance		X ²	X ¹
Verification of Existing Contamination and/or Physical Condition of the Facilities			X ¹
Manage the Inventory of Facilities Projected for Transfer to and Already in EM			X ¹
Determine Deactivation End States		X ²	X ¹
Perform Deactivation			X ¹
Establish Cost Effective S&M Program		X ²	X ¹
Develop and Maintain an EM-40 Inventory of Sites and Facilities		X ¹	
Facility Decommissioning		X ¹	
Final Disposition		TBD	TBD

X¹ Primary Responsibility

X² Coordinate with EM-60

4.0 SURVEILLANCE AND MAINTENANCE

4.1 INTRODUCTION

The Surveillance and Maintenance (S&M) requirements for DOE radioactively contaminated reactor, manufacturing, process, laboratory, and support facilities are driven initially by their operational life cycle and corresponding safety basis. As the facility is shut down and deactivated, the risks will change (and presumably diminish) until a stable S&M situation is achieved. The reader is referred to Chapter 7 for a discussion of the safety analysis documentation which should be applied during S&M, according to the hazard categorization of the facility. The graded approach should be applied so that such documentation and actions during S&M are commensurate with the specific conditions of the facility, the actual hazards present and the other factors discussed in Chapter 1, Section 1.4.5.2.

In addition to developing risk-based S&M plans, EM must safely maintain the facility while minimizing the cost during the entire facility transition period, including the ultimate disposition (alternate use or decommissioning and dismantlement). The shutdown and deactivation activities necessary during the transition period should support the goal to place and maintain the facility in a safe, environmentally secure, and as low as economically achievable (ALEA) state while the facility awaits decommissioning. The purposes of the S&M function for contaminated surplus facilities awaiting decommissioning are to:

- Ensure adequate containment of contamination;
- Provide physical safety and security controls;
- Maintain the facilities in a manner which will minimize potential hazards to the public and workers;
- Maintain selected systems or equipment which will be essential for decommissioning activities in a shutdown but standby or operational mode, if economically justified; and
- Provide a mechanism for the identification and compliance with applicable environmental, safety and health, safeguard, and security requirements.

4.2 RESPONSIBILITIES

As discussed in Chapter 3, the Office of Nuclear Material and Facility Stabilization (EM-60) is normally responsible for deactivating surplus, contaminated facilities. EM-60 will establish a S&M program as part of deactivation. EM-40 program managers are responsible for working with EM-60 to make sure the S&M program is consistent with the criteria discussed in Section

4.3 of this chapter. EM-40 program managers are also responsible for budgeting for S&M in the year deactivated facilities are transferred to EM-40.

Some facilities have already been accepted by EM-40 and may already be in various stages of deactivation or decommissioning. Additionally, some facilities may be transferred directly from the donor office to EM-40 if all affected parties, including EM-60, are in agreement. EM-40 program managers are responsible for the planning and performing of safe shutdown, deactivation, and S&M for these facilities.

4.3 SURVEILLANCE AND MAINTENANCE PLAN

The S&M program is described in an S&M plan covering each facility, or groups of like facilities, accepted into the environmental restoration program, through initiation of project decommissioning. S&M will be conducted before decommissioning field work begins and phased out as decommissioning concludes. Some minor decontamination and equipment removal might be carried out during S&M under the auspices of a NEPA categorical exclusion (CX).

Because of the various types of facilities to be transferred for decommissioning, ranging from uncontaminated ancillary structures to complex reactor and plutonium processing facilities, it is not possible to recommend a specific organization and level of detail expected in a given S&M plan. The Operations Office should organize the S&M plan(s), in the most convenient manner. Potential organizational schemes include facilities grouped by site and geographic location, by assigned contractor, by designated project, or individually.

The S&M plan should address (1) Facility Operations, (2) Facility Maintenance, (3) Quality Assurance, (4) Radiological Controls, (5) Hazardous Material Protection, (6) Health and Safety/Emergency Preparedness, (7) Safeguards and Security, and (8) Cost and Schedule, either by inclusion as a specific section or by reference to an existing procedure or plan. These elements are described in the following sections.

4.3.1 Facility Operations

Because the S&M program for a facility awaiting decommissioning can last for several years, it is likely that the operations and maintenance staff conducting the S&M will change. This expected attrition requires diligence in complying with many of the elements of facility operations required during the operational phase, such as selection, training and qualification of facility personnel; operating/maintenance procedures; and configuration management. The Conduct of Operations (CONOPS) requirements, DOE Order 5480.19, *Conduct of Operations Requirements For DOE Facilities*, apply to S&M activities. However, the degree to which each of the 18 elements specified in CONOPS is applied is determined by the risks involved in the particular operation, or following the Graded Approach. Accordingly, each of the 18 elements of DOE Order 5480.19 should be reviewed to establish the degree of applicability to S&M and

decommissioning operations. The results of this review should be developed by the Operations Office and documented in the S&M plan through the use of an applicability matrix. A typical matrix may consist of, but should not be limited to, the elements from CONOPS identified in Table 4-1.

The routine inspection of the facility and the monitoring of operating systems and instrumentation (elements of "Surveillance") should be included in this section of the S&M plan. Frequencies should be included in Section 8, Cost and Schedule.

4.3.2 Facility Maintenance

Sufficient information should be provided to demonstrate a commitment to comply with the requirements of DOE Order 4330.4A, *Maintenance Management Program*. For DOE nuclear facilities, this order requires the preparation of a Maintenance Implementation Plan (MIP) to address the 17 maintenance elements identified in the order.

These elements are enumerated below:

1. Maintenance, Organization and Administration
2. Training and Qualification of Maintenance Personnel
3. Maintenance Facilities, Equipment, and Tools
4. Types of Maintenance
5. Maintenance Procedures
6. Planning, Scheduling, and Coordination of Maintenance
7. Control of Maintenance Activities
8. Post-Maintenance Testing
9. Procurement of Parts, Materials, and Services
10. Material Receipt, Inspection, Handling, Storage, Retrieval, and Issuance
11. Control and Calibration of Measuring and Test Equipment
12. Maintenance Tools and Equipment Control
13. Facility Condition Inspection
14. Management Involvement
15. Maintenance History
16. Analysis of Maintenance Problems
17. Modification Work

**Table 4-1
CONOPS Elements and Sample Matrix**

Number	CONOPS Element	Sample Matrix
1	Operations Organization and Administration	X
2	Shift Routines and Operating Practices	X
3	Controlled Area Activities	X
4	Communications Within the Facility	X
5	Control of On-Shift Training	X
6	Investigation of Abnormal Events	X
7	Notifications and Reporting Practices	X
8	Control of Equipment and System Status	X
9	Lockouts and Tagouts	where applicable
10	Independent Verification Practices	X
11	Logkeeping	where applicable
12	Operations Turnover Practices	X
13	Operations Aspects of Facility Chemistry and Unique Processes	
14	Required Reading	
15	Timely Orders to Operators	
16	Control of Operations Procedures	X
17	Operator Aid Postings	
18	Equipment and Piping Labeling	

A graded approach should be used to determine the depth of detail required and the magnitude of the resources to be expended for each of the 17 maintenance program elements. The S&M plan should include an analysis of the applicability of each of the 17 elements and, as a minimum, include the following:

- A general description of the maintenance philosophy, objectives, and organization;
- The assignment of responsibilities for specific maintenance functions within the maintenance organization;
- The structures, systems, components, and equipment included in the maintenance program;
- Surveillance, preventive maintenance, and calibration frequencies/schedules for the above;
- The management systems used to control maintenance activities; and
- A description of the interfaces between maintenance and the other facility organizations (e.g., operations, engineering, health physics, industrial safety, and quality assurance).

4.3.3 Quality Assurance

The S&M plan should contain sufficient information, as determined by using a graded approach, to demonstrate an appropriate commitment to a quality assurance program as required by DOE Order 5700.6C, *Quality Assurance*. As appropriate, this section should include descriptions of the processes used at the facility for:

- Design control;
- Procurement control;
- Instructions, procedures, and drawings;
- Document control;
- Control of processes;
- Inspection, surveillance, and testing control;

- Control of measuring and test equipment;
- Receiving, storage, and shipping control;
- Control of nonconforming materials, components, and fabrication/construction features;
- Corrective actions for identified conditions adverse to quality;
- Control of personnel training and qualification;
- Quality improvement;
- Quality assurance documents and records; and
- Independent quality audits.

4.3.4 Radiological Controls

Requirements are specified in 10 *CFR* 835, *Occupational Radiation Protection*. At a minimum, the following topics should be addressed in the S&M plan discussion:

- The as low as reasonably achievable (ALARA) policy and program;
- External radiation exposure control;
- External dosimetry;
- Internal radiation exposure control;
- Internal dosimetry;
- Radiological protection instrumentation programs (both calibration and use);
- Respiratory protection program;
- Air monitoring;
- Radiological monitoring and contamination control;
- Radiological protection recordkeeping;
- Radiological area boundaries, posting, and controls;
- Radiological protection training; and
- Entry and exit control program.

4.3.5 Hazardous Material Protection

The S&M plan should contain sufficient information to demonstrate compliance with applicable requirements and ALARA considerations for control of personnel exposures to hazardous materials. The hazardous materials are those in quantities that can adversely impact the health and safety of the public or that pose a reasonable risk to workers. This discussion should be correlated with the requirements of Chapter 7 and include the following topics:

- The policy or program for keeping exposures to hazardous chemicals or other materials ALARA as detailed in DOE Publication PNL 6577, *Manual of Good Practices for Reducing Radiation Exposure to Levels that are As Low As Reasonably Achievable*;
- Bioassay or medical monitoring programs;
- Air monitoring;
- Workplace monitoring;
- Recordkeeping on hazardous material exposures;
- Instrumentation (maintenance and calibration for safety setpoints and alarms);
- Instrument calibration;
- Hazard communication programs; and
- Hazard evaluation and elimination programs.

4.3.6 Health and Safety/Emergency Preparedness

This S&M plan section should contain sufficient information to demonstrate appropriate commitment to the emergency planning requirements of the DOE Order 5500 directive series and Chapter 7 of this document, as appropriate. The philosophy, objectives, and organization of the emergency preparedness functions should be described for a spectrum of emergencies covering a range from local area emergencies to those that could affect persons off-site, as appropriate. The discussion should include activation of emergency organizations, assessment actions, notification processes, emergency facilities and equipment, training and exercises, and recovery actions.

4.3.7 Safeguards and Security

This section of the S&M plan should show compliance with DOE Order 5632.2A, *Physical Protection of Special Nuclear Material and Vital Equipment*, and DOE Order 5480.5, *Safety of Nuclear Facilities*. It should also:

- Describe the requirements and procedures for controlling access to the facility;
- Provide an evaluation of the adequacy of existing physical controls (e.g., fencing, signage, entrance points into exclusion areas, door locks, and other barriers);
- Provide a plan for the placement and monitoring of intrusion alarms; and

- Describe the duties and scheduling of security patrols, as applicable.

4.3.8 Cost and Schedule

The S&M plan should provide a work breakdown structure and project-correlated schedule of S&M activities, and planned and expected capital expenditures. The plan should summarize S&M costs applicable to each facility and indicate milestones for all significant events.

4.4 REPORTING REQUIREMENTS

The progress and results of the S&M program should be reported by the Operations Office as part of the monthly reports and the mid-year and year-end reviews, as described in Chapter 8. In addition, an annual S&M report may be required at the discretion of the Operations Officer or HQ Program Manager.

5.0 CLOSEOUT, VERIFICATION AND RELEASE PROCESS

5.1 INTRODUCTION

In order to release a decommissioned facility or site for use with or without radiological restrictions, it is necessary to verify, and in some cases certify, that the decontamination has been completed in accordance with DOE-approved criteria established for the project. In addition, several documents should be prepared including the final project report, the record of completion, certification docket, and the project data package as required by DOE Orders 5820.2A and 4300.1C to ensure that resulting radiological and chemical conditions at the facility or site comply with established criteria, standards, or guidelines and that the public and environment are protected. This chapter describes the verification and certification process and the content of the documents needed to transfer a facility from the Office of Environmental Management back to the original landlord, other government agencies, or the public following decommissioning. A program for the long-term surveillance and maintenance (LTSM) of sites with on-site waste disposal is also described.

Although the field activities involving verification and certification usually occur once the decontamination operations are completed, it is recommended that planning and document reviews supporting these activities begin early in the project so that deficiencies can be noted and corrected early rather than at the end of a project. In some cases, the Independent Verification Contractor (IVC) can conduct surveys during decommissioning operations, such as when a project encompasses many rooms in the same building. The IVC can survey rooms that are completed while decommissioning activities are occurring elsewhere in the building. The activities of verification and recommendation for certification are performed by the IVC.

5.2 RESPONSIBILITIES

A memorandum from the Deputy Assistant Secretary for Environmental Restoration (EM-40), dated May 12, 1992, Subject: *Independent Verification for Environmental Restoration Activities*, requires independent or third party verifications of the effectiveness of decommissioning. The following paragraphs outline the associated responsibilities of the DOE field offices, IVC and Headquarters (HQ) during the verification and certification process.

The DOE field offices responsible for decommissioning projects are required to perform the following operations, which include all appropriate documentation as assigned under DOE Order 5820.2A and certification requirements under DOE Order 4300.1C:

- Incorporating verification and certification activities into the project plans and operations,
- Performing the decommissioning work,

- Preparing the final project report,
- Preparing the record of completion,
- Preparing the project data package, and
- Preparing the certification docket for remote sites.

The IVC is responsible for reviewing project documentation to verify compliance with established criteria, standards, or guidelines. These activities include:

- Reviewing the final project reports,
- Reviewing project data package,
- Reviewing record of completion,
- Reviewing the certification docket,
- Performing split sample analyses and spot checks at the facilities both during decommissioning operations and at the conclusion of decommissioning, and
- Preparing final recommendation for HQ approval for release.

The HQ Program Office is responsible for the final determination that certification is complete and that the site may be released. Unless delegated to the field, these activities include:

- Assigning an IVC for the project,
- Reviewing the IVC's activities (in some cases these activities have been delegated to the operation offices),
- Reviewing and approving the final project report,
- Reviewing and approving the record of completion, and
- Reviewing and approving the certification docket for remote sites.

5.3 VERIFICATION AND CERTIFICATION

The ultimate goal of any decommissioning action is to ensure that resulting radiological and chemical conditions at the facility or site comply with established criteria, standards, or guidelines and that the public and environment are thereby protected. To ensure that this goal is met, a process of verification should be performed for all decommissioning projects.

The purpose of verification is to validate the accuracy and completeness of the project's stated end condition and field measurements, and attest to the credibility of the procedures followed during the cleanup and certification operations. A number of factors, including type of cleanup, complexity of the operation and various site-specific issues should be taken into consideration in determining the scope and intensity of the verification activity for a specific project. A detailed description of the verification and certification process can be found in Appendix I, Verification and Certification Protocol.

Verification should be performed by an IVC. Currently, four IVCs are being used for environmental restoration projects:

- Oak Ridge Institute for Science & Education (ORISE),
- Oak Ridge National Laboratory (ORNL),
- ORNL-Grand Junction, and
- Environmental Measurements Technical Center (EMTC) - Grand Junction.

The DOE organizational units responsible for independent verification are not limited to these IVCs, but, any new IVC should be evaluated in order to demonstrate its capability to successfully perform the necessary verification activities. The IVC should demonstrate its capability to successfully perform the necessary activities associated with establishing and implementing a verification protocol that addresses sampling and analysis, evaluation and documentation for verification of radiological and, to a limited extent, chemical contamination.

The purpose of the certification process is to ensure that the resulting radiological, hazardous and toxic contamination conditions at the decommissioned facility comply with established criteria, standards, and guidelines and that the public and environment are protected. The certification process includes collecting and documenting sufficient data to establish the final condition of the site following decommissioning, and archiving this documentation for permanent retention as a public record. The process is documented by completing a certification docket prepared by the field office and reviewed and approved by DOE HQ or by delegation to the field office.

The requirements and activities associated with the verification and certification and the content of the certification docket are described in the "Verification and Certification Protocol for the Office of Environmental Restoration Formerly Utilized Sites Remedial Action Program (FUSRAP) and Decontamination and Decommissioning Program," reproduced in Appendix I. To ensure that the public and environment are protected, it is essential that project planning incorporate the appropriate verification and certification activities, and that those activities are integrated into field decommissioning operations.

The above requirements could be modified by the fact that individual decommissioning projects, performed as CERCLA removal actions, may not be the final cleanup at a particular site or location. In these instances, independent verification and certification may not be required until cleanup action is complete.

5.4 FINAL PROJECT REPORT

Following completion of the planned decommissioning work, a Final Project Report should be prepared, which provides an overview of the project activities, accomplishments, and final facility status. At a minimum, the Final Project Report should include the information listed in Table 5-1.

The Final Project Report should be prepared by the field office and, if appropriate, reviewed and approved by the HQ Program Manager. The Final Project Report should be made available through the Office of Scientific and Technical Information, in accordance with DOE Order 1430.2A, *Scientific and Technical Information Program*. All field office reports should be designated for distribution category UC-511, including the Remedial Action Program Information Center (RAPIC), and appropriate DOE officials.

5.5 RECORD OF COMPLETION

Upon completion of the project, a formal record of completion should be assembled. At a minimum, the record of completion should include photographs of actual characterization and decommissioning work, a final radiation survey, a final hazardous chemical survey, if applicable, the Final Project Report, records of the completed action, independent verification survey, and any other pertinent site release information. For remote sites, the certification docket and appropriate public notices should be included.

In some cases, the completed decommissioning action simply requires a transfer of landlordship from one DOE organization to another. If a site is not located on a federal reservation, the formality required for site surveys and certification may be much greater than if the site is on a reservation. All properties or facilities being transferred to industry or the public should be treated in the same fashion as a site located off a DOE reservation or facility and should have all formal site surveys, independent verification and certification reports reviewed and approved by DOE HQ prior to their release and transfer. In some cases, the site may contain residual radioactivity in some stage of entombment or protective storage. In these cases the record of completion should contain the appropriate information documenting compliance with all aspects of DOE Order 5400.5, *Chapter IV - Residual Radioactive Material*. If any remedial action work is to follow facility decommissioning, the certification of the decommissioning work should be combined with the certification of the remedial action work and incorporated into the final record of completion for the facility. The final condition of a facility or site should be officially recorded with the local land records or deeds office (i.e., Administrative Record and Document Control). Final decision for record retention and final disposition is the responsibility of the respective field office.

If continued surveillance, radiological or institutional control is necessary, the field office should ensure that the level of control that will be provided is adequate to protect the environment and the health and safety of workers and the public.

Table 5-1
Suggested Contents of a Final Project Report

Background including facility history and project purpose
Facility description including buildings and systems and pre-decommissioning status (facility condition including radiological and toxicological contamination)
Decommissioning and remedial action objectives including work scope (e.g., technical approach)
<p>Work performed (accomplishments) including:</p> <ul style="list-style-type: none"> • Project management, • Project engineering, • Site characterization, • Alternatives assessment, • Site preparation, • Decommissioning operations, • Waste disposal, • Post-decommissioning radiological survey, and • Post-decommissioning hazardous chemical condition
Costs and schedules
Waste volumes generated
Occupational exposure to personnel
Final facility or site condition
Lessons learned, conclusions, and recommendations
References
Acronyms and abbreviations listing

5.6 PROJECT DATA PACKAGE

The project data package provides a complete documented history of each project. A list of all pertinent documentation should be prepared in the early planning stages and updated and maintained throughout the project. This supports the preparation of the Final Project Report and serves to organize the archiving of valuable project information. The field office determines the level of detail to be retained for a specific project. The suggested list of information to be included in the project data package can be found in Table 5-2.

Under DOE Order 5820.2A, the minimum requirements for the project data package are the record of completion, the final radiological and hazardous chemical survey report, the Final Project Report, an independent verification survey report, the certification docket, and appropriate public notices. Upon completion, the full project data package should be retained permanently in the field office archives.

**Table 5-2
Suggested Requirements for Project Data Package**

Project title and identification	Cost and schedule status reports
Project authorization	IVC reports
Physical and radiological characterization reports	Release restrictions
Project management plan, as applicable	Sampling and analysis plan
Environmental compliance documentation	Safety analysis report
Decommissioning project plan	Supporting engineering documents
Design reviews	Health and safety plans
Safety evaluations	Final project report
Waste management data	Record of completion
Detailed work procedures	Certification docket (remote sites)
Readiness reviews	Decision analysis report
Radiological survey reports	Hazard class determination
Chemical survey reports	Unresolved safety questions
Property disposition records	Auditable Safety Analysis
Release criteria	Quality inspection reports
Special problems and solutions	Audits
Incident/Unusual occurrence reports	

6.0 ENVIRONMENTAL COMPLIANCE

6.1 INTRODUCTION

The decommissioning process may trigger a wide range of environmental compliance requirements. In particular, decommissioning activities are subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority and requirements if the activity is in response to a release or threatened release of a hazardous substance. In accordance with the *Policy on Decommissioning Department of Energy Facilities Under CERCLA*, May 22, 1995 (provided as Appendix B), activities in response to a release or threatened release of a hazardous substance will be conducted as non-time critical removal actions under most circumstances.

This policy, however, does not require DOE Operations Offices to determine that a release or threatened release of a hazardous substance has occurred before proceeding with decommissioning activity. Rather, the policy states that:

"The decision to conduct decommissioning may be based on any change in the facility's condition that may trigger a need to respond to protect health or the environment, or any other factor that leads DOE to determine that decommissioning of the facility is appropriate."

When a decommissioning action is not in response to a release or threatened release that triggers CERCLA response authority, but instead is triggered by requirements under the Resource Conservation and Recovery Act (RCRA), the Atomic Energy Act (AEA), or by a programmatic determination by DOE to proceed with decommissioning, these authorities and DOE orders define the environmental requirements to be achieved. State and local environmental requirements also must be identified and attained.

Regardless of the statute or authority that drives a specific decommissioning activity, the framework outlined in Chapter 2 outlines the process by which DOE will conduct decommissioning actions. Each statutory driver may raise specific environmental compliance issues, however, which must be addressed within this uniform process. This chapter provides an overview of the environmental compliance issues that arise when a decommissioning action is conducted as a non-time critical removal action under CERCLA. In addition, the chapter identifies some of the key regulatory differences that arise when decommissioning is driven by statutes other than CERCLA.

In addition to CERCLA, the major environmental statutes that may impact decommissioning include the National Environmental Policy Act (NEPA) and RCRA. Other Federal environmental requirements may apply to the decommissioning process, depending on the specific activities of each project. For example, discharges of pollutants to waters of the United

States trigger Clean Water Act (CWA) requirements. Air releases of radionuclides must comply with applicable National Emission Standards for Hazardous Air Pollutants (NESHAPS) under the Clean Air Act (CAA).

The need to comply with environmental requirements and integrate restoration and decommissioning efforts will impact planning and scheduling processes, budgeting processes, communication with the public, and communication with regulatory authorities. This chapter identifies the major environmental statutes and regulations that may apply to the decommissioning process. This chapter is not a substitute for review of the pertinent environmental requirements. Rather, it identifies major environmental compliance requirements to which decommissioning activities may be subject in order to facilitate effective planning for and compliance with applicable requirements.

6.2 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT

As Chapter 1 describes, a decommissioning project conducted as a CERCLA removal action will be subject to environmental requirements that differ in several respects from those applicable to a project that is conducted under another source of authority. A CERCLA removal action will:

- Be conducted under DOE lead agency authority, delegated by Executive Order 12580, in a manner consistent with National Oil and Hazardous Substances Pollution Contingency Plan (NCP) guidelines and the *Policy on Decommissioning of Department of Energy Facilities Under CERCLA*;
- Satisfy NEPA requirements by including NEPA values in CERCLA documents rather than preparing independent NEPA analyses and documentation, as specified by the Secretarial Policy on NEPA (June 1994);
- Not require permits for on-site activities; and
- Address substantive cleanup standards from other authorities as applicable or relevant and appropriate requirements (ARARs), and attain, or waive attainment of, such standards consistent with the NCP.

By contrast, decommissioning projects that are not conducted as CERCLA actions must identify and comply with all applicable NEPA requirements, permit application requirements, and other environmental requirements and standards imposed by additional federal and state statutes.

6.2.1 Applicability of CERCLA

CERCLA provides broad powers to the federal government to investigate and "respond" to any release, or a substantial threat of a release, of a hazardous substance into the environment. CERCLA authorizes response actions determined to be necessary to protect human health or the environment from risks posed by the hazardous substance. The term "hazardous substance" encompasses several categories of chemicals and other pollutants (including radionuclides) regulated pursuant to the CWA, RCRA, the CAA, or the Toxic Substances Control Act (TSCA). A list of hazardous substances is codified at Title 40 of the *Code of Federal Regulations* (40 CFR), Part 302.

Section 120 of CERCLA provides that federal agencies are subject to the requirements of CERCLA "in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity." Section 120 further provides that federal agencies shall not "adopt or utilize any such guidelines, rules, regulations, or criteria which are inconsistent with the guidelines, rules, regulations, and criteria established by the Administrator [of EPA] under this Act" (42 U.S.C. Section 9620[a]).

DOE policy is to respond to releases and "potentially imminent" releases of hazardous substances in a manner which is "in accordance with the provisions of CERCLA, as amended, as well as those of the National Contingency Plan (NCP) and Executive Order 12580. DOE responses shall include both removal and/or remedial actions, as appropriate, to reduce adverse impacts on public health and the environment from releases regardless of whether the facility is listed on the National Priorities List (NPL)" (DOE Order 5400.4, paragraph 7[a]).

As the lead agency for releases on or from facilities under DOE jurisdiction, DOE is authorized to determine if CERCLA response action is required, and the appropriate extent of action to be taken in response to the release or threatened release (40 CFR 300.415). Further responsibilities and procedures for evaluating and responding to releases are specified in DOE Order 5400.4, as well as in this manual.

6.2.2 Determining Release or Substantial Threat of Release

The term "release" is defined broadly by CERCLA and the NCP to mean any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing" of a hazardous substance, pollutant, or contaminant into the environment (40 CFR 300.5). This includes the abandonment or disposal of barrels or other closed receptacles containing hazardous substances, pollutants, or contaminants but does not include the presence of hazardous substances contained within a building.

The NCP also calls for response action to address a "substantial threat" of a release of a hazardous substance. Whether a site, facility, or activity poses a "substantial" threat of a release

invariably depends on the specific facts presented by the situation. As the CERCLA lead agency, DOE is responsible for determining whether the situation involves a substantial threat of release.

A determination that there is a release or substantial threat of a release that requires response action pursuant to CERCLA should be made on a site-by-site basis, in consultation with EPA and state officials, as appropriate. In the event that the Operations Office determines that a release or substantial threat of release exists, the DOE/EPA Policy on Decommissioning provides that the decommissioning action will be conducted as a CERCLA non-time critical removal action unless the circumstances at the site make this inappropriate. Such circumstances may arise at a facility subject to a Nuclear Regulatory Commission (NRC) license or a RCRA permit or corrective action order, or where the Operations Office and EPA Region agree that an alternate approach under CERCLA is appropriate.

As the lead agency at the facility, DOE has discretion to determine whether the threat of release is substantial, and what action, if any, should be taken to protect human health and the environment. For example, based on site conditions, DOE may determine that the threat of release from a facility to be decommissioned is not substantial. If the circumstances change unexpectedly, DOE may determine a substantial threat of release has arisen. In this case, action taken under DOE's CERCLA removal authority to address the threat of release will be appropriate under most circumstances. That action, or action taken under other authority, must be conducted in accordance with the decommissioning process outlined in the *Implementation Guide*, as well as in this manual.

DOE also has the discretion to ascertain whether contaminated material in a certain area, such as a room within a building, constitutes a substantial threat of a release that may impact human health or the environment. Material contained within a building does not constitute a release, and may not pose a threat of release (for further information on this issue, see EPA's clarification of the term "environment," 50 FR 13462, April 4, 1985). DOE must determine, however, the necessary and appropriate response to mitigate any threat within the building. If the activity poses a substantial threat of a release of the contaminant to the environment, response under CERCLA would be warranted. A determination of whether a threat of release is substantial must be made by DOE in such circumstances.

The exercise of this discretion must be consistent with CERCLA and NCP procedures and requirements, which offer significant flexibility to the lead agency. This flexibility and lead agency discretion is subject to any commitments made in an Interagency Agreement (IAG), if applicable to decommissioning. In the event that EPA and the Department of Justice (DOJ) concur that abuse of this discretion has led to an "imminent and substantial endangerment," EPA, with DOJ approval, may issue an order under section 106 of CERCLA requiring DOE to take action to abate the endangerment. Within these limits, however, the Operations Office may use its best professional judgment to determine the most appropriate means of ensuring that human health and the environment are protected.

6.2.3 Determining the Need for Removal Action

At any facility from which a release or threatened release of hazardous substances is present, the Operations Office must determine whether there may be a risk to public health or welfare or the environment that warrants response action. Where a potential risk indicates that action should be taken, a non-time critical removal action should be initiated, unless the Operations Office and EPA Region determine that the situation requires more rapid response, or that removal action is not appropriate, based on the circumstances at the facility.

In order to determine whether a release or threatened release poses a threat to public health or welfare or the environment, the Operations Office should consider the factors specified by the NCP (40 *CFR* 300.415[b]), outlined in Section 1.4.2 of this manual. Based on the review of these factors, the Operations Office shall determine whether removal action is appropriate. If the determination is made that a removal action is appropriate to address the facility, the responsible field office should conduct a removal action in accordance with the decommissioning process outlined in this manual, and Section 300.415 of the NCP (40 *CFR* 300.415).

6.2.4 Attainment of Applicable or Relevant and Appropriate Requirements

When decommissioning activity is conducted as a CERCLA removal action, substantive environmental requirements established by other federal or state statutes, regulations, and other authorities must be identified and evaluated to determine the applicable or relevant and appropriate requirements (ARARs) for the particular decommissioning project. EPA has identified three basic categories of ARARs — chemical specific, location-specific, and action-specific — depending on whether the requirement is triggered by the presence or emission of a specific substance, a vulnerable or protected location, or a particular action.

An "applicable" requirement is any cleanup standard, standard of control, and other substantive requirement, criteria, or limitation promulgated under a federal or state environmental or facility siting law that specifically addresses the hazardous substance, location, action, or other circumstance presented by the decommissioning activity (40 *CFR* 300.5). "Relevant and appropriate" requirements are not specifically applicable to the decommissioning activity, but nevertheless address problems or situations sufficiently similar to decommissioning to be well suited to the activity (40 *CFR* 300.5). In order to be either applicable or relevant and appropriate, a standard must be "promulgated" as a law, regulation, or other legally binding requirement. Other standards not promulgated under federal or state law may qualify as criteria "to be considered" (TBCs) which may be useful in determining the most appropriate means of designing or carrying out a response action.

As suggested by these definitions, ARARs are defined by the scope of the proposed action, the specific location of the action, and the hazardous substances and media to be addressed by the action. For example, standards applicable to the quality of ground water used as a drinking

waster source (e.g., Safe Drinking Water Act maximum contaminant levels (MCLs)) will be ARARs where the response action addresses the cleanup or protection of a drinking water source. When a decommissioning action is limited to removal of a building down to the foundation, but does not address any subsurface contamination, MCLs are not likely to be applicable or relevant and appropriate to that action. Standards applicable or relevant and appropriate to the handling and disposal of radioactive material are likely to be ARARs for any removal action that involves such material. In addition, standards may be ARARs because of the location of the action (e.g., a facility located in the habitat of an endangered species).

The removal action must attain identified ARARs to the maximum extent practicable, considering the urgency of the action, or obtain a waiver from compliance. The grounds for waiving compliance with ARARs are specified in Section 121(d)(4) of CERCLA and Section 300.430(f)(1)(ii)(C) of the NCP. In particular, attainment of ARARs may be waived if:

- The action is part of a broader remedial action at the site and that broader action will attain all ARARs,
- Compliance with the ARAR will result in greater risk to health or the environment than alternative approaches,
- Compliance with the ARAR is technically impracticable from an engineering perspective, or
- The action will attain a level of protection that is equivalent to the ARAR.

When the decommissioning action is not a CERCLA action, these ARAR waivers are not available. In such cases, any requirement established by a federal or state environmental law that is applicable to the action must be attained.

6.2.5 Permit Requirements

A decommissioning action conducted as a CERCLA action is exempt from applying for and obtaining any permit for on-site activities. CERCLA actions must still comply with the substantive requirements that would be enforced by a permit, but such actions are exempt from the time and costs incurred in preparing and submitting permit applications and obtaining permits.

Decommissioning actions that are not CERCLA actions must apply for and obtain any permit applicable to the action. The discussion in Section 6.5 below provides only a brief overview of some of the permitting or licensing requirements that may be triggered by a decommissioning project that is not a CERCLA action. Operations Offices must determine early in the planning process, when preparing the environmental compliance plan, whether the proposed project may

require a permit or license under any of these regulatory programs. In the event such a permit is required, the Operations Office must carefully review the applicable statutory and regulatory requirements to determine specifically the steps necessary to achieve compliance.

6.3 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

6.3.1 Applicability of NEPA

NEPA requires all federal agencies to identify the environmental impacts associated with any proposal for "major" federal action that may significantly affect the environment. While NEPA does not establish substantive environmental standards, it does establish a formalized review process to ensure full consideration of environmental issues. NEPA requirements are specified by Council on Environmental Quality (CEQ) regulations (40 *CFR* 1500-1508), DOE regulations (10 *CFR* 1021), DOE Order 5440.1E, and related guidance documents. The DOE *Secretarial Policy on the National Environmental Policy Act*, June 1994, establishes DOE policies, procedures, and delegations of authority for implementing NEPA requirements. Further assistance in preparing an environmental assessment (EA) is available from the Office of NEPA Oversight (EH-25), *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements*, May 1993.

DOE activities must comply with the letter and spirit of NEPA's policy that environmental values and impacts be given full consideration in federal planning and decisionmaking (10 *CFR* 1021.200 and 1021.300; DOE Order 5440.1E, Section 5). NEPA review and documentation requirements vary depending on the scope and size of the proposed action. As further described in Section 6.3.2.1, an agency must determine whether the proposed action requires the preparation of an environmental impact statement (EIS), an EA, or is categorically excluded from NEPA document preparation requirements.

NEPA compliance requirements will also vary based on whether the decommissioning action is undertaken as a CERCLA removal action or is taken pursuant to some other statutory authority. In accordance with the *Secretarial Policy on NEPA*, the environmental impacts review of actions taken under CERCLA shall rely on the CERCLA process as the means of addressing NEPA values and public involvement procedures. In particular, CERCLA documents should incorporate NEPA values, thereby eliminating the need to undertake additional NEPA analyses, public participation efforts, and document preparation. However, the assessment of whether a CX, EA, or EIA is the appropriate level of documentation for a non-CERCLA action will provide guidance on the manner of treating the NEPA values in the documentation for a CERCLA action.

6.3.2 The Elements of NEPA Compliance

NEPA compliance requirements can be delineated into the following seven principal categories:

- Initial determination of level of NEPA review,

- CX applicability,
- EA preparation,
- Finding of no significant impact (FONSI),
- EIS preparation,
- Public participation, and
- Record of Decision (ROD).

6.3.2.1 Initial Determination of Level of NEPA Review

The purpose of the initial determination of the appropriate level of NEPA review is to determine if the proposed action is categorically excluded from further NEPA documentation requirements, requires the preparation of an EA, or requires the preparation of an EIS. Subpart D of the DOE NEPA regulations (10 *CFR* 1021.400) identifies DOE actions that:

- Normally do not require preparation of either an EIS or an EA (i.e., are categorically excluded as identified in Appendices A and B of Subpart D);
- Normally require preparation of an EA but not necessarily an EIS (Appendix C of Subpart D); and
- Normally require preparation of an EIS (Appendix D of Subpart D).

If the proposed action is not encompassed within a class of actions listed in one of these appendices in Subpart D, if the appropriate level of NEPA review is unclear, or if there are "extraordinary" circumstances presented by the proposal related to the significance of its environmental consequences, a recommended determination should be prepared by the Operations Office (10 *CFR* 1021.211, 1021.314(c), and 1021.400(c)). The recommended determination should recommend that either an EA or EIS be prepared and should be forwarded, with a request for a final determination, to the Assistant Secretary for Environment, Safety and Health (EH-1) (DOE Order 5440.1E 6(a)(13), (14), and (16)). The recommended determination should contain a concise description of the proposed action and the relevant potential environmental impacts. The recommended determination may be supplemented with an Action Description Memorandum (ADM) (DOE Order 5440.1E, Section 4(a)).

6.3.2.2 Categorical Exclusions

The proposed action may be categorically excluded from further NEPA review requirements if it fits within a class of actions listed in either Appendix A or B of Subpart D. In addition, DOE must find that:

- There are no extraordinary circumstances related to the proposal, such as scientific controversy about the environmental effects of the proposal, or uncertain effects or effects involving unique or unknown risks;

- The proposal is not "connected" (as defined in 40 *CFR* 1508.25(a)(1)) to other actions with potentially significant impacts; and
- The proposal is not related to other proposed actions with "cumulatively significant" impacts (as defined in 40 *CFR* 1508.25(a)(2) and 10 *CFR* 1021.410).

To fit within a class of actions that are categorically excluded from further NEPA review, DOE NEPA regulations (10 *CFR* 1021, Subpart D, Appendix B) require that the proposed action must be one that would not:

- Threaten a violation of applicable statutory, regulatory, DOE order, or permit requirements for environment, safety and health;
- Require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities;
- Disturb hazardous substances, pollutants, contaminants, or petroleum products already in the environment to the extent there would be any uncontrolled release of such material; or
- Adversely affect any environmentally sensitive resources (as defined in 10 *CFR* 1021, Subpart D, Appendix B, Section B(4)).

Provided these elements are satisfied, a proposed action that fits within one of the classes of actions listed in Appendix B may be entitled to a CX. The determination of whether a proposed action fits within one of these classes must be made on an individual basis after evaluation of the factors identified above.

Some of the classes of actions and specific actions subject to a CX and most relevant to decommissioning activities are listed below with their appropriate citation to the relevant section of Subpart D, Appendix B, of the DOE NEPA regulations:

- Relocation/demolition/disposal of buildings (Appendix B1.22);
- Site characterization and monitoring including, but not limited to, characterization and monitoring under CERCLA and RCRA (Appendix B3);
- Removal actions under CERCLA, and similar actions under RCRA, provided such actions take less than 12 months to complete and cost less than \$2 million (unless continuation of the removal is necessary to eliminate an immediate risk to health or the environment, or it is consistent with subsequent remedial action to be taken) (Appendix B6.1); and

- Decommissioning of on-site waste accumulation facilities (Appendix B6.4).

If the proposed action satisfies the requirements for a CX, this determination shall be prepared in accordance with DOE Order 5440.1E.

6.3.2.3 Environmental Assessment

If the proposed action is not subject to a CX, and does not clearly require the preparation of an EIS (or the determination whether to prepare an EIS pending the results of the EA has been made), then an EA must be prepared.

The purpose of the EA is to assess whether a FONSI may be issued or, alternatively, whether an EIS is required. The question for the EA to answer is whether the proposed action may "significantly affect the quality of the human environment." If the answer is yes, an EIS must be prepared. If the answer is no, a FONSI must be prepared (10 *CFR* 1021.321(b)). NEPA regulations provide an extensive definition of what constitutes "significant" impacts in 40 *CFR* 1508.27 and should be consulted in determining the need for an EIS or in evaluating the results of an EA.

An EA shall include discussions of the need for action by DOE; appropriate alternatives to the proposed action, including taking no action; the environmental impacts of the proposed action and alternatives; and the agencies and persons consulted (40 *CFR* 1508.9). In the event that an EA concludes that the environmental impacts of the proposed action are not significant and that an EIS is not required for a proposed action, DOE must prepare a FONSI.

The FONSI shall present the reasons why the proposed action will not have a significant effect on the environment and shall include any other environmental documents related to the EA (40 *CFR* 1508.13). Any FONSI issued shall be made available to the public in accordance with the terms of 40 *CFR* 1506.6(b). At a minimum, public notice of the availability of the FONSI must be provided to those persons and agencies that may be interested or affected, including state or Tribal representatives, potentially interested community organizations, owners and occupants of affected property, and any individuals that have requested to be notified.

DOE regulations require that a proposed FONSI be issued for public review and comment before a final determination is made on the FONSI if either the proposed action is, or is closely similar to, one which normally requires an EIS, or the nature of the proposed action is one without precedent (10 *CFR* 1021.322(d)).

Additional specific requirements for providing public notice should be tailored to the circumstances of the action. For further guidance, refer to 40 *CFR* 1506.6 and DOE Order 5440.1E.

For a CERCLA action, the assessment normally made through an EA will be incorporated into the CERCLA documentation rather than as a separate process.

6.3.2.4 Environmental Impact Statement

The purpose of an EIS is to ensure that environmental information concerning the impacts of a proposed action, and appropriate alternatives to that action, are available and considered fully before decisions are made and before actions are taken (40 *CFR* 1502.1). DOE regulations specify particular classes of actions that normally require an EIS at 10 *CFR* 1021, Subpart D, Appendix D. Included among these classes of actions are MSAs, decommissioning of nuclear fuel reprocessing facilities, decommissioning of uranium enrichment facilities, and decommissioning of reactors.

A decommissioning activity conducted as a CERCLA action does not require an independent EIS, but instead may address NEPA values and consider NEPA impacts in relevant CERCLA documents. Direct and indirect NEPA impacts that must be evaluated include ecological, aesthetic, historic, cultural, economic, social, and health effects (40 *CFR* 1508.8).

A decommissioning activity that is not a CERCLA action, however, and that is a "major federal action significantly affecting the quality of the human environment," requires an EIS. In many instances, an EIS required for a decommissioning project should rely on the data and analysis prepared for an earlier EIS by "tiering off" from that earlier EIS. CEQ's NEPA regulations encourage agencies to "tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review" (40 *CFR* 1502.20). When a broader EIS has been prepared within which the proposed decommissioning action falls, a subsequent EIS prepared for the proposed decommissioning action could briefly summarize and reference the issues discussed in the broader EIS. For example, a decommissioning EIS can be tiered from a relevant site-wide EIS. Similarly, tiering may be appropriate for an EIS prepared for an early stage of a decommissioning project to an EIS prepared for a subsequent stage of the project.

Environmental impact statements should be analytical, rather than encyclopedic, and should discuss potential impacts in proportion to their significance. For specific guidance on preparing an EIS, refer to DOE's NEPA regulations (10 *CFR* 1021.310). In addition, examples of a completed EIS are available (e.g., Shippingport, Hanford) to assist with the preparation of an EIS.

6.3.2.4.1 Notice of Intent and Scoping

A notice of intent (NOI) to prepare an EIS shall be published in the *Federal Register* as soon as practicable after a decision to prepare an EIS has been made (10 *CFR* 1021.311). The NOI shall briefly describe the proposed action and possible alternatives, describe when public scoping

meetings will be held, and state the name and address of a contact person within DOE who can answer questions about the proposed action and the EIS (40 *CFR* 1508.22).

Publication of the NOI begins the public scoping process. The scope of the proposed action and issues to be assessed in the EIS must be properly defined. The range of actions, alternatives, and impacts that must be evaluated in defining the scope of the EIS is specified in detail at 40 *CFR* 1508.25. This range includes "connected," "cumulative," and "similar" actions; appropriate alternatives, including the no action alternative, other reasonable courses of action, and mitigation measures not included in the proposed action; and direct, indirect, and cumulative impacts (40 *CFR* 1508.25). At least one public scoping meeting must be held (10 *CFR* 1021.311(d)). Comments received during the public scoping process shall be used to determine the scope of the EIS.

DOE regulations require the preparation of an EIS implementation plan (10 *CFR* 1021.312). The implementation plan provides guidance for the preparation of the EIS and should record the results of the scoping process. Implementation plans shall include a statement of the planned scope and content of the EIS; the purpose and need for the proposed action; a description of the scoping process and the results, including a summary of public comments received and their disposition; target schedules; anticipated consultation with other agencies; and a disclosure statement executed by any contractor that prepared the EIS that specifies that the contractor has no financial or other interest in the outcome of the project (10 *CFR* 1021.312(b)). The implementation plan and any formal revisions made to it shall be made available to the public.

6.3.2.4.2 Draft and Final EIS

Environmental impact statements must be prepared in draft and final form, and may be supplemented. The draft EIS must satisfy to the fullest extent possible the requirements for a final EIS. The public review and comment period on a draft EIS shall be no less than 45 days (10 *CFR* 1021.313(a)). At least one public hearing on the draft EIS shall be held, and it shall be announced at least 15 days in advance by employing appropriate means to reach persons who may be interested in or affected by the proposed action. The final EIS shall respond to the oral and written comments received during the public review process (10 *CFR* 1021.313(c)).

NEPA regulations provide a recommended format for both the draft and final EIS that must be followed unless DOE determines that there is a compelling reason to do otherwise. The format for an EIS is as follows:

- Cover sheet,
- Summary,
- Table of contents,
- Purpose of and need for action,
- Alternatives (including the proposed action),
- Affected environment,

- Environmental consequences,
- List of preparers, and
- Appendix (40 *CFR* 1502.10).

The "Alternatives" and "Environmental consequences" sections are the most significant. The "Alternatives" section must rigorously evaluate all reasonable alternatives, providing sufficient detail for reviewers to evaluate the comparative merits of each alternative. In addition, this section must include appropriate mitigation measures not already identified in the proposed action or alternatives.

The "Environmental consequences" section forms the scientific and analytic basis for comparing the presented alternatives. This section includes a discussion of the environmental impacts of each of the alternatives, any adverse environmental effects which cannot be avoided if the proposed action is implemented, the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be required if the proposed action were implemented (40 *CFR* 1502.16). In addition, this section includes discussions of:

- "Direct effects" and "indirect effects" and their significance (as defined at 40 *CFR* 1508.8);
- Possible conflicts between the proposed action and the objectives of any federal, regional, state, Tribal, or local land use plans, policies, or controls for the area likely to be affected;
- Environmental effects of alternatives;
- Energy and natural resource requirements and conservation opportunities of various alternatives;
- Urban, historic, and cultural resources impacted; and
- Means of mitigating adverse effects (if not fully identified previously).

Direct and indirect effects that must be evaluated include ecological, aesthetic, historic, cultural, economic, social, and health effects (40 *CFR* 1508.8).

6.3.2.5 Record of Decision and Mitigation Action Plan

After the completion of the EIS, a ROD must be prepared and published in the *Federal Register*. The NEPA ROD identifies what decision was reached; identifies all alternatives that were considered, specifying the alternative(s) that was considered to be environmentally preferable; and states whether all practicable means to avoid or minimize environmental harm from the

selected alternative have been adopted (40 *CFR* 1505.2). Following completion of an EIS and its associated ROD, a Mitigation Action Plan is prepared that addresses mitigation commitments made in the ROD (10 *CFR* 1021.331). The Mitigation Action Plan must explain how mitigation measures will be planned and implemented. The Mitigation Action Plan must be prepared prior to any action directed by the ROD and be made available to the public.

6.4 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

6.4.1 Applicability of RCRA

RCRA and its implementing regulations at 40 *CFR* Parts 260-281 regulate the generation, transportation, storage, treatment, and disposal of "solid" and "hazardous" wastes. Persons who "generate" such wastes are responsible for their wastes from "cradle to grave." RCRA requirements also are established for underground storage tanks (USTs) for hazardous substances and petroleum products. Finally, RCRA may provide authority governing cleanup of hazardous wastes that have been released into the environment from hazardous or solid waste management units (SWMUs).

DOE policy and procedures for compliance with RCRA are established in DOE Order 5400.3, *Hazardous and Radioactive Mixed Waste Program*. DOE Order 5480.3, *Safety Requirements for the Packaging and Transportation of Hazardous Materials, Substances, and Wastes*, establishes DOE requirements for waste transportation.

Congress is considering numerous changes to the RCRA program through reauthorization of the statute, which may be completed in the 1994-95 session of Congress. In addition, EPA is expected to initiate rulemaking proceedings to revise the definitions of "solid" and "hazardous" waste, and may also finalize a rulemaking establishing corrective action requirements. These initiatives will impact the scope of RCRA's regulatory universe and could significantly impact decommissioning activities.

6.4.2 RCRA Requirements for Decommissioning Projects

RCRA requirements applicable to hazardous wastes are triggered by the "generation" of hazardous waste. RCRA provisions defining what constitutes the generation of a hazardous waste are outlined at 40 *CFR* Parts 260 and 261. Standards applicable to generators of hazardous waste are located at 40 *CFR* Part 262. Standards and corrective action requirements for owners and operators of hazardous waste treatment, storage, and disposal (TSD) facilities are specified at 40 *CFR* Part 264. Land disposal restrictions and treatment technology requirements are specified at 40 *CFR* Part 268. Finally, standards and corrective action requirements applicable to underground storage tanks are specified at 40 *CFR* Part 280.

The degree to which RCRA requirements may apply to decommissioning activities will depend on many variables, including whether the facility is part of a TSD facility, and whether material

generated in the course of decommissioning falls within the RCRA definition of "solid waste." The discussion below provides only a brief review of applicable requirements. In order to determine the applicability of RCRA requirements to particular decommissioning activities, the Operations Office must analyze the relevant RCRA requirements in light of the specific circumstances presented by the activity.

6.4.2.1 Hazardous Waste Generation

Decommissioning activities are subject to RCRA requirements if such activities generate hazardous wastes. To determine whether a material constitutes a "hazardous waste," the field office must determine (as per 40 *CFR* 261.3):

- If the material is a "solid waste,"
- If the solid waste is excluded from regulation as a hazardous waste,
- If the solid waste exhibits any of the "characteristics" of a hazardous waste identified by RCRA regulations,
- If the solid waste is a "listed" hazardous waste, as defined in Subpart D of 40 *CFR* Part 261, and
- If the material is a mixture of a solid waste and a listed hazardous waste.

The definition of "solid waste" is complex and detailed (40 *CFR* 261.2). A solid waste includes any material that is "discarded" as specified at 40 *CFR* 261.2(a)(1). Discarded material includes material that is "abandoned," "recycled," or "inherently waste-like," as those terms are defined at 40 *CFR* 261.2(b), (c), and (d), respectively. The term "solid waste" includes sludges, liquids, semi-solids, and gaseous materials. If the material generated by the decommissioning process is not a "solid waste," the material is not subject to RCRA's waste management requirements. If the material is otherwise a "solid waste," the field office must determine if it falls under one of RCRA's limited exclusions from the definition of solid waste, outlined at 40 *CFR* 261.4(a) and (b).

If a material is a solid waste, the Operations Office must determine whether it also is a "hazardous waste." A solid waste is "hazardous" if it exhibits a hazardous characteristic (i.e., toxicity, corrosivity, reactivity or ignitability) (40 *CFR* 261.21-24); if it is listed in 40 *CFR* 261.30 (i.e., a "listed waste"); if it is mixed with or derived from a listed waste (40 *CFR* 261.3(a)(2)(iii), and 261.3(c)-(d)); or if it is contained in a hazardous waste. Thus, for example, a decommissioning residue may trigger management requirements under RCRA if the residue is a listed hazardous waste and is mixed with, derived from, or is contained in a listed waste, or if it exhibits one of the hazardous characteristics. Examples of RCRA hazardous waste that may be generated by the decommissioning process include debris contaminated with solvents, oils,

polychlorinated biphenyl compounds (PCBs); waste materials found in drums and tanks; and rags or cleaning materials used in the decontamination of the facility.

Radionuclides of source material, special nuclear material, and by-product material as defined by the AEA are excluded from RCRA's waste management requirements (40 *CFR* 261.49(a)(4)). However, when RCRA hazardous wastes are mixed with radiologically contaminated materials, these become known as "mixed wastes." Such mixed wastes must be managed in accordance with applicable AEA requirements, DOE orders pertaining to radioactive wastes for the radioactive components, and RCRA regulations if the hazardous and radioactive components of the waste cannot be separated.

6.4.2.2 Hazardous Waste Management

The Operations Office must ensure that hazardous wastes are managed in accordance with applicable RCRA regulations. For example, decommissioning activities that generate hazardous wastes will be subject to RCRA hazardous waste management requirements, in accordance with 40 *CFR* Part 262, including:

- Obtaining an EPA generator identification number;
- Complying with manifest requirements for wastes shipped off site, including pollution prevention and waste minimization requirements;
- Properly packaging, marking, and labeling the hazardous waste;
- Complying with accumulation time limits (i.e., short-term storage);
- Complying with recordkeeping and reporting requirements; and
- Ensuring that the hazardous waste is properly treated, stored, and disposed.

Decommissioning activities must comply with all waste management requirements outlined in Chapter 9 and should be coordinated with existing environmental restoration and waste management activities at the site.

6.4.2.3 RCRA "Debris" Rule

EPA has promulgated the "debris rule" to clarify the application of RCRA requirements applicable to "debris" contaminated with hazardous wastes (57 *FR* 37194; August 18, 1992). The term "debris" is defined as any solid material exceeding a 60 millimeter particle size, that is intended for disposal, and that is a manufactured object, plant or animal matter, or natural geologic material (57 *FR* 37270; August 18, 1992). The definition of debris includes certain specified exclusions. Prior to promulgation of this rule, debris contaminated with hazardous

waste was subject to the treatment standards applicable to those wastes. Under the debris rule, generators of debris contaminated with hazardous wastes have greater flexibility to use alternative treatment technologies to treat such debris by removing the wastes from the debris. In some circumstances, treated debris can be exempted from subsequent RCRA requirements.

Three types of treatment technologies may be used to treat debris contaminated with hazardous wastes:

- Extraction technologies (physical, chemical, or thermal);
- Destruction technologies (biodegradation, chemical oxidation/reduction, or thermal destruction); and
- Immobilization technologies (macro-encapsulation, micro-encapsulation, or sealing).

Debris that is treated by extraction or destruction technologies, and no longer demonstrates a hazardous characteristic following treatment, is no longer considered a hazardous waste. Such debris becomes exempt from subsequent compliance with RCRA hazardous waste treatment, storage, and disposal requirements. However, the residual wastes removed or treated by the treatment method remain subject to RCRA hazardous waste requirements, including land disposal restriction (LDR) treatment and disposal standards. The Operations Office should review carefully the discussion of the debris rule at 57 *FR* 37194 (August 18, 1992) to determine if the potential exemption from LDR treatment and disposal requirements may be available for contaminated debris generated during decommissioning activities.

6.4.3 Underground Storage Tanks (USTs)

Decommissioning may include USTs. The remediation of USTs containing petroleum substances or hazardous substances is governed under RCRA, as specified at 40 *CFR* Part 280.

Under RCRA, an UST is a tank, including underground pipes connected to the tank, that is used to contain regulated substances, the volume of which (including connected pipes) is 10 percent or more underground (40 *CFR* 280.12). There are a number of exemptions to this definition, including, but not limited to, septic tanks, tanks storing heating oil used on the premises where stored, and tanks stored in basements.

Regulated substances include any hazardous substances defined in CERCLA Section 101(14), any mixture of such substances, and petroleum. Excluded are substances regulated as hazardous wastes under RCRA and radioactive materials regulated under the AEA.

USTs may be removed or decontaminated as part of the decommissioning process, and thus may be subject to UST requirements under RCRA, provided those USTs store product materials as well as wastes.

6.4.4 Corrective Action at RCRA Sites

RCRA corrective action requirements apply to cleanup of contamination at RCRA facilities permitted, or with interim status, as TSD facilities. Triggers for the application of RCRA corrective action requirements include the issuance of a TSD facility permit; voluntary submission to corrective action requirements; routine, systematic and deliberate releases from SWMUs; and enforcement orders.

Facilities to be decommissioned that are, or were, part of waste treatment, storage, or disposal units may be subject to RCRA corrective action requirements. The elements of a full corrective action are:

- RCRA Facility Assessment (RFA), which identifies the hazard;
- A RCRA Facility Investigation (RFI) to determine the extent and severity of the release;
- Corrective Measures Study (CMS) to develop and screen remedies;
- Statement of Basis summarizing the proposed remedy; and
- Corrective Measures Implementation (CMI), which includes remedial design and construction.

In addition, the Corrective Action Management Rule (published at 58 *FR* 8658), provides a structure for managing remediation wastes at RCRA TSD facilities. Under the rule, remediation wastes placed into or within a "corrective action management unit" (CAMU), approved by the EPA Regional Administrator, are not subject to hazardous waste land disposal restrictions. This rule is only applicable, however, to the extent that the wastes are generated as part of a RCRA corrective action. Thus, if decommissioning wastes are generated at a site undergoing RCRA corrective action, those wastes may be covered under this rule. Such wastes can then be consolidated and placed on land within the designated CAMU prior to any treatment that may subsequently be required. Operations Offices should determine if they may utilize an existing or proposed CAMU for placement of hazardous wastes generated or consolidated during decommissioning activities, or if a CAMU designation may be obtained from the EPA Regional Administrator specifically for decommissioning operations.

6.4.5 Application to the Decommissioning Program

RCRA can impact decommissioning in two major ways. First, if hazardous wastes are generated by decommissioning, these wastes must be managed in compliance with RCRA generator, treatment, storage, and disposal requirements. To the extent hazardous wastes are mixed with radioactive wastes, such mixed wastes must be treated and disposed in accordance with commitments made by the site in its Site Treatment Plan (STP), required by the Federal Facility Compliance Act (FFCA), which amended RCRA. STPs are required at sites where mixed wastes are stored or disposed and must specify the treatment methods and schedules for treating and disposing such wastes. Each STP must be approved by the state in which the site is located. If decommissioning activities are expected to generate mixed wastes, Operations Offices should identify and coordinate with appropriate EM staff responsible for developing and implementing the STP for that site.

In addition, RCRA corrective action requirements may be applicable to decommissioning activities at former or current TSD facilities. In the event a decommissioning project is within a TSD facility or is contiguous to such a facility, RCRA corrective action requirements may apply. In developing the environmental compliance plan for the proposed project, the Operations Office should consult with appropriate state or EPA regulators to determine if RCRA corrective action may be applicable to the decommissioning project.

6.5 ADDITIONAL ENVIRONMENTAL REQUIREMENTS

Decommissioning projects also may be subject to additional environmental compliance requirements. In particular, the CAA, the CWA, and the AEA may currently, or in the future, establish permitting or licensing requirements with which certain decommissioning activities must comply. Provided below is a brief discussion of some of the potential Clean Air Act and Clean Water Act compliance issues that may impact decommissioning projects.

6.5.1 Clean Air Act

Title V of the CAA, adopted by Congress in the CAA Amendments of 1990, establishes a federal permitting program, which is to be administered by the states. Any "major source" of criteria pollutants (i.e., sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, lead, and particulate matter) or hazardous air pollutants (HAPs), will be required to obtain a permit to operate the source. The definitions of "major source" and "affected source" vary depending on the pollutant and the area in which the source is located.

A major source of HAPs is any source, or group of sources within a contiguous area, with the potential to emit 10 tons per year of any single HAP, or 25 tons per year of any combination of HAPs. A source that is not a "major" source of HAPs is an "area" source. Specified categories of area sources of HAPs are also subject to the CAA permitting requirements. Radionuclides are included in the list of HAPs (42 U.S.C. 7412(b)).

Sources of HAPs that are required to obtain an operating permit must comply with technology-based limits on emissions known as "maximum achievable control technology" (MACT) standards. MACT standards are being established by EPA for categories and sub-categories of sources of HAPs. Any source of HAPs required to obtain an operating permit will be subject to applicable MACT standards established for that source. A source of HAPs that is constructed or modified on-site as part of a CERCLA response action is exempt from applying for and obtaining a Clean Air Act permit. The substantive requirements that would be imposed by a permit (e.g., MACT standards), however, must be attained by the source.

In addition, the CAA Amendments of 1990 established a new program to prevent accidental releases of HAPs (42 U.S.C. 7412(r)). Owners or operators of stationary sources of any designated "extremely hazardous substance" must prepare and implement risk management plans, which include hazard assessments and release prevention and response programs. These plans must be registered with EPA.

Operations Offices must determine whether the permitting or accident prevention requirements of the CAA are applicable to proposed decommissioning projects and must plan to take all steps necessary to comply with any applicable requirements.

6.5.2 Clean Water Act

As with the CAA, the CWA requires any source that discharges a "pollutant" into a surface water body to obtain and operate in compliance with a permit, known as a NPDES permit (33 U.S.C. 1342). Under CWA, "pollutant" includes radioactive materials (33 U.S.C. 1362(6)). However, EPA has interpreted the term "pollutant" to exclude radioactive materials regulated under the AEA. Thus, although the CWA applies to naturally occurring and accelerator-produced radioisotopes, it does not apply to source, special, or by-product materials as those terms are defined by the AEA.

The CWA permitting requirements do apply to discharges of other "pollutants," including sludge, munitions, chemical wastes, biological materials, heat, discarded equipment, rock, sand, and industrial waste (33 U.S.C. 1362(6)). A permit for the discharge of pollutants into surface waters will establish discharge limits that may be technology-based (33 U.S.C. 1311), water quality-based (33 U.S.C. 1312), or individual control strategies for toxic pollutants (33 U.S.C. 1314(I)). New sources are subject to new source performance standards (33 U.S.C. 1316). Discharges of toxic pollutants are subject to discharge limits established under Section 307 (33 U.S.C. 1307). Thermal discharges are regulated under Section 316 (33 U.S.C. 1326).

Discharges of pollutants into a municipal or publicly-owned treatment works (POTW) are not required to obtain a NPDES permit, but such discharges are subject to pre-treatment requirements under Section 307 (33 U.S.C. 1307). Pretreatment regulations require that dischargers treat wastewater for pollutants for which the POTW is not equipped. Toxic pollutants are the primary concern of these regulations.

As with potential clean air requirements, Operations Offices must determine whether the permitting or treatment requirements of the CWA are applicable to proposed decommissioning projects and must plan to take all steps necessary to comply with any applicable requirements. Decommissioning actions that are conducted as CERCLA actions are exempt from obtaining a CWA permit but, as previously stated, must meet the substantive standards and limitations that would be imposed by a permit.

6.6 CONCLUSION

Environmental compliance is critical to the timely and successful completion of decommissioning activities. Sound environmental compliance planning during the initial planning phases of the decommissioning process is an essential foundation of a successful decommissioning project. Activities conducted in accordance with DOE decommissioning requirements shall be done in compliance with all applicable environmental requirements.

7.0 HEALTH AND SAFETY

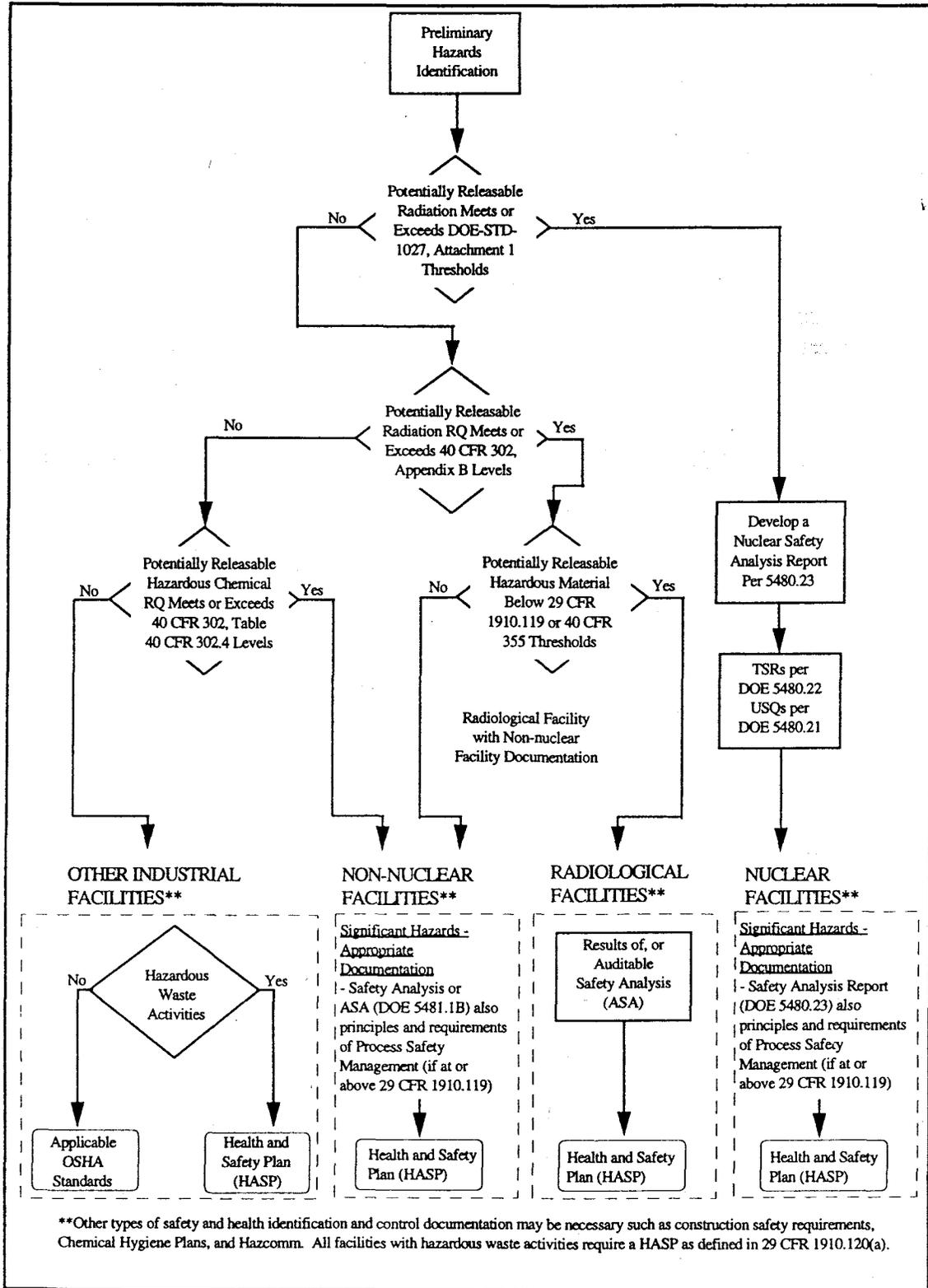
7.1 INTRODUCTION

The main priorities of the Environmental Restoration Program (EM-40) are to protect the safety and health of DOE and contractor personnel, ensure public safety and health, and protect property. These priorities will not be compromised as a result of production imperatives, mission exigencies, or programmatic expediencies. Therefore, all EM-40 environmental restoration plans, systems requirements, operations, functions, and facilities will comply with applicable federal and state safety and health statutes, regulations, codes and standards, as well as Secretary of Energy Notices (SENs), DOE orders and Office of Environmental Management (EM) internal policies, requirements and guidelines. The intent of this chapter is not to detail all of the standards that must be complied with, but to summarize the principal components that comprise the safety and health management system within DOE. Throughout this chapter, sources of standards for DOE requirements are listed by reference to facilitate access to the standards and health and safety program information as necessary.

EM-STD-5502-94, *Hazard Baseline Documentation*, provides a roadmap to the different "classes" of EM facilities with respect to the applicable requirements for safety documentation. The standard relies on several other DOE standards and federal regulations to classify EM facilities for identifying which documentation requirements apply. Figure 7-1 illustrates the EM-STD-5502-94 roadmap of requirement. Despite EM facilities having multiple documentation requirements to meet, Section 5.6 of EM-STD-5502-94 clearly states EM's intentions with regard to minimizing duplication between safety documentation. The section recommends that, if practical, the same hazard analysis be used for each safety document and that where identical sections are called for (e.g., emergency management plans, operational controls), one section be written that can be referenced by each document.

DOE Standard 1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*, provides consistent guidance for determining if facilities should be designated as nuclear category 1 (highest hazard), 2, 3, or Radiological. All facilities classified as at least a category 3 nuclear facility in accordance with this DOE standard are required to comply with DOE Order 5480.23, *Nuclear Safety Analysis Reports*. This order calls for the preparation of a Safety Analysis Report (SAR) for DOE nuclear facilities. Facilities that do not meet or exceed category 3 threshold criteria but still possess some amount of radioactive material, may be considered radiological facilities. Radiological facilities should possess Auditable Safety Analyses (ASA) to address hazards posed by their operation. Facilities having negligible radioactive inventory, but possessing significant other hazards, fall under the requirements of DOE 5481.1B (and 29 *CFR* 1910.119 if the chemical inventory exceed applicable thresholds). All EM facilities engaged in hazardous waste operations will likely have to generate Health and Safety Plans (HASPs) to meet the requirements of 29 *CFR* 1910.120. EM managers should be aware that many safety

Figure 7-1 - EM Hazard Baseline Documentation Process



documentation requirements may overlap with the HASP and that by referencing common analyses and program documents much duplication of effort can be eliminated.

Facilities not designated as nuclear are exempt from DOE Order 5480.23, but they are not exempt from other nuclear-related safety requirements. For example, 10 *CFR* 835 applies to all facilities that possess radioactive material including those that are exempt from DOE Order 5480.23. Exemption from the requirements of DOE Order 5480.23 does not excuse contractors from performing analysis, where applicable, to evaluate significant radiation exposure to workers. Additionally, hazardous chemicals in facilities are governed by DOE Orders 5480.4, 5480.10, 5481.1B, and 5483.1A; accelerators are covered by DOE Order 5480.25.

DOE Order 5480.23 states that a graded approach is to be used in the preparation of SARs for nuclear facilities. The objective of a graded approach is to proportion SAR requirements for analysis, evaluation, and documentation to the potential hazards associated with the nuclear facility. Chapter 1, Section 1.4.5.2, contains additional discussion of the graded approach.

7.2 RESPONSIBILITIES

7.2.1 Responsibilities of Headquarter Program Secretarial Officers

Program Secretarial Officers or their designees in the line organization, in accordance with DOE Order 5480.23, shall:

- Issue permanent exemptions to the requirements of DOE Order 5480.23 for nonreactor nuclear facilities where hazards are of a low magnitude;
- Grant temporary exemptions to the requirements of DOE Order 5480.23 for any activity under his or her cognizance, up to one year in duration;
- Require that contractors prepare and update SARs for each nuclear facility and nuclear operations under their jurisdiction (unless exempted);
- Review and approve SARs and revisions thereto for all nuclear facilities and operations;
- Ensure that all commitments made in the approved SAR are carried out by the contractors for the nuclear facilities and nuclear operations;
- Provide guidance and assistance to field organizations in applying the graded approach for the facility; and
- Designate in writing the design, construction, or operational contractors that will be responsible for preparing a SAR for each nuclear facility or nuclear operation.

7.2.2 Responsibilities of Heads of Field Organizations

Heads of field organizations, in accordance with DOE Order 5480.1B, are responsible for ensuring that all operations under their jurisdiction are carried out consistent with sound safety and health practices and in accordance with other DOE orders. In carrying out this responsibility, the heads of field organizations must:

- Execute programs while ensuring that DOE contractors and their subcontractors execute programs and policies which use and comply with appropriate and required safety and health program guidelines and requirements as identified in DOE orders for the siting, design, construction, operation, maintenance, modification, deactivation, decontamination, and decommissioning of DOE facilities and activities;
- Take appropriate actions to ensure acceptable employee and contractor safety and health, including curtailment and suspension of operations when such operations would result in undue safety and health risks;
- In selecting contractors, ensure the ability of offerors to meet safety and health requirements and ensure that applicable requirements are included in contracts; and
- Appraise programs, projects, and facilities of subordinate field activities in accordance with DOE Order 5482.1B, *Environmental, Safety and Health Appraisal Program*, and other 5480 series DOE orders.

7.2.3 Responsibilities of Decommissioning Project Manager

The decommissioning Project Manager at the facility can ensure compliance and oversight with these standards by participating in an effective, facility-wide comprehensive safety and health management program. There are several features that effective programs of this type should have in common:

- Hazards and resulting risks which may exist at a facility have to be identified as a baseline and monitored on a regular basis. Modifications and changes which may occur to the equipment and processes that are being used at the facility must be accounted for.
- Regulatory requirements must be identified which are applicable to the equipment and materials used, and processes performed, at a facility. Provisions also should be made for incorporating new and anticipating emerging regulatory requirements which will potentially impact a facility.

- Policies, procedures, codes, and specifications must be identified which will protect all DOE and DOE contractor and subcontractor personnel.
- An overall management system should be designed, implemented, and maintained which ensures compliance with applicable requirements while optimizing time, effort, personnel, and cost considerations.

7.3 REGULATORY REQUIREMENTS FOR OCCUPATIONAL SAFETY AND HEALTH

Occupational safety and health standards applicable to all DOE and DOE contractor programs, as detailed in DOE Order 5480.4, *Environmental Protection, Safety and Health Protection Standards*, fall within three general classifications:

- Mandatory Occupational Safety and Health (OSH) standards (statutory requirements) which include those standards that are mandatory as a result of federal, state or local OSH statutes;
- OSH standards that are considered mandatory from documented DOE policy;
- Referenced OSH Standards, including standards and guidelines which may serve as references of good practice and general information for the design, implementation, and maintenance of OSH programs, but which may not be considered mandatory.

These standards, discussed in detail throughout this section, are to be followed during facility design, construction, operation, modification, transition and decommissioning. Facilities covered by these requirements include those owned, leased, or otherwise controlled by DOE or leased by DOE contractors for use in work for DOE (including both permanent or temporary facility components). Requirements and procedures have been established to ensure that DOE and DOE contractor and subcontractor employees in government-owned contractor operated (GOCO) facilities are protected by occupational safety and health standards which are consistent with the level of protection afforded private industry employees under requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596). These requirements and procedures (for GOCO facilities) may be found in DOE Order 5483.1A, *Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities*. OSH and DOE requirements apply to all other facilities and operations (except Naval Reactors) by either statute or contract.

7.3.1 DOE Mandatory Occupational Safety and Health Standards and Statutory Requirements

In accordance with DOE Order 5483.1A, the project shall provide occupational safety and health protection for DOE contractor employees that is consistent with the protection afforded private

industry employees by the occupational safety and health standards promulgated under the Occupational Safety and Health Act of 1970.

The project shall use the mandatory statutory requirements and policy requirements provided in DOE Order 5480.4. The project should use a graded approach when considering the use of non-mandatory standards provided in DOE Order 5480.4.

7.3.1.1 Federal Employees

Executive Order 12196, *Occupational Safety and Health Programs for Federal Employees*, established the requirement for federal agencies to provide OSH programs for their employees. As stated in a formal agreement between the Secretary of Energy and the Department of Labor, DOE exercises full statutory authority to prescribe and enforce standards that are fully comparable with OSHA regulations as detailed in SEN-6D-91 (dated May 16, 1991). Although this authority was restated in SEN-6E-92, the reorganization directive of DOE N 1100.32 rescinded the SEN-6E-92 notice. OSHA has established and codified a process (29 CFR 1960) for affirming that federal managers assume responsibility for federal worker safety and health programs.

7.3.2 DOE Mandatory Occupational Safety and Health Standards (Policy Requirements)

In accordance with DOE Order 5480.1B, *Environment, Safety and Health Program for DOE Operations*, it is DOE policy to:

- Ensure the protection of the environment and the health and safety of the public;
- Ensure that safe and healthful workplaces and conditions of employment are provided to all employees and DOE contractors;
- Protect government property against accidental loss and damage;
- Ensure compliance with applicable statutory requirements affecting federal facilities and operations and where possible, consistent with DOE's mission and supported by appropriate cost/benefit analysis, reduce identified safety and health risks, even when not mandated by specific requirements; and
- Require line management to be responsible for effective safety and health performance in their programs.

The standards and requirements which are considered directly applicable to DOE employees and contractors have been promulgated by various organizations including, but not limited to, the Occupational Safety and Health Administration (OSHA), Mine Safety and Health Administration (MSHA), and the Department of Transportation (DOT).

data quality objectives, which depend on waste matrix assay correction factors, and provide screening measurements to segregate waste categories.

The final stage also is performed during the field work. This stage will provide an overview of potential requirements for radiochemistry and RCRA sampling and analyses. This stage evolves from the combined input of stages one and two, and requires analytical laboratory support. The sampling and analytical requirements must establish legally defensible data. Analytical results help determine processing, certification, handling, safety, storage, and transportation requirements.

9.3.1 Classification of Waste Streams and Spent Nuclear Fuel

Comprehensive characterization begins with historical site information, radiometric surveys, initial plans for radiochemistry and RCRA sampling and analysis. The compilation of process knowledge serves as a first step in waste characterization to estimate generation rates, treatment, packaging, storage capacity requirements, NDE/NDA requirements and potential PP/WMin opportunities. Treatability groupings also are established for waste streams. Refer to 58 FR 17875; April 6, 1993, *Publication of Schedule for Submitting Plans for Treating Mixed Waste Generated or Stored at Each Site as Required by the Federal Facility Compliance Act of 1992*. Waste stream characterization also will provide current data for radioactive waste and spent nuclear fuel inventories contained in the *Integrated Data Base of U. S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics*"¹

Accurate definitions of waste stream material content inventories require personnel qualified in both process knowledge and waste management operations. Qualified personnel must examine the types of radioactive and hazardous contamination and potential waste generation.

Qualified personnel should, at a minimum, possess the following:

- Knowledge of the EPA hazardous waste codes as presented in 40 *CFR* 261, Subpart C, "Characteristics of Hazardous Waste," and 40 *CFR* 261, Subpart D, "Lists of Hazardous Wastes;" and
- The ability to determine radioisotope specific composition to the extent practicable.

¹ This report, DOE/RW-0006, is updated on an annual basis, and can be obtained from the DOE Office of Civilian Radioactive Waste Management or the Office of Environmental Management, Washington, D.C. 20585.

- Oversee RCRA programs and actions for which they have assigned responsibilities, requesting such funds in their budgets as they deem necessary to implement the programs and actions of DOE Order 5400.3;
- Identify when an inconsistency may exist between the requirements of the AEA and RCRA. When a potential inconsistency exists, follow requirements of DOE Order 5400.2A; and
- Implement a waste minimization program for hazardous and radioactive mixed wastes.

A complete list of responsibilities is provided in DOE Order 5400.3.

9.3 PROJECT ASSESSMENT

This section provides a three-stage approach for comprehensive characterization of the waste generated by a decommissioning project. Characterization of past, present, and potential future waste streams should be determined. Facilities subject to decommissioning activities also require accurate knowledge of processes or materials which have been used in those facilities. This will help determine the potential or the actual presence of contamination (chemical and radiological), which may contribute to the decommissioning project generated waste and facilitate identification of PP/WMin opportunities.

The first stage, a waste stream classification stage, should be conducted during engineering and planning and may include pertinent data from surveillance and maintenance (S&M). This stage will require organized investigations for data and information gathering to address classification of waste streams. A suggested Waste Characterization Database, presented in Table 9-1, can be used to document this collected information. The information should be accessible to an interrelational database for a waste management tracking system. This will be necessary to establish data quality objectives and correlate data quality information with historical records to support waste certification plans. This also will enhance record retention and provide input for quality control reports to management.

The proposed Waste Characterization Database represents an abridged approach to formulating data entry fields based on representative WAC requirements. The representative WAC are generic to commercial and DOE disposal facilities and are not intended to be comprehensive requirements. This approach is to suggest and not dictate detailed database entry fields.

The second stage is performed along with decommissioning operations. This stage will involve nondestructive examination/nondestructive assay (NDE/NDA) requirements and input that must satisfy the disposal facility WAC. NDE/NDA measurements are evaluated to determine if additional radiochemical analyses are required. NDE/NDA requirements discuss preliminary

- Providing advice, consultation and assistance to EM-40 in the planning, design, construction, regulatory compliance, operation, and maintenance of waste TSD facilities managed by EM-40; and
- Conducting reviews of EM-40 waste TSD facilities as required by DOE Order 5820.2A.

In addition to the responsibilities listed in this MOU, the Deputy Assistant Secretary for Waste Management is responsible for lifting the DOE-imposed moratorium on potentially radioactive contaminated hazardous waste once site-specific policies, criteria, and procedures are in place for unrestricted release of waste to off-site commercial TSD facilities. No radioactivity added (NRA) classification of hazardous waste streams is addressed in Section 9.3.1.3, Hazardous Waste. NRA determination is examined in Section 9.3.2, Determination of Quantities and Composition of Waste Streams.

9.2.1 Field Organization Responsibilities

As specified in DOE Order 5820.2A, the heads of field organizations are responsible for all activities that affect the TSD of waste in facilities under their jurisdiction regardless of where the waste is generated.

Heads of field organizations responsible for TSD facilities have the authority for establishing waste management requirements at that facility. This includes establishing the WAC for processing, packaging and transporting waste, certification, and verification of contents of waste shipped or to be shipped, to match waste reduction plans. In addition, they are responsible for the day-to-day waste management at their sites. Operations are conducted in compliance with the requirements of DOE Order 5820.2A and must comply with all applicable federal, state, and local statutes. Site managers are responsible for the design, construction, and technology development at these sites. Independent Certification Committees are responsible for review, audit, and approval of waste certification programs and activities at TSD facilities. A complete listing of responsibilities is provided in DOE Order 5820.2A.

As specified in DOE Order 5400.3, *Hazardous and Radioactive Mixed Waste Program*, the heads of field organizations have the following responsibilities:

- Develop and implement a program to ensure that hazardous and radioactive mixed wastes at facilities for which they are responsible are managed in accordance with the requirements of the Atomic Energy Act (AEA) of 1954, the Resource Conservation and Recovery Act (RCRA), and DOE Order 5400.3;
- Complete all RCRA reporting requirements;

purposes of the MOU. For example, a soil washing facility, groundwater pump-and-treat unit, or in-situ treatment unit for contaminated media, along with associated interim storage in adjacent areas, will be managed by EM-40 as part of their remedial action project. Waste generated by such processes will be managed by EM-30 unless otherwise agreed to in accordance with the MOU. The MOU is provided in Appendix K and designation of responsibilities from the MOU are as follows:

The Deputy Assistant Secretary for Environmental Restoration (EM-40) has the following responsibilities:

- Providing annual plans and projections of anticipated volumes by waste type which are intended for shipment to EM-30 facilities so that EM-30 may ensure availability of needed waste management capacity and capability;
- Assuring interim management of waste generated as a result of EM-40 environmental restoration activities;
- Characterizing, packaging, and labeling waste to be transferred to EM-30 in accordance with EM-30 waste acceptance criteria;
- Transporting waste to the appropriate EM-30 facility; and
- Planning, designing, constructing, budgeting, operating, and maintaining TSD facilities at EM-40 sites in coordination with EM-30.

The Deputy Assistant Secretary for Waste Management (EM-30) has the following responsibilities:

- Treating, storing and disposing of the wastes generated by DOE activities in accordance with DOE orders and applicable federal, state and local laws and regulations;
- Planning, designing, constructing, budgeting, operating and maintaining TSD facilities for wastes generated by DOE operations, unless otherwise delegated to EM-40;
- Establishing criteria for accepting waste from generators in accordance with DOE orders and applicable federal, state, and local laws and regulations;
- Coordinating with all waste generators to ensure the availability of capacity and capability to accept waste;

- **Section 9.5, Project Operations**, describes considerations for waste management operating procedures that address PP/WMin, waste segregation, treatment, handling, storing, staging, and transportation.
- **Section 9.6, Waste Management Documentation**, discusses the documents which should be prepared in the management of decommissioning wastes.

9.2 RESPONSIBILITIES

An MOU was signed between EM-40 and EM-30 on September 15, 1992, to ensure an integrated approach for planning, site selection, and managing waste TSD facilities. EM-30 is responsible for all DOE facilities, operations, or sites that are used for the TSD of radioactive, hazardous, mixed waste, and sanitary waste that have been properly characterized, packaged, and labeled. EM-40 is responsible for remediation of inactive potential release sites contaminated by past DOE nuclear activities and the decontamination and dismantling of surplus contaminated facilities. EM-30 and EM-40 site agreements that are in place with the field organizations will further define site-specific roles and responsibilities.

EM-30 will manage all TSD facilities on DOE installations where there is an established EM-30 presence. Unless otherwise agreed to in accordance with the MOU, the TSD of waste generated by EM-40 in conducting its remedial activities is the responsibility of EM-30. Where an EM-40 activity is not on a DOE installation or where there is no EM-30 presence on a DOE installation managed by EM-40, it will be more efficient and cost-effective for EM-40 to manage the relevant TSD facilities, with EM-30 advice, consultation and assistance.

In cases where both EM-30 and EM-40 have responsibility for various TSD facilities at an installation, EM-30 will, in general, be responsible for the planning and implementation of site-wide waste management and regulatory compliance activities, unless otherwise agreed to by a site-specific agreement. Selection of facilities for storage and disposal of waste should be coordinated with EM-30 prior to generating decommissioning waste. Decommissioning waste management documentation for TSD facilities should be coordinated with EM-30 and comply with the Site Waste Management Plan.

Examples of decommissioning waste streams generated by EM-40 and coordinated by EM-30 could include building rubble and decontamination residue. These types of waste are expected to result from the decommissioning of a facility. They should be characterized, packaged, labeled, and stored as specified by the selected disposal facility Waste Acceptance Criteria (WAC) and the requirements of DOE Order 5820.2A. This order is currently under revision by EM-30 (DOE Draft Order 5820.2B, *Waste Management*) to address hazardous and mixed waste management requirements in addition to radioactive waste.

Contaminated media, such as groundwater and soil, when treated, stored or disposed in a dedicated facility in the area of contamination, would generally not be considered waste for the

9.0 WASTE MANAGEMENT

9.1 INTRODUCTION

The purpose of this chapter is to provide suggestions for developing a waste management program for the decommissioning process and to provide examples of special requirements for waste management based on baseline characterization data obtained during development of the project. It also addresses responsibilities, project assessment, project development, project operations, waste management documentation, and waste disposal activities. The Memorandum of Understanding (MOU) between the Office of Environmental Restoration (EM-40) and the Office of Waste Management (EM-30) (Appendix K) should be consulted; this document establishes a mechanism for coordination of waste treatment, storage and disposal (TSD) facility activities between EM-40 and EM-30. The Facility Planning Board uses this document to establish responsibility for waste TSD at each site. The MOU is addressed further in Section 9.2.

The sections of this chapter contain the information described below:

- **Section 9.2, Responsibilities**, describes the roles of various organizations in the management of decommissioning wastes.
- **Section 9.3, Project Assessment**, discusses classification of past, present, and potential future waste streams. Accurate knowledge should be obtained of processes and or materials that have been used in facilities planned for decommissioning to determine potential or actual contamination that could generate decommissioning wastes. This knowledge also will facilitate identification of pollution and waste minimization (PP/WMin) opportunities, including recycling. Recycling initiatives are receiving increased emphasis in the Office of Environmental Management. Decommissioning managers and planners should be aware of emerging programs and policies to take full advantage of recycling as a means of reducing waste quantities and cost of decommissioning. A description of waste categories and analytical methods for waste characterization are included in this section.
- **Section 9.4, Project Development**, identifies and consolidates information about decommissioning project-specific waste management functions (such as characterization and treatment), regulatory compliance requirements pertinent to waste management activities, and applicable disposal facility waste acceptance criteria. A plan, called a Waste Management Project Plan (WMPP), is recommended, as essential input to the Decommissioning Plan. A suggested table of contents for the WMPP is presented.



result in improving items, processes, and quality; (3) the adequacy, validity, and traceability of data; (4) assurance that structures, systems, processes, or components will perform intended functions; and (5) assurance that an activity is performed to specified requirements.

QA records should be identified in the early phases of the program in order to provide efficient and orderly collection of data as the decommissioning efforts proceed. The corrective actions that result from nonconformance reports and other corrective action documents (e.g., NRC reports, audit findings, unusual occurrence reports) should be used for trending analysis and for the assembly of lessons learned. The lessons learned should be shared with site personnel and with other sites. In order to meet the regulatory requirements for the acquisition of legally defensible data, environmental results and accompanying QA-related data should be collected, managed, and analyzed in a well-documented and efficient manner.

8.4.5 Reporting Requirements

Decommissioning project managers should prepare periodic reports for the DOE HQ Division Director. Suggestions include:

- Weekly Highlights. A summary of project progress including milestones achieved, issues, concerns and problems.
- Project Manager's Quarterly Report. The project manager's personal assessment of overall project status including discussion of issues, concerns and problems. Included is the cost, schedule, and technical baseline performance data with variance analysis. The project manager's signature should be included for accountability.
- Progress Tracking System Reporting. The decommissioning project system should provide monthly data to DOE HQ through the EM-40 Progress Tracking System (PTS). The project data should meet the requirements for routine progress reporting and provide DOE management, as well as the Office of Management and Budget (OMB) and Congressional staffs, with critical information for program accomplishment. The information should include status of project milestones, identification of significant issues, list of major accomplishments, cost and schedule analysis, cost planning, funding levels and actual cost. Project Baseline Change Control actions should be addressed in the narrative sections, as appropriate.

8.4.6 Quality Assurance

Consistent with DOE Order 5700.6C, *Quality Assurance*, decommissioning practices should be conducted in accordance with applicable requirements of the appropriate standards such as ASME NQA-1 or (draft) ANSI/ASQC E4. The DOE Order 5700.6C should be used, whenever applicable, to develop and implement a quality assurance plan (QAP). The QAP description should contain the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing adequacy of work. The focus of the QA program should be on safety, the decommissioning process and recordkeeping, not on the quality of an end-product facility. DOE management, including contractors, should define requirements to meet environmental restoration objectives; properly train, motivate, and empower personnel; provide appropriate resources/budget; and assess performance to ensure requisite quality of services.

The management controls systems required by DOE Order 5700.6C, *Quality Assurance Program*, provide for achievement of quality in a planned and systematic manner. The systems include (1) quality verification and oversight activities that demonstrate the completeness and appropriateness of achieved quality; (2) the process of planned and periodic assessments to

Accurate monthly progress reports should be prepared to summarize performance data and should be provided to the appropriate levels of management for visibility, evaluation and action. Information provided, as a minimum, should include narrative status, discussion of problems, schedule/milestones and performance variances. Any issues or problems requiring management action should be reported in a timely manner.

8.4.3 Change Management

All projects should have an appropriate formal documented change control process that provides an audit trail from the project's beginning. Change control starts with the project's baseline being well defined and formally approved. Proposed changes to the project's baseline require approval by only the designated authorized official, as outlined in HQ change control procedures, Standard Operating Practice and Procedure 2.2.2, *Managing Baseline Change Control*, in the EM-40 *Project Management Notebook*. Proposed changes should be well defined and evaluated for identifying, defining, and resolving interface issues. Retroactive changes should not be made except to correct errors. Required changes should be made in a timely manner to minimize impacts.

8.4.4 Work Plans

A current year work plan (or equivalent work description document) should be developed by the DOE field office and, if required, annually submitted to the DOE Headquarters Division Director, Program Manager, for approval. The plan should be prepared congruent with HQ guidance and include, as a minimum, work scope summary description, milestones, budget by WBS and an overall discussion of management strategy.

A typical outline for work plan preparation includes the following sections:

- Executive summary,
- Introduction,
- Purpose and scope of document,
- Management strategy discussion,
- Headquarters guidance,
- Fiscal year scope summaries by WBS,
- Schedule(s) for work scope accomplishment by WBS,
- Budget(s) for work scope accomplishment by WBS,
- Conclusion, and
- References.

The project's budget should be timed-phased over the lower level scheduled activities of the WBS, allowing for a bottom-to-top WBS roll-up including cost and earned value, as applicable. The project's budget and its cost estimate should be reconcilable including subsequent versions. The DOE budgeting and financial management processes are specifically addressed in Appendix J. Indirect costs are to be identified and specifically managed. All work expected to be performed should be in the project's baseline.

Control account plans should be developed to incorporate earned value methods appropriate to the type of work scheduled. These methods should allow for work accomplishments to be measured in a quantifiable or qualitative manner, and to provide accurate comparisons between cost and schedule variances using actual costs and other formal budget data. The Project Tracking System provides this function; its data quality and completeness should be assured by all decommissioning project managers.

8.4.2 Project Performance

The management system implemented should provide a process that integrates the management of funds with the other guideline elements to ensure that funding impacts are reflected in project or contract baselines. The commitment and expenditures of funds should not exceed the authorized limits of the project's approved funding plan. The project management system should allow for timely reporting of early warnings if funding limits are about to be exceeded.

The management system should ensure proper use of accounting data in baseline management. All actual direct costs which have been incurred for resources applied in the performance of work should be recorded on a timely basis. The actual costs should be applied in the same accounting period that performance is measured and recorded (the use of an accrual method should be encouraged). Indirect costs allocated to the project should be recorded consistent with Federal Acquisition Regulations and DOE Acquisition Regulations.

All work should be formally authorized as required by DOE Order 5700.7C, *Work Authorization System*, by appropriate levels of management before a task is executed, and after it is sufficiently defined, organized, and planned. Work authority should be terminated promptly when funding limits or other limits of authority or constraints are exceeded.

Project performance analysis should be conducted monthly by analyzing technical, schedule, and cost results to determine accurate project status, problems and impacts, and alternative courses of action. This should include differences between planned and actual cost, schedule and technical accomplishments and revised project forecast, as appropriate.

The project's estimates-at-completion (EACs) should be periodically evaluated, at least semi-annually. The EAC should represent a realistic appraisal of the final cost of defined increments of work and undefined potential factors affecting final cost summarized to the total project level.

- Engineering. Developing the technical criteria and requirements, conducting analysis, and developing design alternatives for a Decommissioning Plan. Engineering also includes the waste immobilization systems, mockups, tooling, robotics, and training required to perform decommissioning operations.
- Decommissioning Operations. The site-specific task of decontaminating and decommissioning of contaminated and non-contaminated buildings, structures, facilities, and systems, including waste immobilization, packaging, and transport for disposal. This also includes planning, preparation of detailed procedures and manuals, training and other preparation measures by the performing organization.
- Post-OPS. Provides for closeout documentation, verification, and other closeout operations necessary to complete the project and for facility area security, protection and disposal of government-owned equipment and long-term S&M.

8.4 GUIDELINES

8.4.1 Baseline Development

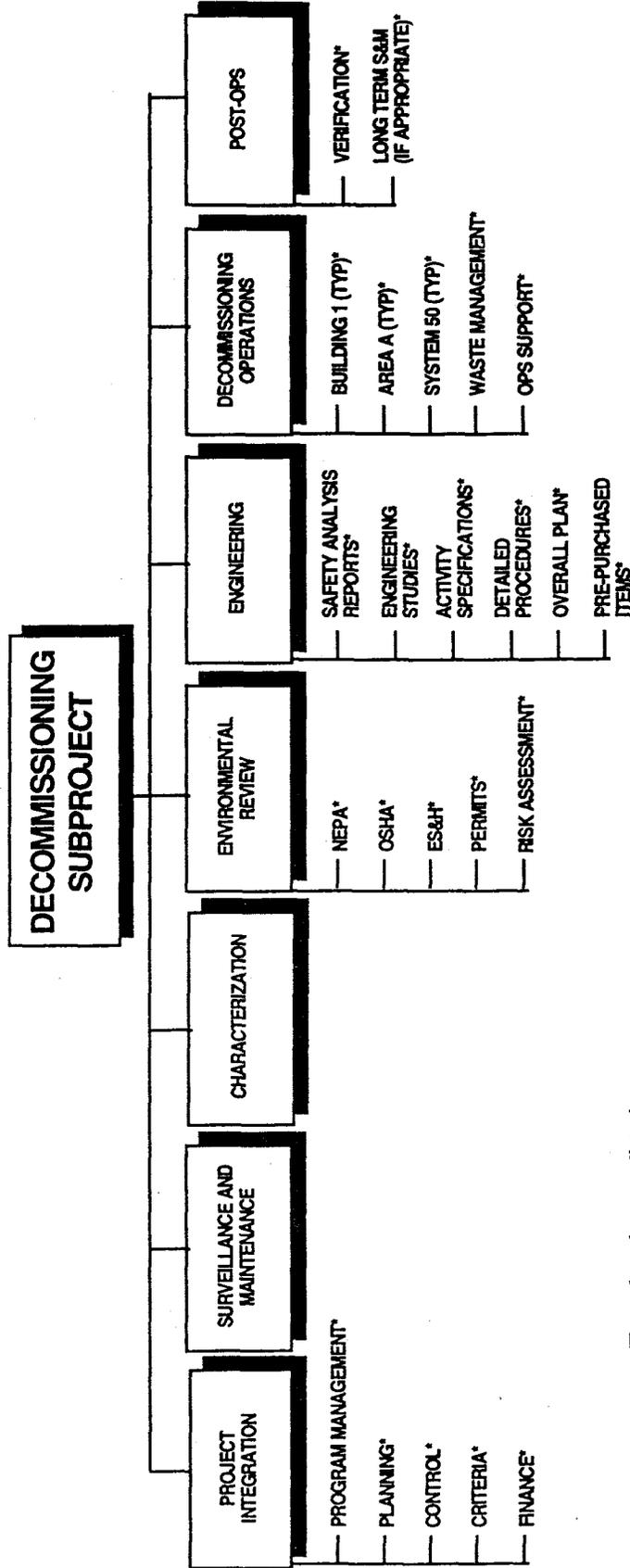
The project team should define the project scope and responsibilities, establish baselines, and plan the project in a framework that integrates all the guideline elements. All authorized work should be defined in an approved WBS and WBS Dictionary in the project plan that represents how the work will be estimated, scheduled, budgeted, performed and managed. Changes to the WBS should be made only by formal change control.

All the project's participants should be identified in a responsibility assignment matrix and roles and responsibilities described. This should include functional and technical scope responsibilities and limits of authority. The WBS is the control point for all work and assigned responsibility.

Accurate cost estimates are required by DOE Order 5700.2D, *Cost Estimating, Analysis, and Standardization*, to establish the approved project cost baseline. Total Estimated Cost figures are to be prepared with methodologies that are integrated with the WBS and the DOE cost structure.

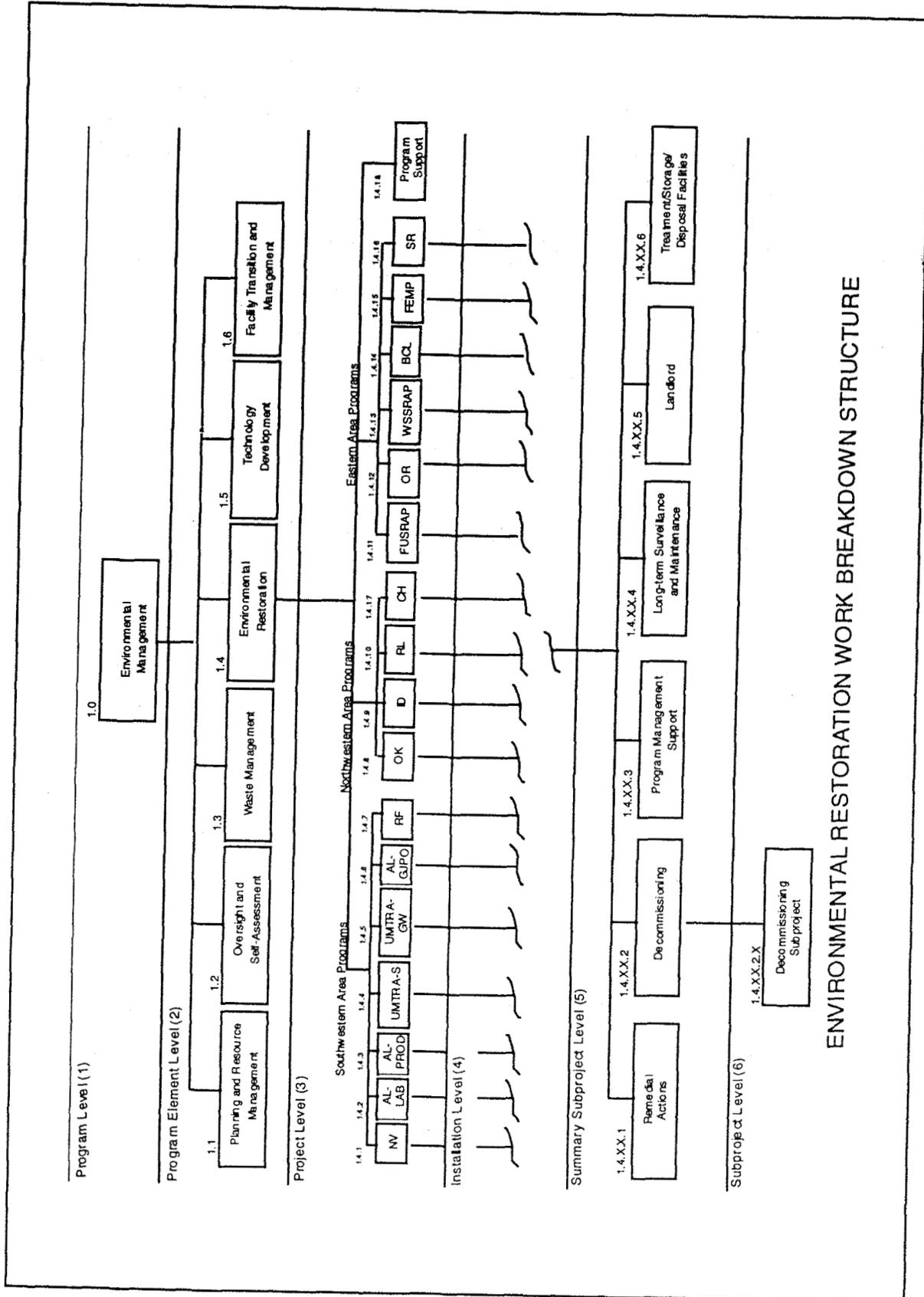
All known requirements affecting the project should be identified and considered in developing the project's baseline. Baselines should reflect all work regardless of the funding source and identify programmatic, operational, legislative, institutional, and project constraints. The project's critical path should be visible, including agreed upon control milestones and potential impacts isolated for management awareness. Depending on the project size and needs, schedules should be developed in a vertical tier, from detailed lower level to summary top level.

Figure 8-3
 Work Breakdown Structure for a Typical Decommissioning Project



*These functions are listed as examples of the contents of WBS area, not as an extension of the WBS itself.

Figure 8-2
Work Breakdown Structure



ENVIRONMENTAL RESTORATION WORK BREAKDOWN STRUCTURE

8.3.1 Management Structure

The backbone for the project is its work breakdown structure (WBS). Figures 8-2 and 8-3 illustrate the concept of the WBS. The WBS is an indented breakdown of project work elements to a level where work is performed. At the lowest level of the WBS, a control account should be prepared, that defines scope, schedule, and budget for a given work element with responsibility and authority assigned for the work.

The control account is essentially a "mini" project with its own scope, schedule, budget, and project manager. The control accounts for all of the elements equals the project's total cost and schedule and provides scope, schedule, and time-phased budget and cost data for intermediate levels. The sum of all control accounts is the project's baseline.

8.3.2 Work Breakdown Structure

The following definitions are provided to aid project managers in understanding the typical WBS shown in Figure 8-3.

- Project Integration. Provides for project management, baseline planning, scheduling, control milestones, budgeting, assessment, reporting and change control including documentation such as project plans, project management plans, and financial plans.
- Surveillance and Maintenance. The activity required to ensure that a site or facility remains in a physically safe and environmentally secure condition, including periodic inspection and monitoring of the property and required maintenance of barriers controlling access.
- Characterization. Identifying and defining through established protocols the contamination constituents of building structures, systems and yard areas including required documentation.
- Environmental Review. The statutory reviews (e.g., NEPA, OSHA, RCRA, CERCLA), reviews necessary to establish project-specific requirements and plans for regulatory compliance.

8.2 BACKGROUND

The cornerstone of DOE's project management policy is the concept of accountability at appropriate levels for project control and management. Project managers, as accountable managers, should be directly involved in the application of overall project controls. This includes establishing technical, scope, and cost baselines, and documenting changes to those baselines. The project manager should apply the graded approach (see Section 1.4.5.2) to tailor the application of project controls, based on the dollar value, complexity, visibility, and risk (technical, schedule, and cost) of the project. The projects baselines and their definitions are described in Table 8-1. The project baseline(s) are established initially in the project plan as explained in Chapter 2 at Step 14 of the decommissioning framework, then subsequently updated in the decommissioning plan.

Table 8-1
Project Baseline Definitions

BASELINE TERM	DEFINITION
Technical	The documented technical requirements/scope of the effort needed to achieve the project objectives.
Schedule	The documented logic sequence of activities with durations and milestones that defines the project's path from beginning to completion.
Cost	The documented estimate of cost to complete all the scheduled activities, including direct and indirect work scope for the project, time-phased with the project's schedule.

8.3 OVERVIEW

The DOE documents referenced in Section 8.1 emphasize management control system results and de-emphasize a specific system method or process. Each DOE field office is responsible for ensuring that the guidelines are met by conducting compliance reviews of its contractor and subcontractor systems to demonstrate that the systems implemented are sound, effective, and reliable.

The guidelines should flow from upper management to the lower tier of individual contractors to provide management consistency in all project work. Fixed price contracts should be examined to identify what guideline elements should be made contractual. (For example, it is not general practice to ask fixed-price contractors for actual cost information.)

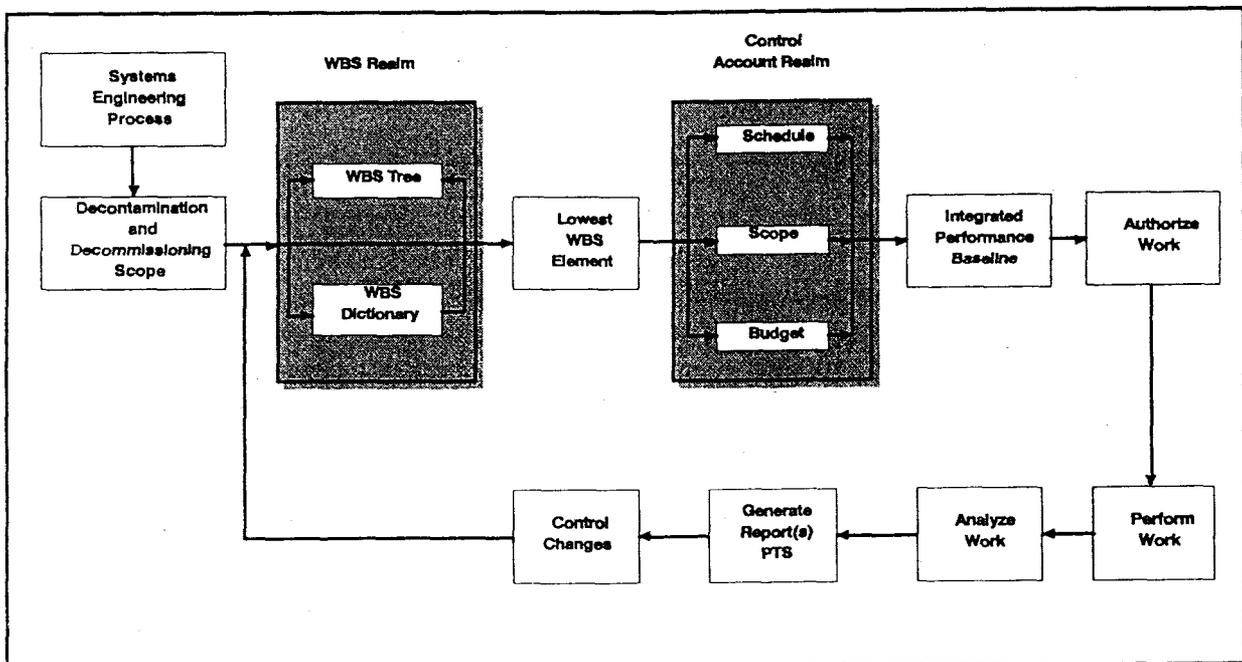
8.0 PROJECT MANAGEMENT

8.1 INTRODUCTION

This section summarizes and outlines the basic project management approach to decommissioning, including the framework and elements required for the execution of all DOE decommissioning projects, and is intended to be a conceptual overview of project management principles. Requirements and implementing instructions including formats and procedures are found in DOE Order 4700.1, *Project Management System*; DOE Notice 4700.5, *Project Control Guidelines*; EM-40 *Project Managers Notebook*, March 1993; EM-40 *Management Policies and Requirements*, March 1992; and EM-40 *Management Plan*, March 1992. DOE order 4700.1 is currently being revised and incorporated into a new DOE order on corporate facility management. All decommissioning projects, regardless of size or complexity, should have a formal management control system in place that meets the guidelines identified in the documents above. All projects should have an approved baseline, with all changes approved by designated authority to provide an audit trail. Figure 8-1 provides an illustration of the management system functionality.

The provisions of this chapter, and other programmatic contents of this manual are intended to replace such material in Chapter 2 through 5 of the *Decommissioning Handbook*.

Figure 8-1
Project Management Flow



7.6.4 Operational Readiness Reviews

DOE 5480.31, *Startup and Restart of DOE Nuclear Facilities*, requires that formal operational readiness reviews (ORRs) be conducted for new nuclear facilities before initiating operations. Should a decommissioning project qualify as a nuclear facility per DOE-STD-1027-92, an ORR may be required before beginning work. Regardless of whether it is required by DOE 5480.31, conducting a readiness review (perhaps more correctly, a “readiness assessment”) is considered good practice before commencing any decommissioning operation. See also the EM-1 memorandum described in Section 2.2.5.

material. The packaging provisions are not recommended and are based on international performance-oriented packaging standards.

To ensure an orderly transition to the new requirements, the DOT has provided a five-year compliance timetable. This timetable is published in 49 *CFR* 171.14, and is known as the "transitional provisions."

DOE waste management groups are implementing the provisions on or before the schedule dates outlined in 49 *CFR* 171.14, *Transitional Provisions for Implementing Requirements based on Unrecommendations*.

7.6.3 Emergency Management System

The establishment of an emergency management system typically involves site-wide hazard assessments and catastrophic failure analysis (through application of several alternate methodologies); planning to identify assets and procedures to be employed in responding to emergency incidents; training response personnel to minimize time and confusion in effecting response procedures; and procedures for recovering from, and investigating the cause and response to, an emergency situation. Emergency management includes planning that involves the response procedures and protective actions for on-site personnel, as well as extensive planning and interaction with federal, state and local community organizations. Establishment and effective maintenance of an emergency management system has been strongly correlated in government and industry with reduction of loss of property and loss or injury of personnel during an actual emergency incident.

DOE has established requirements for emergency planning, response, and recovery in the 5500 series of DOE orders. DOE Order 5500.1B, *Emergency Management System*, formally establishes the DOE Emergency Management System. Emergencies that involve DOE are grouped into three broad categories defined as Operational, Energy, and Continuity of Government or COG (as described in DOE Order 5500.2B, *Emergency Categories, Classes, and Notification and Reporting Requirements*). These categories are further subdivided into classes based on severity depending on actual or potential consequences of the emergency.

Operational emergencies include significant accidents, incidents, events or natural phenomena which may seriously degrade the safety or security of a DOE facility, including non-nuclear facilities. Operational emergencies apply to DOE facilities involved with hazardous materials, DOE-controlled safeguards and security events, and transportation accidents involving hazardous material under DOE control. Three classes of operational emergencies, in ascending order of severity, include Alert, Site Area Emergency, and General Emergency. Conditions and procedures that characterize these classifications are presented in detail in DOE Order 5500.2B. While the remaining two classes of emergency, Energy and COG, are not likely to apply to EM-40 activities, they are also presented in detail in this order.

advisable to exceed the requirements contained in OSHA regulations because they were designed to address minimum requirements, while a job description may require much more detailed training knowledge of the inherent hazards. The safety of the employee may rely on more specific training; the type and level of training that may be required for particular job responsibilities may be determined by comparison of mandatory and non-mandatory standards. Special training may be required to maintain and test safety equipment.

7.6 OTHER OSH COMPLIANCE REQUIREMENTS

7.6.1 Hazardous Waste Operations and Emergency Response (HAZWOPER)

OSHA regulations at 10 *CFR* 1910.120, *Hazardous Waste Operations and Emergency Response*, state:

All employees working on site (such as but not limited to equipment operators, general laborers, and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph.

Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

Under the interagency agreement between DOE and the National Institute of Environmental Health Sciences (NIEHS), NIEHS will administer grants, funded by DOE, to provide training in hazardous waste materials handling to both federal and contractor employees. The curriculum to be taught includes handling of hazardous waste materials, radiation protection, asbestos removal, lead abatement and procedures for emergency response. This training meets the OSHA requirements at 10 *CFR* 1910.120.

7.6.2 Transportation Safety

A wide variety of performance-based standards exist for the packaging and transport (via different modes of transportation) of hazardous, highly hazardous, mixed, and radioactive (low- and high-level) wastes. These standards are enforced or managed by several offices and agencies including the Federal Aviation Administration, Coast Guard, Federal Highway Administration, and other elements of the DOT, NRC, DOE, and International Atomic Energy Agency. In addition, the Hazardous Materials Transport Act of 1990, HM-181, includes new provisions for the packaging and transport of hazardous materials. The Hazardous Materials Transportation Act of 1990, includes new packaging and communication provisions for the transport of hazardous

All employee records regarding occupational health must be retained by the employer (either federal or management and operating contractor) for specific periods of time depending on the record type. Requirements for record retention and file destinations are presented in DOE Order 1324.2A, *Records Dispositions*. In conformance with DOE policy and guidelines, use of the *General Records Schedules*, published by the National Archives and Record Administration (NARA), is mandatory. Those schedules, along with internally generated NARA-approved schedules are used for disposition of DOE records.

7.5 SAFETY AND HEALTH TRAINING AND CERTIFICATION REQUIREMENTS

The training and certifications that will be required for individual DOE and DOE contractor and subcontractor employees will depend on the description of their functional job responsibilities and the level they occupy in the system (e.g., Field Health and Safety Officer, Incident Commander). Each new employee who arrives on-site for work should immediately be provided with the training that is required under the OSHA Hazard Communications Standard (29 *CFR* 1910.1200). At this point, however, the similarities in personnel on-site training requirements often end. Other training programs that are usually required at facilities similar to those under DOE jurisdiction include, but are not limited to:

- Fire suppression equipment and response training;
- Fire brigade training (incipient and/or structural levels, if brigade is present);
- Chemical hygiene plan/laboratory safety training;
- Training in the use and maintenance of personal protective equipment appropriate to the level of expected use;
- Hazardous waste operations and emergency response (HAZWOPER) training;
- Medical monitoring program training;
- Radiation protection training (consistent with *RadCon Manual* Implementation and DOE Notice 5480.6);
- Training in the safe handling, storage, transport, and disposal of hazardous and highly hazardous chemicals; and
- Emergency management training (e.g., contingency plans, evacuation plans, alarm type and awareness, responsibilities).

This is not an exhaustive list of training requirements. Individual requirements can be identified by conducting individual or comprehensive training needs and requirements surveys. It is often

level as delegated). The review by the line organization should be conducted by a group comprised mainly of individuals who are not directly involved with the management of the DOE operation being evaluated. The review shall be sufficiently documented to allow for independent review by an independent party to assess adequacy.

- Authorization of a DOE operation shall be granted by the line organization and shall account for the type and magnitude of the hazards involved, will signify that a determination has been made by the line organization for DOE that the risk is acceptable, and shall limit a DOE operation to those characteristics described and analyzed in the safety analysis.
- All pertinent details of the analysis, review, and authorization relative to any DOE operation shall be traceable from the initial identification of a hazard to its elimination or management through the application of controls necessary to reduce the risk to an appropriate level.

Further information and guidance on the implementation and operation of the Safety Analysis and Review System are included in DOE Order 5481.1B.

7.4.4 Occupational Safety and Health Information Reporting Requirements

It is DOE policy that occurrences having safety and health protection significance involving DOE or DOE contractor operations must be investigated by boards chaired by an individual from an organization other than the line organization responsible for facility operations. There are three broad categories of occurrence investigations with separate investigation and reporting procedures and requirements (in decreasing order of severity):

- Type A Investigations, which must be conducted by a DOE HQ or field organization;
- Type B Investigations, which must be conducted by a DOE board appointed by the head of the field organization and consisting of DOE or contractor personnel or both; and
- Type C Investigations, which are conducted by DOE contractor personnel when their own operations are involved, or by DOE personnel when federal operations for which they are responsible are involved.

Standards for the conduct of these investigations and the subsequent content and submission of the investigation reports are contained in DOE Order 5484.1. In addition, this DOE order provides for standards and instructions pertaining to the submission of quarterly, annual, and individual occupational health reports.

storage drum retrieval, a BIO completed in accordance with DOE-STD-3011-94 is an appropriate basis for an up-to-date auditable analysis mentioned in the attachment to DOE 5480.23.

- For facilities that have less than two years of planned operation before shutdown and remediation, an implementation plan with an appropriate BIO is sufficient for the two-year period.

EM manager should be aware that many of the SAR and BIO sections are identical or similar to sections of the HASP. By referencing common analyses and program documents, both requirements may be satisfied without duplicating effort.

DOE 5480.21, *Unreviewed Safety Questions*, provides requirements for handling modifications to or discovered discrepancies in the current authorization basis of nuclear facilities.

7.4.3 Safety Analysis and Review System

The purpose of the Safety Analysis Review System is to establish and maintain uniform requirements for the preparation and review of safety analyses of DOE non-nuclear operations, in accordance with DOE Order 5481.1B including:

- Identification of workplace hazards,
- Elimination or control of identified hazards,
- Assessment of risk posed by hazards, and
- Documented management authorization of operations.

Note that HASPs for EM sites may be able to meet the requirements of DOE 5481.1B to a large degree, if not entirely.

The basic requirements of the Safety Analysis Review System include, but are not limited to, the following:

- The organization with immediate responsibility must perform as early as possible, a safety analysis of a DOE operation that includes demonstrable conformance with applicable codes, guides and standards; covers classes of efforts or individual operations within a facility so they are bounded by the analysis; and demonstrates that there are reasonable assurances that operations can be conducted in a manner which minimizes risk to the health and safety of DOE and contractor personnel.
- A line organization review of the safety analysis must be conducted to evaluate preventative or mitigative design features and administrative controls implemented to reduce risk and to provide a basis for authorization of the proposed DOE operation (this review may be conducted at the HQ level or field

requires that safety documentation for category 1 nuclear facilities must be approved by Headquarters, while approval authority for category 2 and 3 nuclear facility safety documentation has been delegated to the field office level.

The hazard categorization process provides a method for assessing potential hazards and does not consider potential risk. DOE Standard 1027-92 provides detailed guidance on a consistent methodology which should be used for hazard categorization.

The graded approach directs that the SAR effort should be proportional to the complexity of the facility and the safety systems relied on to maintain an acceptable level of risk. Simple facilities would require less sophisticated analysis. Consequently, the sophistication of the information to be provided in the SAR would be proportioned accordingly. In many cases, the complexity of a facility may have a greater impact on the grading effort than the hazard categorization. In general, a graded approach dictates a more rigorous and thoroughly documented analysis and evaluation of higher-hazard facilities than lower-hazard facilities, given the potential for more widespread and severe consequences if a higher-hazard facility fails to meet its safety basis requirements. In all cases, however, the SAR must provide adequate safety analysis, evaluation, and supporting documentation.

DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports*, was recently issued to provide guidance on the generation of SARs. The standard does not attempt to define a standard format for SARs, although it is recommended that sites attempt to maintain similar format. The standard does highlight how each topic should be addressed in a SAR and how each may be graded to suit the facility being analyzed.

Prior to completion of a SAR, an implementation plan is required to be submitted and approved by DOE. Accompanying the implementation plan will be a Basis for Interim Operation (BIO) for each nuclear facility at a site. The BIO is intended to identify the controls needed to ensure safe operation until a complete SAR can be generated. Use of existing documentation in completing a BIO is encouraged. DOE-STD-3011-94, *Guidance for the Preparation of DOE 5480.22 (Technical Safety Requirements)* and *DOE 5480.23 (SAR) Implementation Plans*, addresses the content of implementation plans and BIOs. A BIO can serve as a transition plan for facilities that do not fully comply with the requirements of DOE Order 5480.22 and DOE Order 5480.23 or require a renewed safety basis. A BIO can serve as an effective cost-cutting measure, for facilities that it applies to, in averting future SAR preparation.

A recent interpretation from the Office of Environment, Safety and Health regarding use of BIOs may have a beneficial impact on EM facilities. A memo dated January 9, 1995, from EH's Policy Development Division to Randall Scott (EM-20) indicated the following:

- For non-facility nuclear operations such as cleanup of contaminated soil or waste

- Factory Mutual Engineering Division,
- American National Standards Institute (ANSI),
- American Conference of Government Industrial Hygienists (ACGIH),
- Crane Manufacturers Association of America (CMAA),
- U.S. Department of Agriculture (USDA),
- American Petroleum Institute (API),
- Department of the Navy,
- American Society of Mechanical Engineers (ASME),
- General Services Administration (GSA),
- Department of Defense (DOD),
- Nuclear Regulatory Commission (NRC),
- Institute of Electrical and Electronic Engineers (IEEE),
- International Air Transport Association (IATA), and
- National Institute of Standards and Technology (NIST).

7.3.4 Exclusions to Mandatory Requirements

DOE and DOE contractor organizations that wish to obtain exclusion/exemption from safety and health requirements should use the exclusion/exemption process described in DOE Order 5480.4 or the appropriate applicable DOE order, requirement, or standard.

7.4 MAJOR OSH REQUIREMENTS/GRADED APPROACH

7.4.1 Health and Safety Plans (HASPs)

29 CFR 1910.120 (HAZWOPER) requires hazardous waste sites, as defined in the rule, to develop health and safety plans (HASPs). The purpose of the HASP is to analyze hazards, establish operational controls and establish appropriate safety management programs to ensure safe operations at these special "facilities."

EM published a guidance document, EM-STD-5503-94, to assist sites in implementing, these requirements. Many of the sections of these documents, if written appropriately, may also serve to meet other safety documentation requirements. Much duplication of effort can be eliminated by referencing common analyses and program documents in these various safety documents.

7.4.2 Nuclear Safety Analysis Reports and Technical Safety Requirements

In accordance with DOE Order 5480.23 and 5480.22, nuclear facilities and operations must be analyzed to identify all hazards and potential accidents associated with the facility and the process systems, components, equipment, or structures and to establish design and operational means to mitigate these hazards and potential accidents. The results of these analyses are to be documented in SARs. The hazards identified and evaluated in the SAR and the associated facility Technical Safety Requirements (TSRs) are to be approved by DOE. Currently, EM

The standards and requirements that have been listed in DOE Order 5480.4 as mandatory regulate a wide and often overlapping variety of activities and facility operations. General classifications include, but are not limited to:

- Management and oversight;
- Emergency preparedness, including prevention, response and recovery;
- Fire protection;
- Industrial hygiene;
- Occupational medical services;
- Radiation protection;
- Industrial safety;
- Nuclear safety;
- Transportation safety; and
- Life safety.

The standards affecting these general safety and health areas are generally either performance-based standards (e.g., permissible exposure limits, ventilation standards, construction safety standards), or management-based standards (e.g., medical monitoring programs, training documentation programs, comprehensive safety programs, chemical hygiene programs, lockout/tagout programs). These standards have been designed to address, control, or eliminate physical, energy, biological, chemical, and mechanical sources of risk to the health and welfare of employees through the application of an interactive mix of engineering controls (e.g., heating, ventilation and air conditioning design, pressure vessel construction codes), administrative controls (e.g., documentation of employee training, employee accident and exposure records, safety inspection programs), and personal protective measures (e.g., respiratory protection, chemical protective clothing).

In instances where both DOE and non-DOE standards are applicable and mandatory and there are conflicts between these standards, it is DOE policy that the standards providing the greater protection shall govern in accordance with DOE Order 5480.4. Similarly, when there are conflicts between the standards of one DOE order in comparison with another, it is DOE policy that the standards offering the most protection shall govern.

7.3.3 Referenced OSH Standards

These guidelines and consensus standards provide the OSH industry with good engineering and administrative practices which, if implemented, will reduce the risk of personal injury or illness. DOE Order 5480.1B specifies that it is DOE policy to reduce identified environment, safety and health risks, even though not mandated by specific requirements. Referenced OSH standards include the following:

- National Fire Protection Association (NFPA),

**Table 9-1
Suggested Waste Characterization Database**

This table represents alphanumeric data/description content that can be entered into a proposed waste characterization database to support the waste management tracking system. Each line of the table requires specific information for a database field of entry that also will satisfy representative waste acceptance criteria at commercial and DOE disposal facilities.

Field Name	Field Size (# of Characters)
Decommissioning Project/Facility Identification Code	8
Waste Generation Operation/Process	20
Waste Generation Operation Description ¹	300
RCRA Hazardous Waste Code(s) ² for each known or suspected Hazardous Waste Type ³	5
Estimated Quantity for each Hazardous Waste Type ⁴	20
Radiological Constituent(s) ³	7
Estimated Total Activity (Ci) for each identified Radiological Constituent	20
Waste Form Content Code(s) ⁵	7
Number of Waste Containers for Each Waste Form	5
Waste Container Type ⁶	40
Description of Condition of Waste Container(s) and Package(s)	40
Storage Date of Waste Container(s) and Package(s)	8
Total Volume of Residual Materials and Free Liquids	20
Total Weight of Residual Materials and Free Liquids	20
Description of Residual Materials and Free Liquids	100
Total Volume of Packing Materials	20
Total Weight of Packing Materials	20
Description of Packing Materials	100
Total Volume of the Waste Form	20
Total Weight of the Waste Form	20
Waste Package Identification Code	13
Interim Storage Location	20
Pollution Prevention/Waste Minimization Opportunities	100

**Table 9-1
Suggested Waste Characterization Database (Continued)**

FOOTNOTES	
1	The description should include the chemical and physical properties that also may constitute part of the waste form matrix such as liquids, gases/vapors, soils and sludges. The description also will support the categorization of waste treatability groups for Site Treatment Plans required by the FFCAct.
2	U.S. Environmental Protection Agency (EPA) hazardous waste codes as presented in Title 40 <i>Code of Federal Regulation</i> Part 261 (40 <i>CFR</i> 261), Subpart C, "Characteristics of Hazardous Waste," and 40 <i>CFR</i> 261, Subpart D, "Lists of Hazardous Wastes."
3	Indicates that multiple fields may be required. For example, a waste stream may have more than one radiological contaminant or hazardous constituent, each of which would be recorded in a separate database field entry location. The additional fields are not shown in this table due to space considerations.
4	The values are to be in micrograms, grams or kilograms of substance per overall weight of the waste form matrix confined by the container.
5	Content codes are used to describe the contents of the waste package, such as the TRUCON (TRUPACT-II transportation container <u>C</u> ONTENT) codes. As an example, TRUCON specifies 116 for newly generated waste (NGW) of "Paper, Plastic, Cloth," and 216 for interim retrievably stored (IRS) waste of "Paper, Plastic, Cloth." Alpha characters for Transuranic (TRU), low level waste (LLW), high level waste (HLW), or spent nuclear fuel (SNF) can be used in combination with digital characters to comprise the total number of characters.
6	Possible descriptions for containers may include DOT 7A 55 gallon drums, and standard waste boxes (SWB). Physical dimensions for containers and the waste packaging also should be provided.

Information should be provided relating to the type of operation which produced the waste. Examples of operations that routinely yield contamination include process operations (e.g., laboratory activities, weapon components manufacturing, and research and development and decommissioning of the facilities). As much detail as possible should be provided when describing the source of contamination or waste generating operation. This will ensure that the following matters will be accurately identified:

- Pollution prevention and waste minimization,
- Waste treatability groups,
- Health and safety hazards, and
- Facility and equipment needs.

Comprehensive waste stream inventories need to be developed before a complete inventory of waste stream constituents and waste form matrices can be established. Waste already in storage as a result of decommissioning activities also are to be included. Waste form matrices should consider solids, liquids, gases/vapors, soils and sludges.

Accurate waste stream inventories will rely on organization of information from the following:

- Generator processes and the source;
- Means by which contamination or waste is produced;
- Waste stream composition description; and
- Radiometric surveys, assay, radiochemistry and RCRA constituent analysis, when process knowledge is inadequate.

Information should be provided that accurately describes the point of origin of waste streams and generator processes. At a minimum, this information should consist of a unique building identification code. If a building contains multiple facilities that routinely generate waste (e.g., laboratories), another facility specific identification code should be provided. For each facility, waste material content descriptions are separated into waste stream constituent categories as determined at the field location. Sections 9.3.1.1 through 9.3.1.6 represent recommended classifications for waste stream categories.

9.3.1.1 Sanitary Waste

This type of waste is generated by normal operations at a decommissioning project site. This non-contaminated waste can be broken down into two different waste streams: solid sanitary waste and liquid sanitary waste.

9.3.1.2 Radioactive Waste

Radioactive waste consists of solid, liquid, or gaseous material that contains radionuclides regulated under the AEA, as amended, and is of negligible economic value considering cost of recovery (ref. DOE Order 5820.2A). Radioactive waste determination will also require technical cleanup criteria in addition to economic values. The technical values will establish cleanup levels and standards for recycle and reuse. Cleanup levels can be based on naturally occurring background levels, radiation detection limits, or risk-based levels for protection standards. Waste characterized at concentration levels below risk-based protection standards and having no economic value for recycle or reuse may be suitable for sanitary landfill disposal.

Technical guidance has not been established for release levels. EPA rulemaking for radiation cleanup standards is in progress (*Issues Paper on Radiation Site Cleanup Regulations*, [EPA 402-R-93-084, September 1993]). The NRC has published a Notice of Intent to prepare a Generic Environmental Impact Statement (GEIS) for the proposed rulemaking on "Radiological Criteria for Decommissioning of NRC-Licensed Facilities" (58 FR 116; June 18, 1993). DOE

and EPA also are participating in this rulemaking, which also will address decommissioning criteria for restricted use and recycling. Promulgation of recycle/reuse standards for residual radioactive contamination levels will greatly enhance waste minimization efforts throughout the DOE complex (see Section 9.4.3, Waste Minimization).

Once a waste stream has been determined to be radioactive it then can be further classified as one of the following subcategories of radioactive waste:

- High Level Waste (HLW),
- Transuranic Waste (TRU), or
- Low Level Waste (LLW).

Determination of whether a waste stream falls into one of the categories is based on the definitions provided in DOE Order 5820.2A.

9.3.1.3 Hazardous Waste

Waste streams that exhibit hazardous characteristics as designated by EPA regulations (40 *CFR* 261) are considered to be hazardous waste streams (ref. DOE Order 5820.2A). Hazardous waste stream materials are those with descriptions meeting the listing in 40 *CFR* 261.31, 32, or 33 (e) and (f). The listings include specific waste from industrial processes, generic process waste such as solvents, and unused commercial chemical products.

Hazardous waste materials that are suspected to be radioactively contaminated, such as those present in a radiologically controlled area such as a Radioactive Material Management Area (RMMA), will require radioanalysis. This is done to determine that the suspect material contains no measurable increase in radioactivity (NRA classification status), at a statistically defined confidence level above background in volume or bulk resulting from DOE operations.

9.3.1.4 Mixed Waste

Waste streams that contain both radioactive and hazardous waste as defined by the AEA and RCRA are considered to be mixed waste streams (Ref DOE Order 5820.2A). Naturally occurring or accelerator-produced radioactive waste (NARM) containing hazardous waste is not included in the definition of mixed waste. When process knowledge does not provide sufficient information on materials that have the potential to be classified as a mixed waste, chemical analysis may be required to determine which, if any, hazardous constituents may be present. Mixed waste also should be associated with the subcategory of radioactive waste listed in Section 9.3.1.2. which are:

- High Level Mixed Waste (HLMW),
- Transuranic Mixed Waste (TRUMW), and
- Low Level Mixed Waste (LLWM)

9.3.1.5 Spent Nuclear Fuel

Fuel material that is withdrawn from nuclear reactors following irradiation, but has not been reprocessed to remove its constituent elements, is considered to be spent nuclear fuel (SNF) (Ref. the Nuclear Waste Policy Act of 1982, Public Law 97-425). In order to provide guidance for the assessment evaluation of DOE spent fuels, fuel storage facilities, fuel characterization, conditioning, interim storage, and ultimate disposal in the first geologic repository, the *DRAFT Integrated Spent Nuclear Fuel Program Plan* will be issued by DOE EM-37, the Office of SNF Management and Special Projects.

9.3.1.6 Treatability Groups

Waste streams are to be categorized into treatability groups that share similar treatment needs based on waste characteristics. A Treatability Group Guide was published in September, 1995 to support the FFCAct mixed waste inventory report. RCRA land disposal restrictions (LDR) requirements should be considered when waste streams are being categorized into treatability groups. This categorization process supports the following:

- A consistent and technically valid methodology with standard definitions for aligning site-specific waste into treatability groups for Site Treatment Plans;
- A standard structure that will allow comparing waste treatability groups among sites, and combining all site-specific data into one data set for the national summary and the mixed waste inventory report;
- A technically based approach to identify treatment technology needs, treatment capacity needs, and technology development needs, and TSD requirements for DOE mixed waste; and
- An approach to identify data gaps within the treatability groups and to identify the type or degree of characterization needed to identify potential treatment.

9.3.2 Determination of Quantities and Composition of Waste Streams

Identification of quantities and composition of waste streams, when process knowledge is inadequate, are determined with the following general types of analysis:

- Nondestructive Examination/Nondestructive Assay (NDE/NDA)
- Radiometric surveys;
- Radiochemistry analyses; and
- RCRA constituent analyses.

Waste characterization may require a sampling and analysis plan that involves an analytical laboratory. This plan is supported by procedures which ensure consistent sample collection, sampling, analysis validation, consistent reporting, documentation requirements, and chain of custody records. Data and records management for sampling and analysis should be included among the general waste characterization data and record management requirements.

RCRA constituent analysis is required to confirm whether a waste contains characteristic hazardous components and to quantitatively and qualitatively identify those hazardous chemicals present. Prior to conducting the Toxic Characteristic Leaching Procedure (TCLP), total metals and total organics sampling may be proposed as a screening measure for RCRA constituent analysis. This step may eliminate costly TCLP analyses which would otherwise serve no technical value. However, there will remain hazardous or mixed waste forms which cannot be certified without appropriate laboratory analyses.

The TCLP is the analytical method which is required to be used to verify whether a waste exceeds specified RCRA levels for toxicity. Waste that exceeds these levels is hazardous waste and must be managed according to the RCRA hazardous waste regulations. Other methods should be used to evaluate whether the waste exhibits the hazardous characteristic of ignitability, corrosivity, or reactivity. This information and data gathered from the conclusion of RCRA constituent analyses can be used to develop a Waste Analysis Plan (WAP) pursuant to 40 *CFR* 264.13 (b) and 265.13(b). If hazardous waste is to be treated on-site to meet applicable LDR requirements, the WAP needs to meet the requirements of 40 *CFR* 268.7. The implementation of the WAP provides an inventory of hazardous and mixed waste characterization data that is cross-referenced to waste packages, waste shipment manifests, and the mixed waste inventory report required by the FFCAct. Analyses for Toxic Substances Control Act (TSCA) 40 *CFR* 761, constituents, such as PCB compounds and asbestos, also may be required.

The DOE policy for the release of non-radioactive hazardous waste is outlined in the EM-30 draft document, *Performance Objective for Certification of Non-radioactive Hazardous Waste*. Process knowledge and procedures involving radioanalysis (radiometric surveys and radiochemical analysis) to free release material or waste from RMMAs, represent the methods to establish NRA. The use of radioanalysis requires determination of NRA baseline activity for each material or waste. Methods to determine the NRA baseline activity include:

- Radioanalysis of the material before it is exposed to radioactive contamination;
- Documented background activities for specific waste types that may require regulatory approval; and
- Radioanalysis of a similar unexposed material.

For material with surface contamination greater than NRA, free release may still be possible as long as these contamination levels do not exceed the guidelines given in DOE Order 5400.5, NRC Regulatory Guide 1.86, and the EM-30 draft document, *Performance Objective for Certification of Non-radioactive Hazardous Waste*. For material with volume contamination

greater than NRA, DOE Order 5400.5, paragraph 11.5.c(6) requires EM-30, EM-40, and EH-1 approval before radiological free release.

9.4 PROJECT DEVELOPMENT

Waste generating activities, waste characterization, and waste certification requirements (contingent upon disposal WAC), identified during project assessment, should be used to develop requirements for waste processing, packaging, storage, transportation, and to satisfy WAC for final disposal. These major waste management program functions attributable to the specific decommissioning project should be presented in an individual WMPP. This WMPP should provide important input to the Decommissioning Plan. Relevant WMPP information also should be integrated into the annual Waste Management Plan format, required by Chapter VI, Waste Management Plan Outline, of DOE Order 5820.2A, *Radioactive Waste Management*. Table 9-2 is a suggested Table of Contents for a WMPP.

The contents of the WMPP should also address decommissioning characterization, waste minimization, waste treatment, packaging, storage, transportation, safety, training, and indoctrination. Qualifications, roles, and responsibilities for required trained personnel should be described in the WMPP. The WMPP will also help to determine facility and equipment needs.

The DOE facility site-specific waste certification plan should be supported by the WMPP Quality Assurance (QA) objectives (see Table 9-2, Section 4.0, "Decommissioning Project Waste Certification"). The site waste certification plans address all waste categories generated or stored at DOE installations (not just waste originating from decommissioning activities) which may be scheduled for final disposition at off-site facilities. These disposal facilities already have WAC which site certification plans must satisfy.

9.4.1 Management Overview

DOE field sites may require program interface with various Maintenance and Operations (M&O) contractors or an Environmental Restoration Management Contractor (ERMC) and the decommissioning contractor to provide operations and maintenance support for waste management activities.

If facilities for waste handling, transfer, waste characterization, waste assay, waste processing and interim storage exist at DOE sites, the WMPP also should address program interface for process engineering and plant operations. Plant operation personnel also should perform waste minimization, waste transfer, processing, and implementation of relevant provisions of site waste certification plans under appointed guidance from designated authorities at the DOE site. Responsibilities also include instructions for monitoring work quality, audit schedules, document review, data verification, and confirmation of certified waste packages prior to storage or shipment.

Table 9-2

**Waste Management Project Plan
Suggested Table of Contents**

TABLE OF ACRONYMS AND DEFINITIONS

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1.2 Scope

1.3 Objectives

1.4 Personnel Organizations

1.4.1 Responsibilities

1.4.2 Indoctrination and Training

2.0 WASTE GENERATION

2.1 Waste Stream Composition

2.1.1 Pre-Waste Characterization Questionnaire

2.1.2 Hazardous Constituents

2.1.3 Radioisotope Composition

2.2 Inventory

2.3 Segregation

2.4 Integrated Database Tracking System

2.5 Identification of Health and Safety Hazards

2.6 Identification of Facility and Equipment Requirements

3.0 WASTE CHARACTERIZATION

3.1 Process Knowledge

3.2 Sampling and Analysis

3.2.1 Nondestructive Examination/Nondestructive Assay

3.2.2 Radiochemistry

3.3.3 RCRA Analysis

Table 9-2

**Waste Management Project Plan
Suggested Table of Contents (Continued)**

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4.1.6	On-Site Transportation and Storage
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5.4	Waste Treatment and Packaging
5.5	Waste Certification
5.6	On-Site Transportation and Storage
5.7	Training
6.0	WASTE DISPOSAL
6.1	Off-Site Transportation Requirements
6.2	Waste Certification - Impracticality Issues
6.3	Waste Management Data Package Documentation
	REFERENCES

An independent certification review committee, (ref. DOE Order 5700.6C) ensures the three types of waste (radioactive, hazardous, and mixed waste) are characterized, distinguished from sanitary waste, processed, packaged and placed into interim storage and that the waste complies with the appropriate disposal facility WAC. Waste packages for interim storage should be accepted in accordance with criteria that are at least as restrictive as the disposal facility WAC. The independent certification review committee will provide performance assessment and quality improvement suggestions.

9.4.2 Waste Characterization

This subject matter will include development of waste profile composition, inventories, and waste forms, and will provide tracking from origin to final disposition. Activities to support this objective may require process knowledge, radiometric surveys, NDE involving Real-Time Radiography (RTR) operations, and NDA operations with analytical laboratory support for RCRA and radiochemical constituent determination. Process knowledge, quality control procedures, waste characterization, and WAC certification procedures will have to be developed to support characterization requirements for site-specific waste certification plans.

The 10 criteria (such as Personnel Training and Qualification and Inspection and Acceptance Testing) in DOE Order 5700.6C, *Quality Assurance*, help to define the QA objectives for radioactive LLW, TRU, and HLW hazardous and mixed waste certification to ensure compliance with the site-specific waste certification plans. The site-specific waste certification plan should reference a site-specific Quality Assurance Project Plan (QAPjP), which details implementation requirements and procedures. The QAPjP details requirements for coordination and verification of these procedures and also references site-specific Standard Operating Procedures (SOPs). Relevant SOPs should be referenced in the WMPP. The main objective of the WMPP waste characterization section is to meet the requirements of the site certification plan.

A comprehensive site-specific RCRA WAP should be developed for hazardous and mixed waste from the inventory of waste characterization data. The RCRA WAP should also be devised to support the acquisition of legally defensible waste characterization data for each waste form and category generated by the decommissioning project. The analytical RCRA waste characterization methods used for mixed waste forms should be documented in the waste characterization section of the WMPP.

Applicable RCRA analyses should be determined in accordance with the provisions of 40 *CFR* 264.13 or 40 *CFR* 265.13. The RCRA WAP will provide detailed descriptions of waste stream generation and resulting waste forms. The WAP specifies inspections, selection of sampling methods, frequencies, and analyses consistent with the QAPjP referenced SOPs to attain data quality objectives. Process knowledge, visual, and NDE, NDA, radiochemistry, and analytical chemistry for hazardous waste constituents, and RCRA analysis methods will require detailed SOPs to produce waste characterization data suitable for compliance.

9.4.3 Pollution Prevention and Waste Minimization-Including Recycling

The WMPP should identify actions to be taken to ensure that all activities are reviewed for PP/WMin opportunities. A variety of regulatory drivers exist for identifying and incorporating PP/WMin in all waste generating activities, including decommissioning. Requirements are found in RCRA, CERCLA, and the Pollution Prevention Act of 1990, in addition to DOE Orders 5400.1, *General Environmental Protection Program*, and 5820.2A, *Radioactive Waste Management*. DOE guidance for developing site-wide and generator specific PP/WMin programs is provided in the *1994 Waste Minimization/Pollution Prevention Crosscut Plan*. In addition, guidance specific to environmental restoration activities, including decommissioning, is provided in *Pollution Prevention and Waste Minimization Guidance for Environmental Restoration Activities*. Both of these documents can be provided by the site Waste Minimization Coordinator. The Waste Minimization Division within the Office of Waste Management has established Waste Minimization Coordinators at each site to provide PP/WMin support to all waste generators. These Wmin Coordinators should be included in the planning and implementation processes to assist in identifying potential PP/WMin opportunities.

Recycling, which is a waste minimization technique, can have significant beneficial impacts on decommissioning activities. DOE Order 5400.5, *Radiation Protection of the Public and the Environment* contains provisions to permit release and recycle of metals and other materials from decommissioning projects. Standards for materials with surface contamination is provided in Figure IV-1 of the order. Situations with volumetric contamination can be addressed on a case-by-case basis (see Chapter II, paragraph 5.c.(6)). Release/recycle standards and criteria are being considered by regulatory organization, and additional emphasis on recycle can be expected in the future.

9.4.4 Waste Treatment and Packaging

The WMPP should contain a section on waste treatment and packaging to identify the specifications to process, package, and stage certified waste forms for final disposition. Waste treatment quality control procedures should be developed and referenced by this section of the WMPP. Treatability groupings are also established to support the DOE Site Treatment Plans, as mentioned in Section 9.3.1.6.

The methodology for categorizing waste into treatability groupings is based on the premise that the key information necessary for identifying or assessing technology needs can be identified. Radiological, physical, and chemical properties determination of the waste and its contaminants is key. Radiological properties influence the design or modification of the treatment facility to control radioactive releases and to prevent worker exposure. The bulk physical and chemical properties influence facility design or modification and technology selection. Contaminant composition determines the type of treatment requirements from a regulatory and technical perspective. It also impacts any necessary residual treatment and dictates any applicable effluent controls.

Once waste content inventories, especially RCRA profile inventories in the WAP, are established and appropriate treatment technologies are successfully demonstrated, detailed implementation procedures should be developed for waste treatment quality control procedures. These procedures should focus primarily on operation, inspection, acceptance testing of waste treatment systems, and interim storage facilities. The need to evaluate alternative strategies for treatment of waste may be necessary should any waste forms prove to be noncertifiable.

9.4.5 Interim Storage, Transportation, and Final Disposition

The WMPP section on waste interim storage or final disposition and transportation should support relevant criteria contained in the following:

- DOE Order 5820.2A, *Radioactive Waste Management*, establishes policies and guidelines and minimum requirements by which DOE manages radioactive and mixed waste, and contaminated facilities.
- DOE Order 5480.3, *Safety Requirements For Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes*, includes requirements for protection of human health and the environment for shipments of waste from decommissioning project generator locations for both on-site and off-site TSD facilities. Transportation quality control procedures are based on DOE Order 1540.1, *Materials Transportation & Traffic Management*.
- DOE Order 1540.3, *Base Technology for Radioactive Material Transportation Packaging Systems*, requirements will ensure on-site transfers and movements and off-site shipments of waste will be performed at levels of safety equivalent to those required by DOT regulations, and will not compromise the health and safety of employees and the public.
- Title 10 *CFR 71, Packaging and Transportation of Radioactive Material*, establishes procedures and standards for Nuclear Regulatory Commission (NRC) approval of shipment and transportation of fissile material, and for a quantity of other licensed material in excess of a Type A quantity.
- Title 29 *CFR 1910, Occupational Safety and Health Administration (OSHA)* Standards establishes worker health and safety protection standards relevant to personnel who handle and ship TRU waste.
- Title 40 *CFR 191, Environmental Radioactive Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, establishes radiation protection standards governing the management and storage of SNF HLW, and TRU waste.

- Title 40 *CFR* Part 261, Subpart C, *Characteristics of Hazardous Waste*, and Subpart D, *Lists of Hazardous Wastes*, establish the waste matrix to be hazardous or mixed hazardous waste if the characteristics of ignitability, corrosivity, reactivity and toxicity are exhibited (Subpart C) or if the solid waste is specifically listed (Subpart D).
- Title 40 *CFR* 262, *Standards Application to Generators of Hazardous Waste*, establishes regulations concerning waste manifesting, pre-transportation storage (including waste accumulation methods and length of time), recordkeeping and reporting, and exports and imports of hazardous waste.
- Title 40 *CFR* 263, *Standards Applicable to Transporters of Hazardous Waste*, establishes manifesting, recordkeeping, spill reporting, and cleanup requirements for transporters of hazardous waste.
- Title 40 *CFR* 264 and 265, *Standards for Owners and Operators of Permitted and Interim Status Hazardous Waste Treatment, Storage and Disposal Facilities*, presents the operating standards which govern all facilities that treat, store and dispose of hazardous waste.
- Title 40 *CFR* 264.18 and 265.18, *Location Standards*, establishes requirements for siting permitted (Part 264) and interim status (Part 265) TSD facilities.
- Title 40 *CFR* 264 and 265 Subpart I, *Use and Management of Containers*, establishes requirements for permitted (Part 264) and interim status TSD facilities (Part 265) to receive and store containers or packages. The requirements address condition of containers and compatibility of the waste forms with the containers.
- Title 40 *CFR* 268, *Land Disposal Restrictions*, establishes treatment standards for hazardous waste that must be met before it can be disposed on land.
- Title 49 *CFR* Subchapter C, *Hazardous Materials Regulations*, Parts 171-173, establishes requirements for shipping papers, package marking, labeling, and transport vehicle placarding applicable to the shipment and transportation of hazardous and radioactive materials.

These activities also should be conducted to prevent the release of radionuclides or hazardous substances into the environment. Relevant provisions of DOE Order 5000.3B, *Occurrence Reporting and Processing of Operations Information*, should be followed in the event that a release should occur. Potential adverse impacts of the on-site transportation of radioactive and mixed waste to the safety of the public and the environment, should be evaluated in accordance with NEPA. Notification requirements for off-site transportation to ensure public safety should

be addressed. Disposal facilities are to provide NEPA documentation to cover transport to their respective locations.

9.4.6 Indoctrination and Training

The decommissioning WMPP section on indoctrination and training should identify individual facility operator training and safety courses relevant to the management of radioactive, hazardous, and mixed waste. In accordance with the DOE site-specific waste certification plan, all persons who certify or verify PP/WMin, segregation, data collection, waste treatment, packaging, radiation surveys, and other associated quality functions should receive training in the disposal facility WAC requirements and QAPjP referenced SOPs relevant to waste management for the decommissioning project.

The indoctrination and training program also should address occupational health and safety, EPA regulations, DOE Orders, site PP/WMin program and radiation worker training. This will ensure waste characterization, processing, packaging, storage, and transportation activities will be performed in accordance with regulatory, security, and accountability requirements.

Once developed, the training program should be maintained by the designated DOE site contractor, and documentation assigned to an on-site records center to verify all training records, such as course content and test results. A master list of trained individuals also should be maintained at the records center.

Trained personnel must identify health and safety hazards associated with storage and on-site and off-site transportation of hazardous, radioactive and mixed waste materials. Identification of facility, equipment needs, subsequent safety analysis, and NEPA documentation requirements will help determine the design, construction, operation, and quality assessment of transportation systems.

9.5 PROJECT OPERATIONS

This section describes waste management considerations that should be addressed during the processes of waste generation, waste handling and packaging, waste treatment, and transportation.

9.5.1 Waste Generation

Procedures or guidelines used to control the decontamination process should consider ways to eliminate or reduce waste generation. *The Pollution Prevention and Waste Minimization Guidance for Environmental Restoration Activities* provides examples of opportunities. The DOE Radiological Control (Rad Con) Manual article 442, "Waste Minimization", should be consulted for requirements in this area. Additionally, techniques for performing decontamination should be considered along with methods to prevent or minimize waste. The DOE

Decommissioning Handbook, DOE/EM-0142P, provides more detailed discussion on waste minimization. In addition to the *Decommissioning Handbook*, the Remedial Action Program Information Center (RAPIC) can provide reference material and "lessons learned" on PP/WMin.

These procedures should be included in initial training for the decontamination personnel. Supervision in the field should reinforce these procedures and guidelines. Suggestions for PP/WMin techniques should be encouraged and investigated. The worker is an important resource for improvement of operations and to incorporating PP/WMin techniques. The DOE *Decommissioning Handbook* can serve as a reference for waste characterization and treatment technologies.

Guidance should be given for recognizing unidentified waste streams. This will require training of workers and radiological controls personnel. This training should include information on the history of the project and on the identified source of the waste. The importance of identifying unexpected sources of waste should be stressed. Where possible, waste streams should be reclaimed or regenerated rather than marked for disposal.

Methods should be established to periodically reconfirm the waste stream characterization. This may consist of routine sampling of the area being decontaminated and sample analysis to reconfirm waste stream constituents.

As waste is generated it should be segregated. The segregation will determine the number of types of waste. There also may be more than one waste stream. Each of these categories may require different processes for storage or disposal or different methods of transportation. Determination of the contents of a package, curie content and other such information should be based on all the contents from the same waste stream.

9.5.2 Waste Handling and Packaging

This section provides suggestions and references for handling and removing waste in preparation for processing and disposal. Radioactive waste should be packaged and handled in accordance with the *Rad Con Manual* articles and DOE Order 5820.2A, as appropriate.

Additionally, waste should be placed in packages which are easily handled. The packaging process should consider weight and size of the waste. Final disposition of the waste also may dictate initial packaging requirements. Many of these requirements can be found in the WAC of the disposal facility and within the WAP for the site. The object of this guidance is to minimize the number of times a package of waste is handled. Waste should initially be packaged such that it is not necessary to reopen the package prior to shipment. This minimizes exposure to the hazards associated with the waste. Measurements required during characterization and packaging are specified in the *Rad Con Manual* for tagging radioactive material and in 49 *CFR* 170 through 180 for DOT-controlled shipments.

Waste container contents should be adequately characterized by the waste producer as the waste is being generated and packaged. This characterization may include the type of material, location of waste generator, and the physical and chemical characteristics of the waste. The identification on the waste container should include requirements for later waste processing. The identifications on the waste container should indicate if the waste is compactable, noncompactable, or if the container contains free standing water or any other requirement for proper processing, final packaging, and disposal.

Depending on the complexity of the waste operation, each waste container may be assigned a unique barcoded identification. This identification code can be included in a process knowledge database, a waste characterization database, a waste processing database, and an integrated database tracking system to track the location of the waste container and its progress through the waste characterization, processing, and certification processes as necessary.

A facility or location may need to be established to store packages that have been generated during decontamination activities. This location should allow separate storage for each waste stream and for each waste form. This will minimize the handling of this waste for processing and disposal. If a new facility is necessary, DOE Order 5820.2A lists the requirements for siting, design and construction for various types of waste facilities.

If a facility generates over 1000 kilograms of hazardous waste in a calendar month, it is classified as a RCRA large quantity generator (LQG) and is allowed to store waste for up to 90 days. If a LQG needs to store hazardous waste for 90 days or more, the facility must be either permitted or have been granted interim status for storage. If the DOE facility does not meet these criteria, the waste must be shipped off-site to a proper facility before the 90-day time period time expires.

9.5.3 Waste Processing During Decommissioning

Waste generated during the decommissioning process may need to be processed prior to its disposal. The development of a new large-scale waste treatment facility must meet the requirements in DOE Order 5820.2A.

Solid radioactive waste is routinely processed for volume reduction. Compaction is one method routinely used to reduce the volume of solid radioactive waste. Super compactors are able to compact material that normal compactors cannot and, therefore, provide additional volume reduction. Solid radioactive waste that cannot be compacted is, normally, either decontaminated or disposed, depending on a cost analysis of the process. Incineration and smelting techniques can sometimes be advantageous. The DOE *Decommissioning Handbook*, provides additional discussion on volume reduction technologies. In addition to the Handbook, the RAPIC can provide reference material and "lessons learned" on waste volume reduction. Liquid waste should be handled and processed in accordance with the *Rad Con Manual*, Chapter 4, Part 5, article 451, "Minimization and Control of Radioactive Liquid Wastes."

9.5.4 Transportation

For requirements on transportation of radioactive waste, refer to the *Rad Con Manual*, Chapter 4, article 423, "Transportation of Radioactive Material," and Section 9.4, "Project Development," of this manual.

9.6 WASTE MANAGEMENT DOCUMENTATION

Each field organization should develop and maintain a historical record of waste generated, treated, stored, shipped, and disposed at the facilities under its cognizance. The data maintained should include all data necessary to show that the waste was properly classified, treated, stored, shipped, or disposed and what, if any, PP/WMin techniques were applied to reduce waste. The data maintained in the system should be based on the data recorded on waste manifests. Waste management documentation should be incorporated into the decommissioning project data package for permanent records management. As stated earlier in this Chapter, waste management documentation also will be required to update various reports including the DOE FFCA Act Site Treatment Plans, the annual "Integrated Data Base," and the mixed waste inventory report.

Waste manifest records should be kept and accompany each waste package from generation through final disposal. The manifest should contain data necessary to document the proper classification and assist in determining proper TSD of the waste. Waste manifests should be kept as permanent records. At a minimum, the following data should be included:

- Waste physical and chemical characteristics,
- Quantity of each major radionuclide present,
- Weight of the waste (total of waste and any solidification or absorbent media),
- Volume of the waste (total of waste and any solidification or absorbent media), and
- Other data necessary to demonstrate compliance with waste acceptance criteria.

The waste management documentation which should be contained in the project data package includes:

- Package certification,
- Shipping manifests,
- RCRA WAP,
- Waste characterization report
- Radionuclide data sheets,
- Hazardous waste data sheets,
- QA audit reports, and
- Waste disposal records.

After decommissioning operations have been completed, waste management documentation updates to the project data package should be retained permanently in the field organizations' archives. The project data package cannot be completed until waste disposal documentation is complete.

Appendix A

U.S. Department of Energy Environmental Restoration Program Decommissioning Implementation Guide

May 22, 1995

U.S. DEPARTMENT OF ENERGY
ENVIRONMENTAL RESTORATION PROGRAM
DECOMMISSIONING IMPLEMENTATION GUIDE

May 22, 1995

Office of Environmental Restoration
Regulatory Integration Division



- Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions.

DECOMMISSIONING FRAMEWORK

The Decommissioning Framework has been designed to accommodate decommissioning activities under CERCLA and decommissioning activities that take place under another appropriate federal or state response, including decommissioning in compliance with a Nuclear Regulatory Commission (NRC) license and with permits or orders issued under the Resource Conservation and Recovery Act (RCRA). In all cases, the same basic process will be followed and the graded approach is to be used as appropriate. DOE orders are applicable to decommissioning.

A single approach to decommissioning ensures that decommissioning projects are sufficient to protect health and safety and the environment while achieving project objectives. This also ensures that decommissioning projects are consistent, so that external reviewers such as the Defense Nuclear Facilities Safety Board and local regulators understand the process and can perform their responsibilities effectively. This will reduce time and effort on the part of decommissioning project managers to respond to questions or requests for information about decommissioning projects.

Use of the Graded Approach in the Decommissioning Framework

The Decommissioning Framework accounts for differences in the complexity, risks, and objectives of decommissioning projects by application of the graded approach. This means that the level of analysis, documentation, and action must be commensurate with:

- The relative importance to safety, safeguards, and security
- The magnitude of any hazard involved
- The life cycle stage of the facility
- The programmatic mission of the facility
- The particular characteristics of the facility
- Any other relevant factor.

The graded approach is specified at 10 CFR 830 and in various DOE orders.

PURPOSE AND SCOPE

The Decommissioning Framework to be used by the Environmental Restoration program provides for compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Decommissioning Framework presented in flowchart form in this Implementation Guide establishes the CERCLA non-time critical removal action process as the process to be followed for all decommissioning projects. This Framework is consistent with the *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation, and Liability Act*, dated May 22, 1995.

This document explains the Decommissioning Framework (see page 4) for the Environmental Restoration program and how it is to be implemented. The Framework specifies a graded approach, consistent with 10 CFR 830 and DOE orders, to ensure safe, timely, efficient, and cost-effective decommissioning of the Department's surplus facilities. This Implementation Guide discusses each of the steps in the Framework for decommissioning surplus DOE facilities in compliance with applicable laws and regulations and consistent with DOE orders and policies.

DECOMMISSIONING AS A CERCLA NON-TIME CRITICAL REMOVAL ACTION

Removal action is one of two types of responses authorized by CERCLA. The other is remedial action, often characterized as the "RI/FS" (remedial investigation/feasibility study) process. Both the removal action and the remedial action processes to be followed for CERCLA compliance are specified in the National Contingency Plan (NCP), found at 40 CFR Part 300, which implements CERCLA.

The Decommissioning Framework presumes that decommissioning will be conducted as a non-time critical removal action. Non-time critical removals are defined in the NCP as removals with a planning horizon of six months or more.

Non-time critical removals are the appropriate CERCLA action for decommissioning projects for the following reasons in addition to the necessary planning window:

- The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This usually will eliminate the need for the more detailed analysis of alternatives required for remedial action.
- Non-time critical removal action requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented.

Differences between CERCLA and non-CERCLA Actions

Permits are not required if decommissioning is conducted as a CERCLA response, but legal provisions and other requirements that give rise to the need for permits will be included as applicable or relevant and appropriate requirements (ARARs). Otherwise, necessary permits must be obtained.

If environmental samples are to be collected, the sampling and analysis plan must be submitted to and approved by EPA if decommissioning is conducted as a CERCLA response. Otherwise, the sampling and analysis plan does not require outside approval.

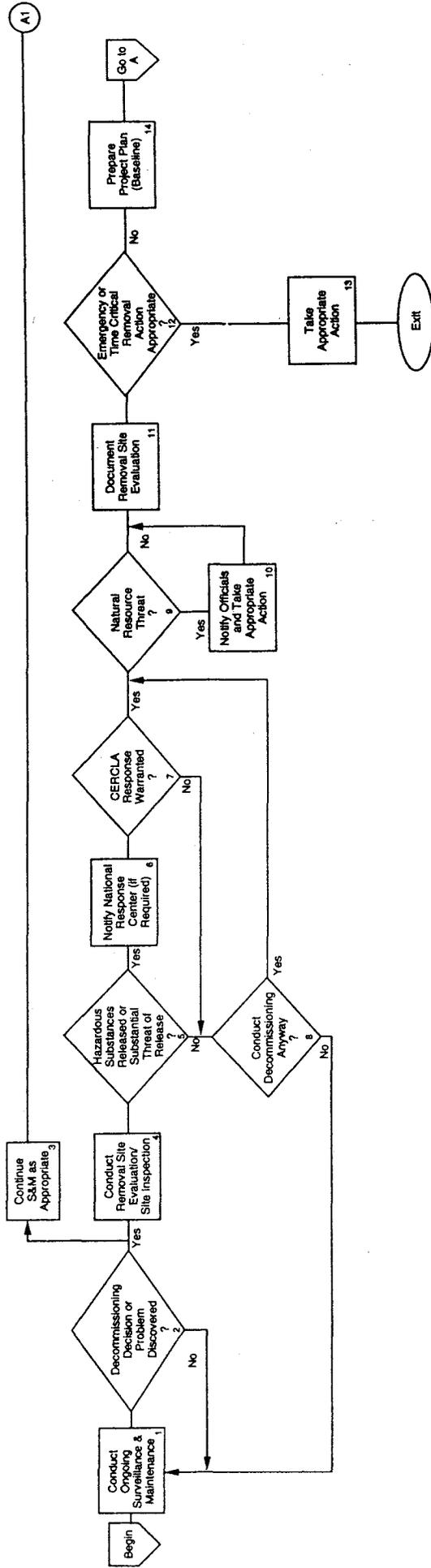
Decommissioning projects conducted as CERCLA responses should involve EPA and the State. Such involvement should be consistent with the provisions of the sitewide compliance agreement, if there is one.

Decommissioning projects conducted under NRC-approved decommissioning plans or RCRA permits or orders may need to meet requirements specific to those plans, permits, or orders. Document titles may differ and some additional information may be specified under such plans, permits, or orders.

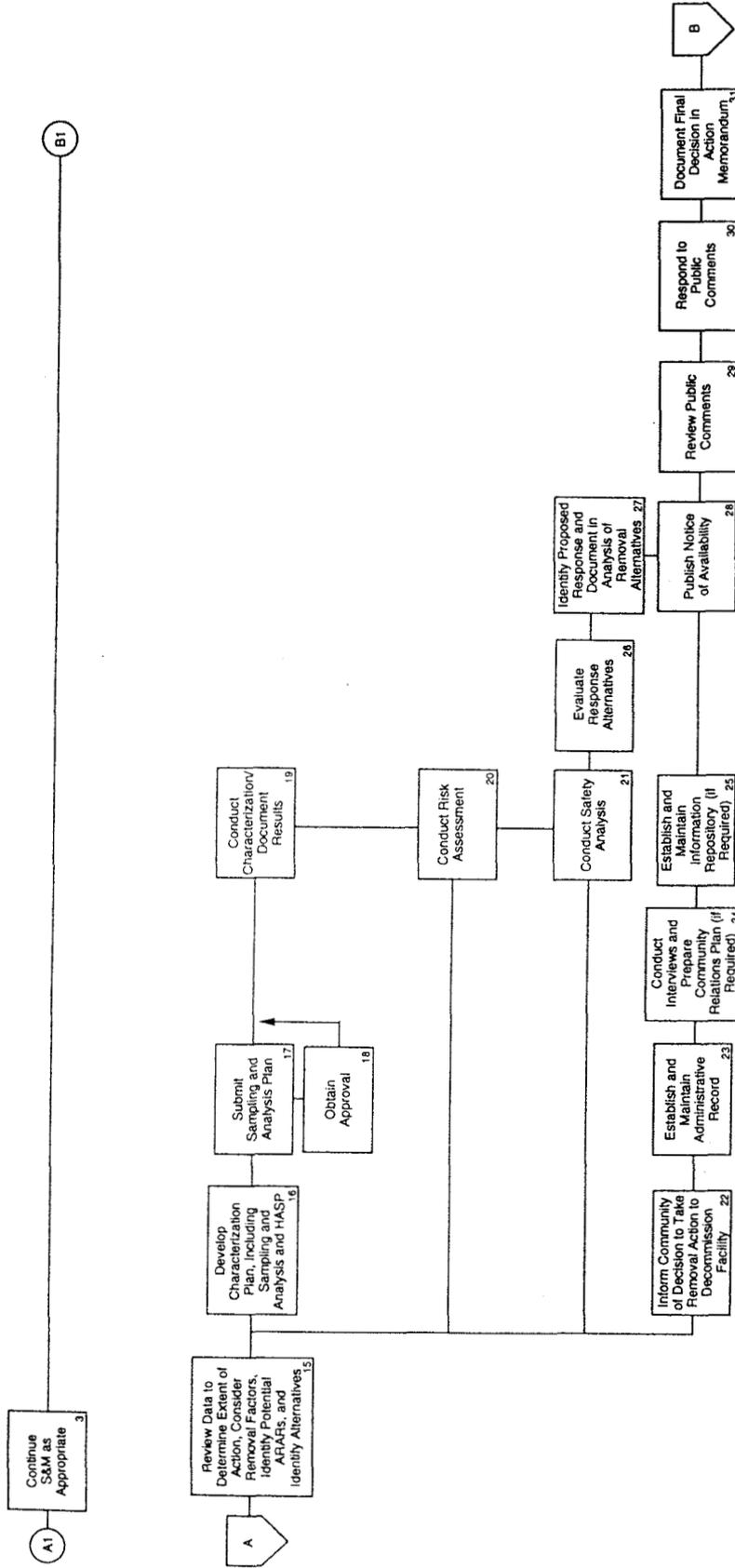
Decommissioning projects under CERCLA must adhere to the public participation and administrative record requirements of the NCP. Separate review of the environmental impact under the National Environmental Policy Act (NEPA) is not required. This review will be accomplished by incorporating NEPA values in decisions and documents prepared as part of the CERCLA process.

Consistent with the Environmental Management Program's strategic goal to strengthen relationships with stakeholders, public participation also is an essential part of the Decommissioning Framework for projects that are not CERCLA responses. The decommissioning project manager still must ensure that stakeholders are informed about decommissioning decisions and activities. In this case, the NEPA process provides for review of environmental impacts and for public participation.

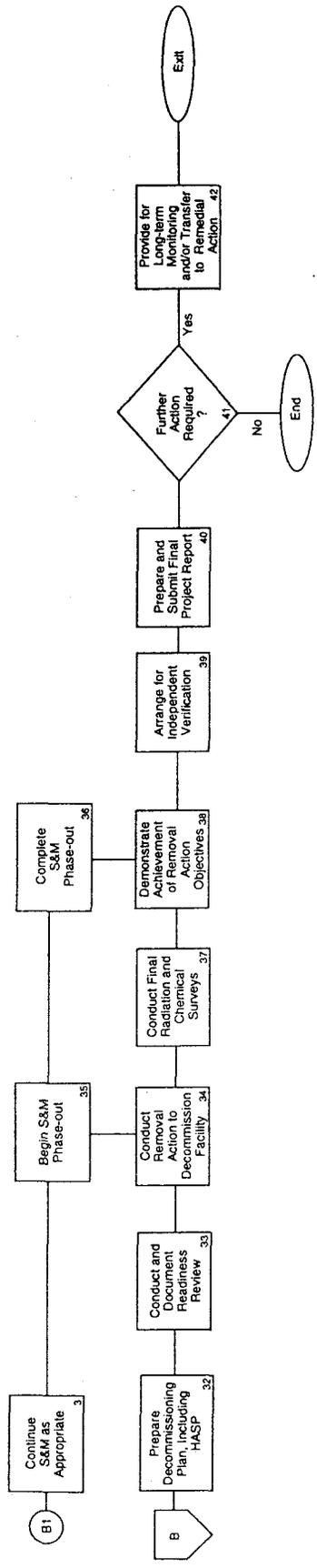
U.S. DEPARTMENT OF ENERGY DECOMMISSIONING FRAMEWORK (1 of 3)



U.S. DEPARTMENT OF ENERGY DECOMMISSIONING FRAMEWORK (2 of 3)



U.S. DEPARTMENT OF ENERGY DECOMMISSIONING FRAMEWORK (3 of 3)



STEP-BY-STEP GUIDE TO DECOMMISSIONING FRAMEWORK

The narrative below explains the actions which are to take place in the various steps shown in the flowchart. Reference is made to the National Contingency Plan (NCP) as specified in 40 CFR 300. (References will be cited as "300.xxx(y)(z)"). The process described implements the agreement between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) embodied in the *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, dated May 22, 1995.

Step 1. The facility will have been placed in a safe, stable shutdown condition (deactivation end state) and the Surveillance & Maintenance (S&M) program established during the transition from the operating agency to EM-40. The health and safety program in force during operations will have been modified for S&M activities consistent with the DOE Orders that address environment, health and safety, and radiation protection (principally the 5400 and 5480 Series). It is intended that during the transition a preliminary characterization and preliminary hazards analysis (in accordance with Orders 5481.1B, 5480.6, and 5480.23 as appropriate) will have been performed to establish the threats and hazards that need to be addressed in the S&M program. This program will reflect the current safety basis. The deactivation end state will be as agreed upon between EM-60 and EM-40.

Step 2. This step may be triggered by a "discovery" of a release or threatened release (300.405) or some other circumstance that triggers a programmatic decision to consider proceeding with decommissioning.

Step 3 indicates that S&M will continue throughout the process, until phased out in Step 36 or converted to a long-term, post-cleanup situation in Step 42.

Step 4 is the removal site evaluation (300.410) which includes a removal preliminary assessment (300.410(c)) and, if needed, a removal site inspection (300.410(d)). A preliminary assessment will include a review of the documents prepared during transition which describe the deactivation process, the status of the facility and the measures being taken in the S&M program to avoid risks to people and the environment. If a removal site inspection is necessary, it may include perimeter or on-site inspections. Any physical inspection will be planned to assure the health and safety of workers and the public and protection of the environment. The S&M health and safety program will be used as a foundation and augmented as necessary to assure protection during the inspection. Where applicable, site agreements will describe the manner in which DOE will consult with EPA and/or the State when a removal site evaluation is conducted.

Step 5 constitutes the key decision whether a CERCLA response may be appropriate. CERCLA response may be appropriate when hazardous substances (including radionuclides)

are released to the environment or when there is a substantial threat that such a release will occur, and response to protect health or the environment is warranted. In either case DOE will consult with EPA and the State in a manner consistent with applicable site agreements.

Step 6 provides for notification of the National Response Center (NRC) (300.405), if required. Such notification is required only if quantities released exceed the Reportable Quantities established by part 302 or if the release is not authorized by a federal permit.

Step 7 provides a decision point to evaluate whether a CERCLA response is necessary. The removal action evaluation process provides flexibility to determine whether CERCLA response is warranted or another appropriate federal or state response is available. CERCLA response may not be necessary for a facility licensed by the NRC and being decommissioned in conformance with an NRC-approved decommissioning plan, or for a facility being decommissioned in compliance with a RCRA permit or order, or if a release or substantial threat of release is not present at the facility or the amount of hazardous substances present does not warrant federal response (300.410(e)(5)). DOE should consult with EPA and the State concerning this decision in a manner consistent with applicable site agreements.

Step 8 is the decision whether or not to proceed with decommissioning even if CERCLA response is not necessary. This could apply to a decision to decommission a facility under an NRC-approved plan or a RCRA permit or order. In addition, DOE may consider other factors to make a decision to decommission a building (for example, a building may be more costly to maintain than to dismantle). In any case, the same process will be followed for decommissioning.

Steps 9 and 10. If natural resources are or may be injured by the release, the appropriate State and Federal trustees of the affected natural resources must be notified. While DOE is a Federal trustee for natural resources located on land administered by DOE, the Department may share trustee responsibility with other Federal agencies, the States, or affected Indian Tribes. Other actions may be required to assist the trustees in assessments, evaluations, investigations, and planning (300.410(g)). Where possible, such action should be incorporated into other CERCLA actions planned for the site.

Step 11 documents the removal site evaluation including the decision resulting from the evaluation, consistent with 300.410(f). In this step, the site evaluation will be reviewed, the evaluation factors¹ of 300.415(b)(2) will be assessed, and any other data will be collected as

¹ Evaluation Factors include: (i) impact on nearby humans, animals or the food chain; (ii) contamination of drinking water supplies or sensitive ecosystems; (iii) materials in drums, barrels, tanks or other bulk container that pose a threat of release; (iv) materials in soils at or near the surface that may migrate; (v) weather that may cause materials to migrate or be released; (vi) threat of fire or explosion; (vii) the availability of other appropriate federal or state response mechanisms to respond to the release; and (viii) other situations or factors that may pose threats to public health or welfare

necessary to determine what action is appropriate. The decommissioning framework as described in this flow diagram from Step 14 forward presumes that a decision has been made that a removal action is appropriate and the action is non-time-critical. Documentation should include the facility description, threats to worker or public health or the environment, and the basis for proceeding with decommissioning either as a CERCLA action or as a programmatic decision. DOE should consult with EPA and the State concerning this determination in a manner consistent with applicable site agreements.

Step 12. If unusual circumstances specific to the facility are present, then other action should be taken outside the DOE Decommissioning Framework.

Step 13 actions might include an emergency removal action, for example, to respond to a spill or leak; a time-critical removal action, of less urgency than an emergency but response is required in less than six months; or a final or interim remedial action, if circumstances warrant. It is possible that, after some of the responses described above, the logic flow would lead back to Step 1, for continuing S&M.

Step 14 is the preparation of a Decommissioning Project Plan. The Project Plan will define the project; and establish the initial technical, cost and schedule baselines for the project. The Project Plan should describe the general approach to be taken to protect the safety and health of workers and the public, and to protect the environment, to the extent such matters can be determined at this early stage of the project.

Step 15. This step starts the process of selecting and evaluating removal alternatives for the facility. In evaluating the alternatives, the evaluation factors of 300.415(b)(2) and the types of actions described in 300.415(d)² should be considered, among others. Following the identification of the candidate alternatives, four parallel paths of actions will lead to the selection of the appropriate removal action. Site agreements will specify the manner of coordinating with EPA and the State in determining the level of EPA involvement and what response action is appropriate for facilities on NPL sites. NRC-approved decommissioning plans and RCRA permits or orders also may specify coordination between the regulator and DOE.

or the environment. (NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording)

² The following types of removal actions may be appropriate, among others: (1) fences, warning signs, or other security or site control precautions; (2) drainage controls; (3) stabilization of impoundments or drainage of lagoons to maintain integrity; (4) capping of soils or sludges to reduce migration; (5) using chemicals and other materials to retard the spread of the release or to mitigate its effects; (6) excavation, consolidation or removal of highly contaminated soils; (7) removal of drums, barrels, tanks or other bulk containers; (8) containment, treatment, disposal or incineration of materials; or (9) provision of alternative water supply until local authorities can satisfy the need for a permanent remedy. (NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording)

Note: If the decommissioning is not proceeding as a CERCLA response, managers should give attention at this point to the need to obtain long-lead permits. Many complex factors must be considered in identifying, applying for and obtaining the necessary environmental and other permits for the removal action. Permitting requirements of a decommissioning project must be evaluated early and frequently so that the time requirements for permits are not an impediment to timely completion of the work.

Step 16 continues the process of characterization of the facility so that the nature of contamination is identified and appropriate removal action can be taken. This first step is the preparation of the Characterization Plan. The Characterization Plan satisfies the requirements of 300.415(b)(4)(ii) for a field sampling plan and a Quality Assurance (QA) project plan (referred to collectively as Sampling and Analysis Plans); will include a Health and Safety Plan (HASP) for the field sampling work; and will include an assessment of the physical condition of the DOE facilities involved and other DOE programmatic requirements. The HASP will ensure the characterization work is performed in conformance with the general safety requirements of Order 5480.4, and, in particular, the radiation protection standards and procedures, and the ALARA concept, as embodied in Order 5480.11 and the DOE Radiological Control Manual (DOE/EH-0256T).

Steps 17 and 18 satisfy the requirement of 300.415 (b)(4)(ii) to submit the Sampling and Analysis Plans to EPA for review and approval (CERCLA actions only) if environmental samples are to be collected.

Step 19 involves the conduct of the field characterization work and documentation in a Characterization Report.

Step 20 is the preparation of a Risk Assessment to support the Safety Analysis and the evaluation of the removal action alternatives. The focus should be on the environmental safety and health risks associated with the removal action alternatives, using the graded approach. The scope and depth of the assessment should be in proportion to the potential threat resulting from actual conditions at the facility.

Step 21 is an analysis, performed in graded conformance with DOE Order 5481.1B (or Order 5480.23), to focus on the alternatives for the decommissioning removal action itself and the potential releases and/or accidents that could occur. Hazards and risks should be identified, and mitigation measures that are to be provided for in the Decommissioning Plan described.

Step 22 initiates the process to involve stakeholders in the selection of the removal action alternative. This initial step satisfies the requirement of 300.415(m)(1) to designate a spokesperson; to inform the community of the actions taken, respond to inquiries, and provide

information concerning the release (or threat); and to notify affected citizens and officials, when appropriate.³

DOE Field offices are responsible for developing and implementing comprehensive public participation plans and programs for environmental restoration activities and may have established public participation programs. (Guidance was provided in DOE/EH-0221, Public Participation in Environmental Restoration Activities, U.S. DOE, Office of Environmental Guidance, RCRA/CERCLA Division, EH-231, November 1991. This guidance was supplemented by the EM-1 memorandum dated June 19, 1992 on roles and field office liaisons, and public participation policy and guidance.⁴) An established program that provides for the activities specified in Steps 22-25 and 28-30 may be followed in lieu of these steps.

Step 23 is the establishment of the Administrative Record for the removal action (see Part 300, Subpart I - 300.800). The Administrative Record should be created as soon as possible after the Decommissioning Project Plan is prepared (see Step 15) and no later than the issuance for public comment of the document that analyzes removal alternatives (Steps 27 and 28). It is to be located at a DOE office or other central location available to the public; and is to be made available for public inspection at or near the site at issue (see Step 25, Information Repository). Most DOE facilities have public reading rooms or information resource centers that can serve as the information repository for the Administrative Record. The Record is to contain the results of the removal site evaluation and other factual information and analyses upon which the decision to conduct response action was based. As additional information is developed that forms the basis for selection of the response action, such information is to be included. Public comments, and DOE's response, will be included in the Administrative Record. (See 300.810 and 300.820 for more complete information on contents.)

Steps 24 and 25 respond to the requirement in 300.415(m)(3) to conduct interviews and prepare a formal Community Relations Plan (CRP) and establish and maintain an information repository for removal actions where on-site action is expected to extend beyond 120 days from the initiation of on-site removal activities. Section 300.415(m)(4)(i) requires these actions to be completed prior to the completion of the analysis of removal alternatives. (see Step 27).

³The *Secretarial Policy on the National Environmental Policy Act, U.S. Department of Energy, June 1994*, emphasizes the importance of early public involvement in the CERCLA process and making CERCLA documents available to the public as early as possible (as provided for in this Decommissioning Framework) is in keeping with the NEPA process. If decommissioning is not proceeding as a CERCLA response, the public participation requirements of NEPA will apply. In this case, NEPA public participation activities would replace Steps 22, 23, 24, 25, 28, 29, and 30.

⁴In addition, staff should be aware of DOE's Public Participation Guidance for Environmental Restoration and Waste Management. The EM Guidance does not replace or duplicate the EH Guidance. The EM Guidance was developed to provide general, programmatic direction to EM organizations for public participation planning and documentation.

Steps 26 and 27. Using the information from the steps preceding, DOE will evaluate the response alternatives and select and identify the preferred alternative in the Analysis of Removal Alternatives, Step 27.⁵ (As an example of the graded approach, a single document would contain the results from Steps 19, 20, 21, 26, and 27.)

Step 28 requires publication in a major local newspaper of a notice of availability of the Analysis of Removal Alternatives. This notice must provide 30 calendar days (45 or more, upon timely request) for submission of written and oral comments on the analysis, in compliance with 300.415(m)(4)(ii) and (iii). The public comments are reviewed (Step 29) and written response made to significant public comments pursuant to 300.820(a) (Step 30).

In Step 31, the final decision in the selection of the removal action is documented. The decision takes into account the Analysis of Removal Alternatives, the comments received on the analysis, and, if appropriate, comments received prior to the analysis comment period. The determination in this step must be documented. The information from the determination in Step 12 should be included to provide a complete record of the decision. DOE should consult with regulators concerning this decision in a manner consistent with applicable site agreements, NRC-approved decommissioning plans, or RCRA permits or orders.

In Step 32, engineering and planning work is performed to prepare a Decommissioning Plan. Consistent with the graded approach, the scope and detail of the Decommissioning Plan should be commensurate with the scope and complexity of the decommissioning project. The Plan should include background information as necessary; project scope and objectives; technical approach; compliance with applicable requirements; end state criteria; management approach; quality assurance; and attachments and supplemental information as necessary or appropriate. Part of the Plan will be a HASP for the removal action. The Decommissioning Plan should incorporate the measures necessary to protect the health and safety of workers and the public and to prevent the spread of contamination during decommissioning operations. The planning work will consider ALARA in the decision-making process and will reference studies and other supporting documents used in ALARA analyses. At NPL sites, the work described in the Plan must be consistent with long-term remedies at the site.

A waste management project plan is also included in the Decommissioning Plan to ensure that wastes generated from decommissioning are managed in accordance with RCRA and applicable State requirements.

The manner of coordinating action with regulators during this step will be the subject of site agreements, NRC-approved decommissioning plans, or RCRA permits or orders.

⁵The manner of incorporating NEPA principles in DOE planning and decision making for CERCLA actions can be found in the *Secretarial Policy on the National Environmental Policy Act, U.S. DOE, June 1994*. The policy provides for incorporating into CERCLA documents NEPA values, such as analysis of cumulative, off-site, ecological and socioeconomic impacts, to the extent practicable.

The Decommissioning Team will make preparations for the field work, such as completion of appropriate procedures, manuals and additional plans, and the training of personnel. When the Decommissioning Team is fully prepared, a Readiness Review will be performed in compliance with DOE Orders 5481.1B and 5480.31 and appropriately documented, Step 33.

Step 34 is the performance of the field work to carry out the removal action to achieve the end criteria (removal action objectives) stated in the Decommissioning Plan. During field operations, the S&M activities will be phased out in the manner planned (Steps 35 and 36). During decommissioning operations, provisions of the HASP and the technical specification of the Plan will be followed to assure the field operations are protective of workers, the public and the environment, consistent with the graded approach. During decommissioning operations all wastes generated must be handled in compliance with all applicable regulatory requirements.

The removal action will be completed by conducting final radiation and chemical surveys (Step 37) to demonstrate that the removal action objectives (which should be consistent with Order 5400.5 and appropriate non-radiological contamination criteria) have been achieved (Step 38). S&M activities will cease with the achievement of removal action objectives (Step 36), unless required for long-term remedial action.

Step 39 consists of actions that may be necessary for verification that removal objectives have been met. A qualified Independent Verification Contractor may be retained to review records and take additional samples as required to verify that the removal action objectives have been achieved.

Step 40 is the preparation of the final project report.

Further action will be considered in Step 41. Such additional action may include long-term monitoring, if appropriate; transfer to site remediation action for final cleanup (adjacent soil or groundwater, for example); or administrative action to declare surplus or transfer property or facilities to another government agency or private enterprise. Such follow-on activity is depicted in Step 42.



Appendix B

**Policy on Decommissioning
Department of Energy Facilities
Under CERCLA**

May 22, 1995



U.S. Department of Energy
U.S. Environmental Protection Agency



MAY 22 1995

MEMORANDUM

SUBJECT: Policy on Decommissioning Department of Energy
Facilities Under CERCLA

FROM: Steven A. Herman *SAH*
Assistant Administrator
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency

Elliott P. Laws *EPL*
Assistant Administrator
Office of Solid Waste and Emergency Response
United States Environmental Protection Agency

Thomas P. Grumbly *Thomas P. Grumbly*
Assistant Secretary for Environmental Management
United States Department of Energy

TO: See Addressees

The attached policy establishes the approach agreed upon by the Environmental Protection Agency (EPA) and the Department of Energy (DOE) for decommissioning surplus DOE facilities, consistent with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This policy is the result of a joint effort by EPA and DOE to develop an approach to decommissioning that ensures protection of worker and public health and the environment, that is consistent with CERCLA, that provides for stakeholder involvement, and that achieves risk reduction without unnecessary delay.

Consistent with the jointly issued "Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities" (August 22, 1994), this decommissioning policy encourages streamlined decisionmaking. This policy builds on the goal of that guidance to "develop decisions that appropriately address the reduction of risk to human health and the environment as expeditiously as the law allows."

The policy establishes that decommissioning activities will be conducted as non-time critical removal actions, unless the

circumstances at the facility make it inappropriate. Use of non-time critical removals for conducting decommissioning activities effectively integrates EPA oversight responsibility, DOE lead agency responsibility, and state and stakeholder participation.

So that EPA can fulfill its responsibilities to ensure compliance with CERCLA requirements, including remedy selection at NPL facilities, DOE Operations Offices will consult with EPA Regions and share information as determined by the DOE Operations Office and affected EPA Region. Decommissioning projects will retain sufficient flexibility to tailor activities to meet specific site needs and achieve risk reduction and environmental restoration expeditiously.

This policy and any internal procedures adopted for its implementation are intended exclusively for employees of the U.S. Environmental Protection Agency, for employees of the U.S. Department of Energy, and for DOE contractors. This guidance does not constitute rulemaking by EPA and may not be relied upon to create a right or benefit, substantive or procedural, enforceable at law or in equity, by any person. EPA may take action at variance with this guidance or its internal implementing procedures.

Addressees:

United States Environmental Protection Agency
Waste Management Division Directors, Regions I-X
Federal Facility Leadership Council, Regions I-X
Regional Counsels, Regions I-X
Federal Facilities Coordinators, Regions I-X

United States Department of Energy
Environmental Restoration Office Directors
Assistant Managers for Environmental Management,
DOE Operations Offices

responsibilities to ensure compliance with CERCLA requirements, including remedy selection,² at NPL facilities, DOE Operations Offices will consult with EPA Regions and share information as determined by the DOE Operations Office and affected EPA Region. In the event EPA disagrees with DOE's determination as to the presence of a release or substantial threat of release, EPA and DOE should make every effort to resolve the dispute in a manner satisfactory to both parties. If resolution is not possible and EPA determines that a threat of release is substantial, then under section 106 of CERCLA, with the concurrence of the Attorney General, EPA may order DOE to take appropriate action. EPA may also issue a CERCLA section 106 order to any other party, including past or present DOE contractors, that is liable under CERCLA section 107. EPA may further exercise any authority that is provided under an applicable IAG to "stop work" until EPA concerns are satisfactorily addressed. RCRA authorities may also be available to EPA. Specifically, these authorities may address waste management, corrective action, and closure requirements that may be established or enforced through regulations, permits, orders, or agreements.

SCOPE AND APPLICABILITY

This Policy applies to all decommissioning projects to be conducted by DOE. Decommissioning projects that have selected the removal alternative as of the date this Policy is adopted are not subject to this Policy. Such projects are encouraged, however, to proceed in a manner consistent with this Policy to the maximum extent practicable.

Decommissioning of facilities that are subject to the requirements of an interagency agreement (IAG) in effect on the date this Policy is adopted will be conducted in accordance with such requirements. When existing IAGs are renegotiated or amended, or new agreements are adopted, any requirements applicable to decommissioning activities should be in accordance with this Policy.

CERCLA RESPONSE ACTION TO DECOMMISSION FACILITIES

The NCP recognizes DOE as lead agency for the purpose of determining whether response action is necessary to protect health, welfare, or the environment, and what type of response is most appropriate under the circumstances presented by the site. Response action may be taken when DOE determines that the action will prevent, minimize, stabilize, or eliminate a risk to health or the environment. When DOE determines that CERCLA removal action is necessary, DOE is authorized to evaluate, select, and implement the removal action that DOE determines is most appropriate to address potential risks posed by the release or threat of release. The selection and implementation of such response should comply with the

² EPA remedy selection authority is established by section 120(e) of CERCLA. Section 120(e) provides that, absent agreement between EPA and the affected Federal agency, EPA shall select remedial actions at NPL facilities from alternatives developed through the remedial investigation/feasibility study (RI/FS) process. DOE lead agency authority for removal actions must be coordinated with any anticipated remedial action to ensure an orderly transition from removal to remedial activity is achieved where applicable.

requirements of CERCLA, the NCP, and other applicable authorities. EPA has responsibility to oversee compliance with these requirements.

Although the full range of CERCLA response actions may be applicable to decommissioning activities, non-time critical removal actions should be used for decommissioning, consistent with this Policy. The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This often will eliminate the need for the more thorough analysis of alternatives required for remedial actions. Non-time critical removal action requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented. Statutory time and dollar limits on removal action do not apply to removal action conducted by DOE, which increases the scope of projects that may be addressed by DOE removal action. Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions. For these reasons, DOE may exercise removal action authority to conduct decommissioning whenever such action is authorized by CERCLA, the NCP, and Executive Order 12580. To ensure an adequate regulatory role in the removal planning and decision process, EPA Regions are encouraged to communicate with DOE Operations Offices concerning the level of consultation EPA believes is appropriate for specific decommissioning projects. Such an approach will provide greater assurances that the removal action will be consistent with CERCLA requirements and any subsequent remedial action that may be necessary.

DOE Operations Offices will determine that removal action is appropriate for a particular project before proceeding. The scope of activities that qualify as removal actions under CERCLA includes site security or control precautions to reduce access or migration, stabilization of structures or buildings, consolidation or removal of substances or structures, and any other actions deemed necessary by the lead agency. Any activity that reduces risks or potential risks in a relatively short time-frame and can be identified as appropriate with a relatively limited amount of analysis of alternatives may be taken under removal action authority. CERCLA requires that removal actions should, to the extent practicable, contribute to the efficient performance of any long term remedial action conducted at the site.

DOE Decommissioning Program

The DOE Decommissioning Program will conduct decommissioning activities in compliance with applicable requirements of CERCLA and the NCP. The decision to conduct decommissioning may be based on any change in the facility's condition that may trigger a need to respond to protect health or the environment, or any other factor that leads DOE to determine that decommissioning of the facility is appropriate. DOE will conduct a removal site evaluation as directed by the NCP to assess site conditions and determine whether a release or substantial threat of release exists at the facility. At any facility for which DOE conducts a removal site evaluation, DOE will consult with EPA and will provide, as requested, EPA with such information necessary for EPA to review such evaluation. At any facility where DOE determines that a release or substantial threat of release has not occurred,

DOE will consult with EPA and provide any information necessary for EPA to evaluate such determination.

Both DOE Operations Offices and EPA Regions must take a good faith approach to assessing potential decommissioning projects. Unless the circumstances at the facility make it inappropriate, decommissioning activities will be conducted as non-time critical removal actions. Non-time critical removal actions generally will provide the most appropriate level of analysis, oversight, public participation, and flexibility to conduct decommissioning in a cost-effective manner that fully protects health and the environment. Using non-time critical removal action authority will enable DOE to exercise the flexibility provided in the NCP to reduce risks and achieve results without unnecessary expenditure or delay.

Compliance with Applicable Requirements, Permits, Agreements, and Orders

Decommissioning activities must comply with all applicable requirements established by any existing IAGs, Federal Facility Agreements (FFAs), Site Treatment Plans required under the Federal Facility Compliance Act, permits and orders issued pursuant to authorized State or Federal programs, and other applicable requirements. Decommissioning activities should comply with relevant and appropriate standards to the extent practicable, as provided by the NCP, and as necessary to contribute to the efficient performance of any long term remedial action.

In particular, States authorized by EPA to implement and enforce State hazardous waste programs in lieu of RCRA may have authority under such programs to enforce requirements applicable to decommissioning activities. These requirements include waste management, corrective action, and closure requirements which may be established or enforced through regulations, permits, orders, or agreements. The degree to which State hazardous waste and other requirements may affect decommissioning projects will depend on a number of site-specific factors including the scope of State authorization, and whether the facility to be decommissioned is included within a RCRA-permitted facility or is otherwise subject to RCRA requirements. EPA and DOE intend to work with authorized States to coordinate RCRA and CERCLA authorities to the maximum extent practicable in order to prevent unnecessary duplication or delay in decommissioning projects subject to both authorities.

EPA Involvement

DOE lead agency responsibilities for determining whether response action is warranted, and what type of response is appropriate, must be coordinated with EPA oversight

and remedy selection authority³ for facilities included in sites listed on the NPL. Clarifying the integration of DOE and EPA responsibilities at facilities included within a site listed on the NPL and subject to decommissioning is essential to achieving streamlined, effective response action that fully protects human health and the environment. To achieve coordinated integration with respect to decommissioning, this Policy establishes guidelines for defining the appropriate level of EPA consultation and stakeholder participation.

EPA involvement with DOE decommissioning activities on NPL sites will depend on the complexity and potential risk to health and the environment posed by the facility to be decommissioned. EPA involvement should focus on key documents and decision points in the removal action process. The NCP requires EPA approval of sampling and analysis plans developed in accordance with section 300.415(b)(4) of the NCP. EPA involvement may be appropriate with respect to other steps in the removal process.

The extent of EPA involvement will be determined by the EPA Region and DOE Operations Office responsible for the facility, based on the circumstances presented by each facility. Factors to be considered in determining EPA involvement in decommissioning projects include complexity, severity of potential risks, duration, cost, and appropriateness of applying EPA resources to the project. Where no IAG exists for the site, or where an existing IAG does not address decommissioning in general, or specific facilities appropriate for decommissioning in particular, the DOE Operations Office and EPA Region should identify the steps in the removal action process where EPA involvement can be most effective. In particular, EPA involvement should ensure that decommissioning activities comply with applicable requirements, that protection of health and the environment is achieved, and that decommissioning is consistent with ongoing or subsequent remedial actions at the site.

Stakeholder Involvement

Decommissioning activities will be conducted in full compliance with the community relations and public participation requirements established by CERCLA, the NCP, and DOE policies. The nature and scope of these stakeholder involvement requirements will depend on the type of removal action taken. All non-time critical removal actions will comply with the public participation requirements applicable to such actions outlined in the NCP. Where applicable, a formal community relations plan (CRP) will be prepared, specifying the community relations activities to be conducted during the removal. The CRP will be prepared prior to completion of the analysis of removal alternatives. In addition, stakeholders will be provided notice and an opportunity to submit comments on the analysis of removal alternatives. Written responses to public comments will be prepared.

³ As described in footnote 2, EPA remedy selection authority applies to selection of remedial actions at NPL facilities from alternatives developed through the remedial investigation/feasibility study (RI/FS) process. Removal actions selected by DOE must be consistent with any longer term remedial activity anticipated at the site.

DOE will establish an Administrative Record as provided by CERCLA section 113 and the NCP for non-time critical removals. The Administrative Record will include the results of the removal site evaluation and other factual information and analyses upon which the decision to conduct response action was based. As additional information is developed that forms the basis for selection of the response action, such information will be included in the Administrative Record. The Administrative Record will be accessible to the public, consistent with the requirements of the NCP. Public comments, and DOE's response, will be included in the Administrative Record.

CONCLUSION

Use of non-time critical removals for conducting decommissioning activities effectively integrates DOE lead agency responsibility, EPA oversight responsibility, and stakeholder participation. The DOE Decommissioning Program will utilize DOE expertise in devising and implementing appropriate solutions to decommissioning projects. Effective EPA oversight and stakeholder participation will be provided in compliance with applicable requirements. Decommissioning projects will retain sufficient flexibility to tailor activities to meet specific site needs, and achieve risk reduction and restoration expeditiously.

* * * * *

This policy and any internal procedures adopted for its implementation are intended exclusively for employees of the U.S. Environmental Protection Agency, for employees of the U.S. Department of Energy, and for DOE contractors. This guidance does not constitute rulemaking by the Agency and may not be relied upon to create a right or benefit, substantive or procedural, enforceable at law or in equity, by any person. The Agency may take action at variance with this guidance or its internal implementing procedures.



Appendix C

Flowcharts for Potential Decommissioning Drivers

Appendix C

Flowcharts for Potential Decommissioning Drivers

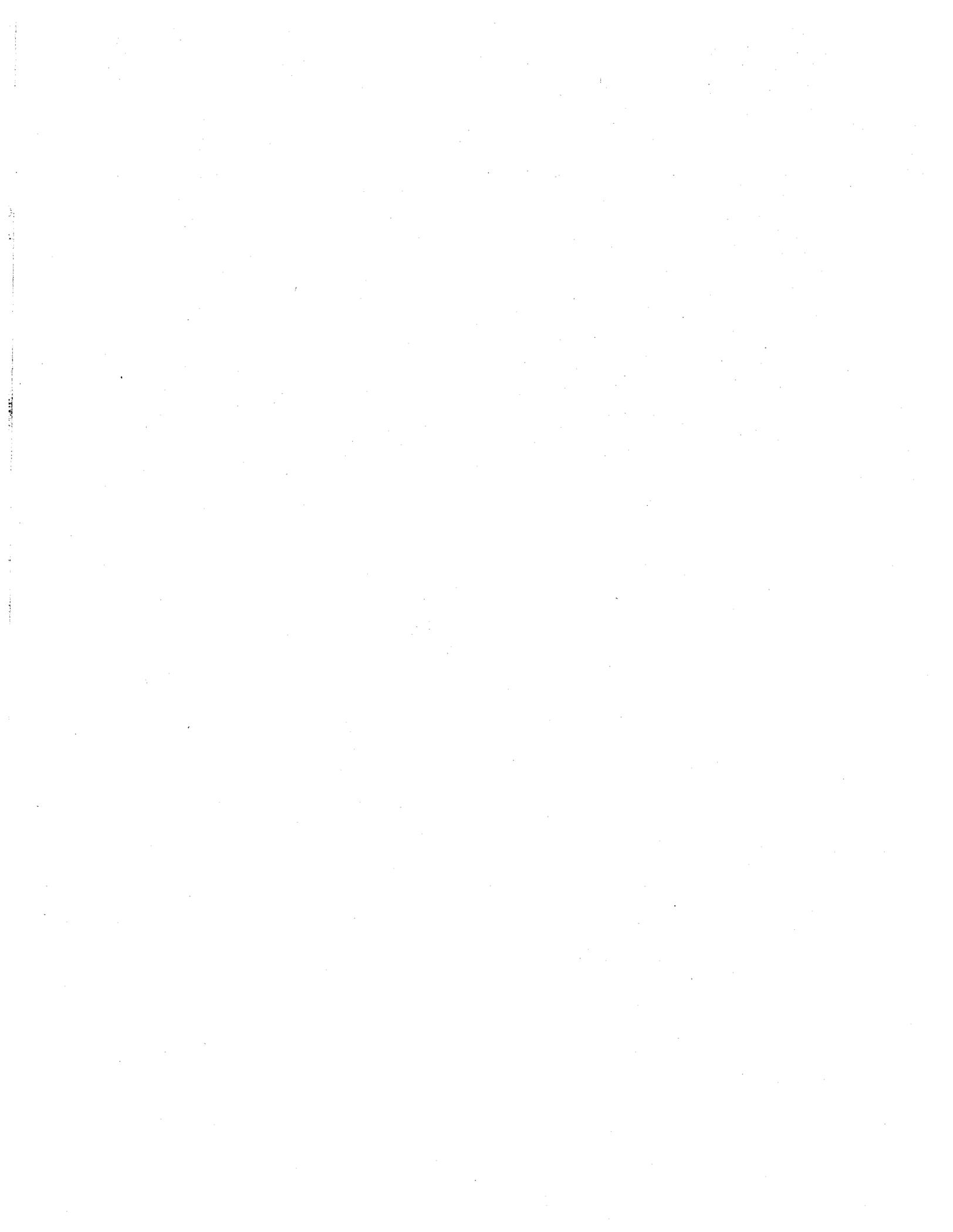
The decommissioning policy (Appendix B) creates a consistent, flexible framework (Appendix A) which can be applied to the universe of DOE facilities, subject to a variety of environmental laws and policies. This framework, based on the CERCLA non-time-critical removal process, complies with a number of other environmental requirements while meeting the goals of the decommissioning policy established by EPA and DOE. In developing this framework the following processes were reviewed, as they are the most likely to be applicable to DOE decommissioning operations:

- CERCLA Removal Process
- RCRA Corrective Action Process
- RCRA Closure Process
- NRC Materials License Termination Process
- NRC Reactor License Termination Process
- EM Decommissioning Process.

Appendix C.1 presents a flowchart of each of the above processes, as potential decommissioning drivers. Appendix C.2 presents the decommissioning framework created by the policy, sequentially numbered, and color coded to reflect the processes reviewed.

Appendix C.1, used in conjunction with Appendix C.2, demonstrates how each element of the six programs reviewed is captured by the decommissioning framework created by the policy. In Appendix C.1, each program flowchart is color coded and each box has a number which corresponds to an appropriate box in Appendix C.2. For example, to determine where the decommissioning framework captures the RCRA Corrective Action Process (color coded orange) requirement to conduct a RCRA facility assessment (RFA), first look to Appendix C.1 to locate the RCRA requirement of interest, page 1 of 3; second note the number associated with the box, number four; third look to Appendix C.2 and box four will be color coded orange.





Appendix D

EPA/DOE/DOE Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities

August 22, 1994



AUG 22 1994

MEMORANDUM

SUBJECT: Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities

FROM: Steven A. Herman *SAH*
Assistant Administrator
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency

Elliott P. Laws *EPL*
Assistant Administrator
Office of Solid Waste and Emergency Response
United States Environmental Protection Agency

Thomas P. Grumbly *TPG*
Assistant Secretary for Environmental Management
United States Department of Energy

Sherri W. Goodman *SWG*
Deputy Under Secretary for Environmental Security
United States Department of Defense

TO: See Addressees

PURPOSE

The purpose of this guidance is to encourage and support efforts at federal facilities to accelerate and develop streamlined approaches to the cleanup of hazardous waste.

BACKGROUND

On July 7, 1992, U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response (OSWER) issued OSWER Directive No. 9203.1-03, "Guidance on Implementation of the Superfund Accelerated Cleanup Model (SACM) under CERCLA and the NCP" to address accelerating cleanup of private Superfund sites. The OSWER directive stated that separate guidance would be issued for accelerating cleanup of federal facility sites. This guidance is being issued as a supplement to the OSWER guidance.

Washington, D.C.

In order to encourage and facilitate the acceleration of hazardous waste cleanup at federal facilities, the EPA Federal Facilities Enforcement Office (FFEO), the U.S. Department of Defense (DoD), and the Department of Energy (DOE) met to consider ways in which this goal could be achieved consistent with the requirements of §120 of the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP) and Executive Order (E.O.) Number 12580, 3 C.F.R. 193 (1987).

CERCLA §120 and E.O. 12580 establish certain unique requirements with respect to federal facilities. In addition, the potential for cooperative decision making between the lead federal agencies, EPA and the states, in consultation with community groups, offers opportunities for flexibility at federal facility sites. To improve and accelerate cleanups at federal facility sites, it will be necessary to identify available opportunities, take creative approaches to managing uncertainty, empower field managers to make decisions, be prepared to review past conclusions when necessary and develop decisions that appropriately address the reduction of risk to human health and the environment as expeditiously as the law allows.

EPA also seeks to encourage accelerated cleanup at federal facilities through the use of innovative technologies, as appropriate. (See OSWER Directive 9380.0-17). Although the time constraints imposed by CERCLA §120(e) to initiate the Remedial Action (RA) within 15 months of remedy selection may discourage the use of federal facilities for research and development of new technologies, EPA is willing to explore, in appropriate circumstances, a "decision-sharing" approach in order to provide incentives to develop innovative technologies for environmental restoration. Where states are a party to the Interagency Agreement/Federal Facilities Agreement (IAG/FFA), they need to be a party to the decision making process. Where innovative technology may offer accelerated cleanup at federal facilities, EPA may allow for changes in scheduled activities, and provide technical support to the federal agency. Such an approach should be based on decisions acceptable to EPA, state environmental regulatory agencies, the lead federal agency and the public.

EPA is fully committed to improving the overall performance of environmental restoration activities at all federal facilities and to put into practice, in collaboration with federal agencies, the states and the public, strategies that accelerate the cleanup process. Potential areas for streamlining and accelerating the cleanup process are: standardize technical and field methodologies, use of removal actions to address imminent and substantial endangerment, use of non-time-critical removals and interim response actions, use of sampling data for both the Site Investigation (SI) and the Remedial Investigation (RI), use of focused Feasibility Studies (FS), use of presumptive remedies,

concurrent document review, early Remedial Design (RD) starts, plan, scope and use site assessment data for removal or remedial determinations, develop common measures of performance (e.g., risk reduction), delineate regulatory responsibilities (e.g., Resource Conservation and Recovery Act (RCRA), CERCLA) and improve team work at sites amongst regulators and the facility.

EPA has recently begun working with DOE on a joint pilot project to evaluate the effectiveness of a streamlining approach developed by DOE. The Streamlined Approach for Environmental Restoration (SAFER) is being implemented at four DOE facilities and is being closely monitored and evaluated by EPA and DOE. SAFER was developed by DOE to manage the uncertainty associated with environmental restoration activities and to address stakeholder concerns early in the process. DOE expects that this approach will result in more efficient and effective waste cleanups.

With respect to CERCLA, this memorandum focuses on accelerating cleanup of those facilities which either are "National Priorities List (NPL) caliber" (i.e., likely to be listed on the NPL), proposed for or listed on the NPL, because the scope of EPA involvement at federal facility Superfund sites is defined in CERCLA §120 and E.O. 12580 as focused at NPL sites. It is intended, however, that approaches to accelerated cleanup will also be applicable to cleanups under RCRA and cleanups undertaken in the context of military base closure. EPA's RCRA program is currently developing guidance on the use of a streamlined approach for the corrective action process.

EPA also is in the process of issuing guidance on future land use and innovative technology. These documents may be useful for implementing acceleration measures.

Site Assessment

Efforts should be made to simplify or consolidate site assessments by planning and performing required studies and collecting data in such a way that the studies and data collected can be used to satisfy multiple purposes. Under current practices, hazardous waste sites may receive numerous sequential assessments prior to the inception of cleanup. Rather than sequentially conducting a Removal Preliminary Assessment (PA), Removal SI, Remedial PA and Remedial SI, where possible, the studies should be consolidated in one site assessment and one site report, provided the report includes findings required by the NCP for moving from one phase of site assessment to another.

A more flexible approach to site assessment will generally require the agencies that either own or operate the facility to improve the quality of the information collected in order for it to be useful beyond the PA/SI stage. Improved levels of Quality

Assessment/Quality Control (QA/QC), identification of background levels and adequate sampling and analysis methods may facilitate multiple use of the data. To facilitate the regulatory process under CERCLA or RCRA, early consultation with EPA and states and early involvement of the public will be essential. This approach will also help in the determination of clean parcels based on Community Environmental Response Facilitation Act (CERFA) requirements.

Lead agencies are encouraged to adopt innovative approaches to field sampling with the understanding that they will sample to a level that will produce a defensible level of data that will allow sound cleanup decisions to be made. (EPA and the Air Force are currently piloting a field method of site characterization.) In order to balance the uncertainty that may arise from less detailed initial site assessment, it may be necessary to develop contingent Records of Decision (RODs) that will provide for alternative remedies should additional data be uncovered that makes the preferred remedy impracticable.

"Early Actions" v. "Long-Term Actions"

Although federal facilities are encouraged to take early actions at any facility where risk reduction can be accomplished promptly, the response action chosen must be one that will satisfy CERCLA and its implementing regulations. Early interaction with EPA, the state and the public will help ensure that removal actions are consistent with long-term actions and that cleanup levels will be based on risk assessment and Applicable or Relevant and Appropriate Requirements (ARARs) that will be sufficient to be the final action, whenever possible.

The need to promptly address sources of contamination, without compromising environmental requirements, at all federal facility sites should be addressed by means of a removal, operable unit RODs, and/or interim remedial actions, once a federal facility has been listed on the NPL. Strong consideration should be given to non-time-critical removals (NTCRs) (i.e., where an estimated 6 month planning period is required), that will achieve results comparable to a remedial action, but which may be completed in less time. The NCP provides that in selecting a NTCR action, the alternatives must be evaluated in an engineering evaluation/cost assessment (EE/CA) which must be provided to the public for no less than a thirty

¹ When using removal authorities delegated by Executive Order 12580, other federal agencies should consult with EPA, states and the public to ensure that the action is consistent with overall facility restoration goals and will result in cleanups consistent with the operable unit ROD and/or the final installation-wide ROD to delete the site from the NPL.

(30) day comment period prior to the selection of the action.
(See 40 CFR 300.415(b)(4) and (m)(4)).

Opportunities for accelerated cleanup may be the greatest for actions that fall between time critical removals and remedial actions; i.e., for NTCR at which rapid risk reduction is possible. All parties will benefit if the lead federal agency provides EPA and the state with an adequate regulatory role in the removal planning and decision process, including consultation on the removal action decision and monitoring progress of the action. Such an approach gains the regulatory assurances that the removal actions will be consistent with the final remedy. Without this early participation, the federal agency, EPA and the state may later be required to expend additional resources if there is an inconsistency.

Careful consultation with EPA and the states will be essential in the identification of ARARs in the removal or remedial decision process. ARARs analysis remains a part of the removal decision process since the NCP requires that in removals, ARARs be met to the extent practicable. As noted in the OSWER directive (OSWER Directive No.9203.1-03, July 7, 1992, at 7), it should generally be practicable to meet ARARs in NTCR actions. However, to the extent that the scope of those actions is limited, the issue of attaining ARARs may be deferred to later remedial actions.

Presumptive Remedies

Historically, a substantial amount of time and money has been expended in the remediation process to address similar or recurring contamination problems. EPA and federal agencies have received substantial criticism for studying sites too long and not moving ahead with response actions. Federal agencies, with the cooperation and concurrence of EPA and the states, should focus on developing standardized solutions consistent with the requirements of the NCP (i.e., 40 CFR 300.420(b)(iv)). Standardized approaches offer the opportunity to streamline the investigation and cleanup process, provide consistency in dealing with recurring problems and should result in significant saving of resources at all agencies. EPA has developed presumptive remedies for CERCLA municipal landfill sites (OSWER Directive Number 9355.0-49FS) and CERCLA sites with Volatile Organic Compounds (VOCs) in soils (OSWER Directive Number 9355.0-48FS). EPA in consultation with other federal agencies will begin the development of presumptive remedies more specifically relevant to federal facilities such as remedies for jet fuel spills (e.g., Jet Propulsion 4 (JP4)).

Presumptive remedies are expected to improve the focus of data collection efforts during the site assessment, site inspection and remedial investigation activities. Employing a

presumptive remedy approach, data collection efforts should focus on seeking information adequate to confirm the site type. If the site type is one for which a presumptive remedy has been developed, data collection should next be focused on characterization needs for that particular type of site. Following site characterization, a focused Feasibility Study (FS) or Engineering Evaluation/Cost Analysis (EE/CA) may be sufficient when employing the presumptive remedy approach.

These focused analyses may be streamlined using presumptive remedies by limiting, as appropriate, the discussion of the identification and screening of technologies and response action alternatives. Similarly, the Proposed Plan and ROD or Action Memorandum may be streamlined by focusing primarily on the presumptive remedies being considered. Finally, the remedial design may be streamlined by using the data collected earlier in the process and drawing on the existing programmatic knowledge of the design of the particular presumptive remedy.

The following are some initial steps which could lead to the development of presumptive remedies at federal facilities:

- ♦ Identifying types of contamination for which such an approach is feasible;
- ♦ Establishing a structure for getting state/federal/local regulators and facility staff together early in the process to decide on cleanup methods, and Data Quality Objectives required; and
- ♦ Identifying pilot sites at which to test the feasibility of the approach.

If studies at pilot sites validate the use of a presumptive remedy, information on that remedy will be made available to similar sites. Proposed presumptive remedies will be evaluated and addressed consistent with OSWER Publication 9203.1-021, Superfund Accelerated Cleanup Bulletin\Presumptive Remedies.

Sites that have common contamination problems that lend themselves to presumptive, standardized approaches may also be good candidates for innovative technology development. Innovative technologies that are developed for a cluster of similar sites could result in significant cost and time savings.

Public Participation

Accelerating cleanups may require employing new and innovative strategies and processes that may be of concern to affected stakeholders. Choosing removal and interim remedial responses may raise policy and legal questions related to ARAR compliance and the merits of early action. Affected public

stakeholders should be given an early and meaningful opportunity to participate in a comment and response process that results in decision-making. Federal facilities should consider establishing Site-Specific Advisory Boards (SSABs) or their equivalent, early in the decision-making process for the purpose of sharing technical and regulatory concerns and providing a forum for dialogue on cleanup decision related issues.

Effect on Existing Federal Facility Interagency Agreements

Federal facilities listed on the NPL are subject to IAGs under CERCLA §120(e)(2) which provide for enforceable schedules for the conduct of RI/FS work and for the implementation of selected remedies, including interim remedial actions. The implementation of the IAGs is also subject to the public participation requirements of CERCLA §117. Most IAGs do not provide enforceable schedules for removal actions.

IAGs provide for the opportunity to change or modify milestones. To the extent that acceleration efforts affect milestones, the parties to the IAG should review the schedules and modify as appropriate. The statutory mandate for IAGs must be considered in the evaluation of the restoration strategy at federal facilities. CERCLA §120(e)(2) provides that IAGs be entered into at or about the time of remedy selection. No explicit role is defined for EPA in CERCLA §120 relative to removal actions. However, in consideration of the Congressional mandate for EPA involvement in the remedy selection process, the federal facility must exercise its removal authority with prudence. That is to say that not all response actions should be categorized as removals, thereby obviating regulatory involvement.

Decision Teams

Under the SACM model, OSWER views Regional Decision Teams (RDTs) as the key to the successful implementation of accelerated

² The role of Site Specific Advisory Boards is discussed more fully in the Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee, February 1993. The Report recommends that SSABs include individual residents of communities where the site is located, representatives of citizen, environmental and public interest groups in communities where the site is located, workers or representatives of workers involved in site cleanup and representatives of Indian Nations and other indigenous people with rights affected by cleanup activities at the site. A Technical Review Committee (TRC) or Restoration Advisory Board (RAB) with sufficiently broad membership and involvement at a site may provide the mechanism for this purpose.

cleanup at private sites. While it is suggested that the make-up of the RDTs may vary from region to region, the general assumption is that a team would include an EPA Branch Chief, On-scene Coordinator (OSC), Remedial Project Manager (RPM), Office of Regional Counsel and site assessment representative. The purpose of the RDTs is to provide continuity throughout a project and to centralize and expedite decision making.

Under Executive Order No. 12580 and CERCLA §120, federal agencies, other than EPA, have jurisdiction for carrying out most response actions at federal facility sites. As EPA is not the lead agency at such sites, its role is different from that at other Superfund sites.

To achieve the purpose intended for RDTs at a federal facility, the lead agency could create an empowered site-specific team to perform a number of the RDT functions, such as establishing a site-wide sampling strategy, deciding whether to use early or long term actions, making recommendations for approval of the Action Memorandum and screening proposed remedial actions. A team including representatives of EPA, the state, the community and the federal agency could accomplish the overall goal of accelerating cleanup by improved coordination and simplification. This cooperative model is currently being employed in the base closure program.

Improved planning and cooperative decision making between lead agencies, EPA and the states will be necessary because of fixed and often limited resources. A decision to proceed with a removal may result in delaying other activities at the site. A site-specific team should consider the implications of available alternatives and seek buy-in from affected stakeholders early in the decision-making process.

CONCLUSION

As described above, there are significant opportunities for the acceleration of environmental restoration at federal facility sites on the NPL. EPA is supportive of coordinated efforts between agencies on the development and initiation of projects that accelerate the cleanup process. EPA views the focus on accelerated cleanup of hazardous waste sites as an opportunity to work cooperatively with other federal agencies in order to more effectively achieve our joint goal: protecting human health and the environment.

PURPOSE AND USE OF THIS GUIDANCE

This policy and any internal procedures adopted for its implementation are intended exclusively as guidance for employees of the U.S. Environmental Protection Agency. This guidance does not constitute rulemaking by the Agency and may not be relied

upon to create a right or benefit, substantive or procedural, enforceable at law or in equity, by any person. The Agency may take action at variance with this guidance or its internal implementing procedures.

Addressees:

United States Environmental protection Agency
Waste Management Division Directors, Regions I-X
Federal Facility Leadership Council, Regions I-X
Office of Regional Counsel, Regions I-X
United States Department of Energy
Environmental Restoration Office Directors
Assistant Managers for Environmental Management,
DOE Operations Offices
United States Department of Defense
Deputy Assistant Secretary of the Army for
Environment, Safety and Occupational Health
Deputy Assistant Secretary of the Navy for
Environment and Safety
Deputy Assistant Secretary of the Air Force for
Environment, Safety and Occupational Health
Director, Defense Logistics Agency (DLA-CAAE)



Appendix E

References

Appendix E

References

The documents listed in this appendix are general references for this Resource Manual and can be used in identifying the requirements for an individual project.

Document Number	Title	Description
DEPARTMENT OF ENERGY (DOE) Regulations and Orders		
10 CFR 820	Procedural Rules for DOE Nuclear Activities	This part sets forth the procedures for implementing the provisions of the Price-Anderson Amendments Act of 1988 (PAAA).
10 CFR 830	Nuclear Safety Management	This Part establishes requirements for the safe management of Contractor work at DOE nuclear facilities. This part codified DOE Order 5700.6C (4/5/94) and is scheduled to codify Orders 4330.4B, 5000.3B, 5480.7A, 5480.19, 5480.20, 5480.21, 5480.22, 5480.23, 5480.28 and 5480.30 by 1996.
10 CFR 835	Occupational Radiation Protection	This regulation provides standards for occupational radiation protection of workers at DOE facilities. See DOE order 5480.11.
10 CFR 1021	DOE National Environmental Policy Act Implementing Procedures	This part provides requirements for complying with NEPA at DOE facilities.
DOE Order 1240.2B	Unclassified Visits and Assignments by Foreign Nations	This order provides policy and administrative procedures for visits and assignments involving unclassified material.
DOE Order 1324.2A	Records Disposition	This order provides information in responsibilities, authorities, policies, procedures, standards, and guidelines for records disposition. The order provides implementing instructions, record inventory and disposition schedule, appraisals, transfer of records, and other information.
DOE Order 1324.5B	Records Management Program	This order provides the necessary requirements to develop a records management program.
DOE Order 1332.1A	Uniform Reporting System	This order provides the content and format for plans and reports that are to be submitted to DOE from its contractors.
DOE Order 1430.1D	Scientific and Technical Information Management	This order establishes implementation procedures for DOE scientific and technical information program policy. Scientific and technical information related to DOE supported work shall be reported to DOE for inclusion in DOE's information systems.
DOE Order 1540.1C	Materials Transportation and Traffic Management	This order establishes the Department's policies for management of materials transportation activities.
DOE Order 1540.2	Hazardous Material Packaging for Transport-Administrative Procedures	This DOE Order standardizes the current approval procedures to ensure that DOE packaging designs and transportation operations provide for public health and safety in accordance with regulations of the DOT and in accordance with standards that are equivalent to the standards prescribed by NRC. Chapter II through Chapter XII of this Order summarize the actions associated with the review and approval of packaging for the transportation of radioactive and other hazardous materials.
DOE Order 1540.3A	Base Technology for Radioactive Material Transportation Packaging Systems	This order provides definitions used in transportation and packaging of radioactive materials.
DOE Order 4300.1C	Real Property Management	This order provides policy and procedures for the disposal of real property including the requirement for land use planning in the decommissioning process. Chapter 2 of this order provides information on disposal of real property.

Document Number	Title	Description
DOE Order 4330.4B	Maintenance Management Program	This order provides policy and procedures for the establishment of programs for the maintenance and repair of DOE property.
DOE Order 4700.1	Project Management System	This order establishes the principles and requirements that govern the development, approval, and execution of DOE Project Management.
DOE Order 5000.3B	Occurrence Reporting and Processing of Operations Information	This order provides policy, responsibility, criteria, and instructions for reporting occurrences that have programmatic significance.
DOE Order 5400.1 Change 1	General Environmental Protection Program	This order describes the general concepts of DOE's environmental protection program. This order provides the mandatory environmental standards, requirements on reporting, and the requirements for environmental monitoring programs.
DOE Order 5400.2A Change 1	Environmental Compliance Issue Coordination	This order provides requirements for coordination of significant environmental compliance issues to ensure timely development and consistent application of DOE's environmental policy and guidance.
DOE Order 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Requirements	This order establishes and implements DOE policy on CERCLA and procedures as prescribed by National Oil and Hazardous Substance Pollution Contingency Plan (NCP).
DOE Order 5400.5 Change 2	Radiation Protection of the Public and the Environment	Presents radiological protection requirements and guidelines for cleanup of residual radioactive material and management of the resulting waste and residues and release of property.
DOE Order 5440.1E	National Environmental Policy Act	This order establishes the Department's policy for implementing the National Environmental Policy Act of 1969.
DOE Order 5480.1B Change 5	Environmental, Safety and Health Program for Department of Energy Operations	This order provides guidance on establishing an Environmental, Safety and Health Program for DOE operations. This whole order should be considered when developing an ES&H Program for decommissioning activities.
DOE Order 5480.3A	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes	This order provides requirements for the packaging and transportation of hazardous materials.
DOE Order 5480.4	Environmental Protection, Safety, and Health Protection Standards	This order provides standards and guidelines for general ES&H information. It also supplies two sets of mandatory ES&H requirements.
DOE Order 5480.5	Safety of Nuclear Facilities	This order establishes nuclear facility safety program requirements using the graded approach.
DOE Order 5480.6	Safety of Department of Energy Owned Nuclear Reactors	This order covers safety requirements for DOE owned reactors.
DOE Order 5480.7A	Fire Protection	This order establishes requirements for a comprehensive fire protection program.
DOE Order 5480.8A Change 1	Contractor Occupational Medical Program	This order describes the requirements (including monitoring and documentation) for medical surveillance of contractor employees at hazardous waste sites.
DOE Order 5480.9A	Construction Project Safety and Health Program	This order requires the preparation of detailed activity hazard analyses prior to start of work.
DOE Order 5480.10	Contractor Industry Hygiene Program	This order establishes requirements and guidelines applicable to DOE contractor operations of Government Owned Contractor Operated (GOCO) facilities.
DOE Order 5480.11 Change 3	Radiation Protection for Occupational Workers	This order provides the standards and requirements for radiation protection of occupational workers. This order provides the exposure limits allowed by DOE and procedural requirements for radiation protection; guidance on entry into controlled areas, and the requirements for release of material and equipment from radiological areas. This order has been codified in 10 CFR 835.

Document Number	Title	Description
DOE Order 5480.15	Department of Energy Laboratory Accreditation Program for Personnel Dosimetry	This order establishes requirements for evaluating DOE and contractor dosimetry programs.
DOE Order 5480.19 Change 1	Conduct of Operations (CONOPS)	The order provides requirements and guidelines for conduct of operations. Elements covered include organization, shift routines communications, training, equipment, lockout & tagouts, etc.
DOE Order 5480.20A	Personnel Selection, Qualification Training and Staffing Requirements at DOE Reactor and Non- Reactor Nuclear Facilities	This order establishes requirements for personnel at nuclear facilities.
DOE Order 5480.21	Unreviewed Safety Questions	This order sets forth the definition and basis for determining the existence of an unreviewed safety questions.
DOE Order 5480.22 Change 1	Technical Safety Requirements	This order provides the definition of technical safety requirements and technical safety limits. This order also describes implementation of technical safety requirements. The attachment to this order provides specific guidance on how to prepare technical safety requirements.
DOE Order 5480.23 Change 1	Nuclear Safety Analysis Reports	This order establishes requirements for the development of safety analyses that establish and evaluate the adequacy of the safety basis of facilities being designed, constructed, operated, and/or decommissioned.
DOE Order 5480.24	Nuclear Criticality Safety	This order provide requirements for a criticality safety program.
DOE Order 5480.28	Natural Phenomena Hazards Mitigation	This order establishes policy and requirements for natural phenomena hazards mitigation using the graded approach.
DOE Order 5480.30	Nuclear Reactor Safety Design Criteria	This order provides criteria for design, fabrication, construction, testing and performance of reaction facilities.
DOE Order 5480.31	Startup and Restart of Nuclear Facilities	This order identifies the requirements for Occupational Readiness Reviews prior to initiating decommissioning activities.
DOE Order 5481.1B Change 1	Safety Analysis and Review System	This order provides general requirements for the safety analysis and review system. It also provides guidance and preferred practices for use by line organization in implementing the policy, objectives, and requirements of this order.
DOE Order 5482.1B	Environmental, Safety, and Health Appraisal Program	This order provides the policy and objectives of DOE's environmental, safety, and health appraisal program. This order also provides generic factors to be considered and applied as appropriate for use in all levels of the ES&H appraisal program.
DOE Order 5483.1A	Occupational Safety and Health Program for DOE Contractor Employees at Government Owned contractor Operated Facilities	This order provides the OSHA standards for which all contractors must comply.
DOE Order 5484.1 Change 7	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	This order establishes reporting requirements for the protection of environment, safety, and health for DOE operations.
DOE Order 5500.1B Change 1	Emergency Management System	This order provides overall policy and requirements for DOE's emergency management system. It provides an outline for the Headquarters executive team which is a part of the emergency management system.
DOE Order 5500.2B Change 1	Emergency Categories, Classes, and Notification and Reporting Requirements	This order establishes requirements for the coordination and direction of planning preparedness and response to operational emergencies.
DOE Order 5500.3A Change 1	Planning and Preparedness for Operational Emergencies	This order establishes requirements for the development of site specific emergency plans and procedures at nuclear facilities.

Document Number	Title	Description
DOE Order 5500.10 Change I	Emergency Response Assurance Program	This order establishes requirements for assuring the continued readiness of the emergency management system.
DOE Order 5630.11B	Safeguards and Security Program	This order establishes the policy and responsibilities of a safeguards and security program.
DOE Order 5633.3B	Control and Accountability of Nuclear Materials	This order provides the minimum requirements for the control and accountability of nuclear material. Chapter 2 of the order provides the six requirements used for nuclear material accountability. Chapter 3 of this order provides the four requirements used for nuclear material control.
DOE Order 5700.2D	Cost Estimating, Analysis, and Standardization	This order provides information on the development of a budget.
DOE Order 5700.6C	Quality Assurance	This order establishes quality assurance requirements for DOE. Attachment I of this document is a Quality Assurance Program Implementation Guide.
DOE Order 5700.7C	Work Authorization System	This order establishes a formal process for budget development, authorization, and monitoring of DOE funded work at specified contractor facilities.
DOE Order 5820.2A	Radioactive Waste Management	This order provides definitions of radioactive waste, hazardous waste, and mixed waste. This order also provides a waste management plan outline and waste management documentation requirements. This order provides information on storage, treatment, and disposal of radioactive waste.
DOE Order 6430.1A	General Design Criteria	This order should be used if a decommissioning Project has the need for construction of a facility, system or fabrication of materials for use in the D&D Project.
DOE Standards, Guidance Documents and Information Sources		
DOE Standard 1013-92	Guidance on Preliminary Hazard Classification and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports	Provides guidance for preparation of preliminary hazard analysis in accordance with DOE Order 5480.23.
DOE Standard 1027-92	Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports	This DOE standard establishes guidance for compliance with the safety analysis requirements of DOE order 5480.23. The standard provides a uniform methodology for hazard categorization of nuclear facilities.
DOE-Standard 1053-93	Guideline to Good Practices for Control of Maintenance Activities at DOE Nuclear facilities	Provides guidance for complying with DOE Order 4330.4B.
DOE Standard 3006-93	Planning and Conduct of Operational Readiness Reviews (ORR)	Provides guidance for conducting ORR's in accordance with DOE Order 5480.31.
DOE Standard 3009-94	Preparation Guide for U.S. Department of Energy Non-Reactor Nuclear Facility Safety Analysis Report	Provides guidance on the format and content of nuclear safety analysis reports.
DOE Safety Guide (SG) 830.110	Guidelines for the Preparation of Safety Analysis Reports for DOE Nuclear Facilities and Non-Facility Nuclear Operations, (1991)	Provides guidance on the format and content of nuclear safety analysis reports for these particular types of facilities/operations, based on 10 CFR 830.110.
DOE-EM-Standard 5502-94	Hazard Baseline Documentation	This standard establishes uniform EM guidance on hazard baseline documents that identify and control both radiological and non-radiological hazards for all EM facilities. This document also serves as a roadmap to the safety & health identification and control requirements from DOE Orders and provides guidance on their applicability and integration.
DOE-EM-Standard 5503-94	Health & Safety Plan (HASP) Guidelines (Draft)	Provides guidance on the required elements of a site-specific health & safety plan.

Document Number	Title	Description
--	Secretarial Policy on the National Environmental Protection Act, June 1994	This document provides the Secretary's general policy for implementing NEPA requirements for Departmental activities.
DOE/FM-0145	DOE Waste Minimization/Pollution Preventive Crosscut Plan 1994	This plan is the principal planning document for DOE's waste minimization and pollution prevention program for compliance with Executive Order 12856.
DOE/EH-0435	Removal Actions under the Comprehensive and Liability Act (CERCLA)	DOE Guidance for performing removal actions in compliance with CERCLA (40 CFR 300.415)
DOE/EH-0256T Revision 1	U.S. Department of Energy Radiological Control Manual	This manual establishes standards for the conduct and performance of DOE radiological control programs.
DOE/EH-0192	Natural Resource Trusteeship and Ecological Evaluation for Environmental Restoration at DOE Facilities	Provides guidance for evaluating potential damage to natural resources from cleanup activities.
DOE/EH-0221	Public Participation in Environmental Restoration Activities	Provides guidance for development of a site specific public participation program.
--	EM-40 Project Management Notebook	Document serves as a comprehensive aid in all cost and schedule estimation and maintenance efforts. This includes establishing a project baseline, preparing independent cost estimates, and conducting annual validation reviews. The notebook also provides more specific guidance on EM-40 requirements.
DOE/EM/RM/01	EM-40 Management Policies and Requirements	This document describes the policies and requirements for accomplishing the mission of the Environmental Restoration Program.
DOE/EM/RM/02	EM-40 Management Plan	This document translates DOE policies and requirements into a specific EM-40 approach to managing ER work.
DOE/EM-0115P through -0156T	Office of Technology Development (EM-50) "Rainbow" Books	These publications provide information and the status of the various and ongoing technology development programs in support of EM.
DOE/EM-0142P	Decommissioning Handbook	This handbook provides technical information for decommissioning nuclear facilities. The handbook is primarily a technology identification document for both available and potentially available technologies.
DOE Guidance FM/EM-5	Future Use Core Documentation, (Final draft, 9/2/94)	These documents are intended as resources to be used in the development of future use options for EM cleanup projects. Various subjects are covered such as an overview of pertinent laws and regulations as well as DOE requirements, public participation, project planning, and remedy selection.
ES/ER/TM-132/E	Nuclear Facility Decommissioning and Site Remedial Actions: A Selected Bibliography	This report contains bibliographic citations to 2645 documents relevant to DOE's ER Program and is available from RAPIC.
ANL/EAD/LD-2 DOE/CH-8901	Manual for Implementing Residual Radioactivity Material Guidelines Using RESRAD, Version 5.0	This Argonne Lab document serves as a user manual for the computer program RESRAD. RESRAD is used to derive residual radionuclide soil concentrations which correspond with specified radiation dose limits. See DOE order 5480.11.
EGG-2518	Final Report Decontamination and Decommissioning at the Auxiliary Reactor Area IV Facility	This document provides an example of a final decommissioning report.
--	U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites.	This document provides guidelines for residual radioactive materials at FUSRAP sites and Remote Surplus Facilities Management Program sites. This document should be applied to all decommissioning activities at these specific sites.
OCCUPATIONAL SAFETY & HEALTH (OSHA) - DEPARTMENT OF LABOR		
29 CFR 1910	Occupational Safety and Health	This Federal Code establishes standards for occupational Safety and Health.
29 CFR 1926	Safety and Health Regulations for Construction	This Federal Code sets forth Safety and Health standards for construction activities.

Document Number	Title	Description
29 CFR 1960	Basic Program Elements for Federal Employee Occupational Safety and Health Program and Related Matters	This Federal Code issues the basic program elements with which the heads of government agencies are to use to operate their Safety and Health Program.
PROTECTION OF ENVIRONMENT - ENVIRONMENTAL PROTECTION AGENCY (EPA)		
40 CFR 61	National Emission Standards for Hazardous Air Pollutants (NESHAPS)	This Federal Code establishes standards for atmospheric emissions of hazardous air pollutants.
40 CFR 141	National Primary Drinking Water Regulations	This part establishes primary drinking water regulations. The part identifies maximum contaminant levels, monitoring and analytical requirements, etc.
40 CFR 191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Wastes.	This Federal Code provides the environmental standards for management, storage, and disposal of high level radioactive waste.
40 CFR 192	Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings	Regarding decommissioning, this part establishes standards for control of residual radioactivity and cleanup standards for inactive uranium processing sites.
40 CFR 260	Hazardous Waste Management System: General	This part provides definitions of terms, general standards and overview information applicable to 40 CFR 260 thru 265 & 268.
40 CFR 261	Hazardous Waste Identification and Listing	This part identifies those solid wastes subject to regulation as hazardous wastes under 40 CFR 262, 265-268, 210, 271, 124, and RCRA section 3010.
40 CFR 262	Standards Applicable to Generators of Hazardous Waste	These regulations establish standards for generators of hazardous wastes including manifest requirements, packaging, recordkeeping, and reporting.
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste	This part applies to hazardous waste transportation.
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	This part establishes standards for hazardous waste management, including general facility standards, preparedness, emergency procedures, manifest and recordkeeping requirements, reporting, closure requirements, tank systems, landfills, etc.
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.	This part covers the equivalent requirements of 40 CFR 264 during the period of interim status and until certification of final closure.
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities	Subpart C of this part identifies regulations (40 CFR 262 and 263) during the period of interim status through certification of final closure.
40 CFR 267	Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities	This part covers regulations applicable to new facilities that treat and/or dispose of hazardous wastes.
40 CFR 268	Land Disposal Restrictions	This part identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances where otherwise prohibited waste may continue with land disposal.
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program	These permit regulations establish provisions for the hazardous waste permit program under subtitle of the Solid Waste Disposal Act.
40 CFR 271	Requirements for Authorization of Hazardous Waste Programs	This part identifies requirements for EPA approval of state programs.
40 CFR 272	Approved State Hazardous Waste Management Program	This part sets forth the authorized state hazardous waste management programs under RCRA.
40 CFR 279	Standards For The Management of Used Oil	This part identifies requirements for the management of used oil.
40 CFR 280	Technical Standard and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)	This part covers regulations for UST design operation, release detection and reporting, release response closure and financial responsibility.

Document Number	Title	Description
40 CFR 281	Approval of State Underground Storage Tank-Programs	This part covers approval requirements and procedures for state UST programs.
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency plan	This part provides the organizational structure and procedures for preparing for and responding to releases of hazardous substances.
40 CFR 302	Reportable Quantities and Notification	This part identifies reportable quantities and notification requirements for hazardous substances (including radionuclides).
40 CFR 700 - 766	Toxic Substances Control Act (TSCA) Regulations	These parts provide federal regulations for compliance with TSCA.
40 CFR 1501	National Environmental Policy Act and Agency Planning	This part insures consideration of NEPA in early planning, discusses agency cooperation regarding the preparation of Environmental Impact Statement EIS and prioritization of environmental issues in EISs.
40 CFR 1502	Environmental Impact Statement	This part identifies the required content of an EIS.
40 CFR 1503	Commenting	Procedures for commenting on EISs.
40 CFR 1504	Predecision referrals to the council for proposed Federal Actions Determined to be Environmentally Unsatisfactory	This part establishes procedures for referring interagency disputes concerning proposed federal actions to the Council on Environmental Quality.
40 CFR 1505	National Environmental policy Act and Agency Decision making	Federal agencies shall adopt procedures to ensure that decisions are made in accordance with NEPA.
40 CFR 1506	Other Requirements of National Environmental Policy Act	Miscellaneous NEPA requirements (i.e. public involvement, agency responsibility, etc.).
40 CFR 1507	Agency Compliance	Requires agencies to comply with NEPA and to adopt procedures as necessary to supplement NEPA regulations.
40 CFR 1508	Terminology and Index	Establishes uniform terminology for NEPA throughout the Federal Government.
TRANSPORTATION (SUBCHAPTER C. HAZARDOUS MATERIALS REGULATIONS) - DEPARTMENT OF TRANSPORTATION (DOT)		
49 CFR 171	General Information, Regulations and Definitions	Prescribes requirements governing transportation of hazardous material and the manufacture and packaging of containers.
49 CFR 172	Hazardous Material Tables and Hazardous Materials Communications Regulations	Prescribes requirements for shipping papers; package marking, labeling, placarding; and emergency response and training.
49 CFR 173	Shippers - General Regulations for Shipments and Packages	Includes definitions of hazardous materials, package preparation requirements, and inspection and testing responsibilities.
49 CFR 174	Carriage by rail	This part prescribes requirements for the transport of hazardous materials in or on rail cars.
49 CFR 175	Carriage by aircraft	This part prescribes requirements for the transport of hazardous materials aboard aircraft.
49 CFR 176	Carriage by vessel	This part prescribes requirements for the transport of hazardous materials by vessel.
49 CFR 177	Carriage by public highway	This part prescribes requirements for the transport of hazardous materials by motor vehicle.
NUCLEAR REGULATORY COMMISSION (NRC)		
10 CFR 20	Standards for Protection Against Radiation	This part defines the NRC's standards for protection against radiation hazards. Subpart B provides the protection program. Subparts C and D provides dose limits. Proposed Subpart E provides (proposed) radiological criteria for decommissioning. Subpart H provides information on respiration protection and controls to restrict internal exposure in restricted areas. Subpart K provides information on waste disposal.

Document Number	Title	Description
10 CFR 30	Rules of General Applicability to Domestic Licensing of Byproduct Material	This part provides rules for domestic licensing of byproduct material.
10 CFR 31-33	Additional Regulations for the Licensing of Byproduct Materials	These parts cover additional information for the licensing of byproduct material.
10 CFR 40	Domestic Licensing of Source Material	This part established procedures and criteria for the issuance of licenses for source material (i.e. uranium and thorium).
10 CFR 50	Domestic Licensing at Production and Utilization Facilities	This part contains the regulations governing the licensing of nuclear reactors.
10 CFR 51	Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions	This part contains environmental protection regulations applicable to NRC's domestic licensing and related regulatory functions. This part implements Section 102(2) of the National Environmental Policy Act of 1969, as amended.
10 CFR 61	Licensing Requirements for Land Disposal of Radioactive Waste	This part provides requirements for the land disposal of radioactive waste.
10 CFR 70	Domestic Licensing of Special Nuclear Material	This part established procedures and criteria for the issuance of licenses for Special Nuclear Material (SNM) (i.e. plutonium or uranium enriched in U-233 or U-235).
10 CFR 71	Packaging and Transportation of Radioactive Material	This part provides requirements that must be used in the packaging and transportation of radioactive material.
NRC Regulatory Guide 1.86	Termination of Operating Licenses for Nuclear Reactors	Section four of this document provides surface decontamination limits for release for unrestricted use.
NRC Regulatory Guide 3.65	Standard Format and Content for Decommissioning Plans for Licensees Under 10 CFR Parts 30, 40 and 70	This reg. guide provides the format and content for decommissioning plans for facilities with materials licences.
NRC Draft Regulatory Guide DG-1005	Standard Format and Content for Decommissioning Plans for Nuclear Reactors	This draft reg. guide provides the required format and material for decommissioning plans for NRC facilities.
NRC Draft Regulatory Guide DG-1006	Records Important for Decommissioning of Nuclear Reactors	This draft reg. guide provides guidance on the specific information that should be kept and maintained for records important to safety and health during decommissioning.
NRC Policy & Guidance Directive FC-82-23	Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material	This document specifies the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. This document covers NRC materials licenses and is analogous to NRC RG 1.86 for reactors.
--	NRC Branch Technical Position on Site Characterization, 11/94 (Draft)	Provides guidance on the conduct of site characterization and the preparation of site characterization reports to the NRC.
NRC NUREG/CR 0130	Technology, Safety and Cost of decommissioning a Reference PWR	This report documents studies performed for the NRC to analyze the various decommissioning alternatives, safety considerations, and costs associated with the decommissioning at a pressurized water reactor.
NRC NUREG 0586	Final Generic Environmental Impact Statement of Decommissioning of Nuclear Facilities	To fulfill the NRC's responsibilities under NEPA, this report was prepared to analyze the generic aspects of decommissioning NRC-licensed nuclear facilities.
NRC NUREG 0613	Residual Radioactivity Limits for Decommissioning	This report provides guidance for determination of cleanup levels for decommissioning.
NRC NUREG/CR 0672	Technology, Safety and Cost of Decommissioning a Reference Boiling Water Reactor Power Station	This report documents studies performed for the NRC to analyze the various decommissioning alternatives, safety consideration and costs associated with the decommissioning at a pressurized boiling water reactor.
NRC NUREG 0707	A Methodology for Calculating Residual Radioactivity Levels Following Decommissioning	This report provides guidance for determination of cleanup levels for decommissioning.

Document Number	Title	Description
NRC NUREG 1101	On-Site Disposal of Radioactive Waste	Provides guidance on the disposal of radioactive waste on-site.
NRC NUREG-1307	Report on Waste Burial Charges	This report provides a formula for estimating future waste disposal costs.
NRC NUREG-1496 (draft for comment)	Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for Decommissioning of NRC-Licensed Nuclear Facilities	The GEIS considers the amendment of 10 CFR 20 for inclusion of radiological criteria for decommissioning. To fulfill NRC's responsibilities under NEPA, this document analyzes the alternative courses of action and the associated costs and impacts.
NRC NUREG 1500	Working Draft Regulatory Guide on Release Criteria for Decommissioning: Staff Draft	This guide provides acceptable procedures for determining dose levels from residual radioactivity left at a site.
NRC NUREG 1501	Background as a Residual Radioactivity Criterion for Decommissioning	This report provides assistance in evaluating background radiation as a decommissioning criterion and also provides information on the existing applications of background radiation in regulatory criteria and standards.
NRC NUREG/CR 1754	Technology, Safety and Cost of Decommissioning Reference Non-Fuel Cycle Facilities	This report documents studies performed for the NRC to analyze the various decommissioning alternatives, safety considerations, and costs associated with the decommissioning of a non-fuel cycle facility.
NRC NUREG/CR 1756	Technology, Safety and Cost of Decommissioning Reference Nuclear Research and Test Reactor	This report documents studies performed for the NRC to analyze the various decommissioning alternatives, safety considerations, and costs associated with the decommissioning of a nuclear research and test reactor.
NRC NUREG/CR 2241	Technology and Cost of Termination Surveys Associated with Decommissioning of Nuclear Facilities	This report documents studies performed for the NRC to analyze the various decommissioning alternatives, safety considerations and costs associated with the decommissioning of a nuclear facility.
NRC NUREG/CR 5849	Manual for Conducting Radiological Surveys for Support of License Termination	This report describes a process for conducting radiological surveys during decommissioning to demonstrate that residual radioactive material satisfies criteria set by the NRC for license termination.
NRC NUREG/CR 5512	Residual Radioactive Contamination from Decommissioning	This report provides radiation dose estimates from residual radioactive contamination following decommissioning. It contains exposure scenarios, pathway modeling and other information as a technical basis for the NRC's development of decommissioning criteria.
INTERNATIONAL STANDARDS		
CD-NA-14498-EN-C	Community Research and Development Program on Decommissioning of Nuclear Installations 1989-93: Annual Progress Report 1992	This document provides information on the decommissioning plan adopted by the EC Council, decontamination and decommissioning purposes, research and development projects, and dismantling techniques.
CD-NA-14530-EN-C	Methodology to Collect Data on Decommissioning Costs and Occupational Radiation	Provides information on data collection for decommissioning costs and occupational radiation.
STI/DOC/348	IAEA Technical Report Series No. 348	This document provides an overview of remotely handling equipment, notably robotics, in decommissioning nuclear facilities.
IAEA Safety Series 89	Principles for the Exemption of radiation Sources and Practices from Regulatory Control	This document provides recommendation on exemptions from the basic safety standard system.
STI/DOC/351	IAEA Technical Report Series No.351: Planning and Management for the Decommissioning of Research Reactors and Other Small Nuclear Facilities	This document provides information on planning and management of decommissioning process of research reactors and other small nuclear facilities. It provides information on decommissioning plans, reviewing quality assurance, waste management implications, cost, and regulatory interfaces.

Document Number	Title	Description
IAEA-TECDOC-629	Radioactive Waste Management Profiles	This document specifies the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use.
OECD Document	International Cooperation on Decommissioning-Achievements of NEA Program 1985-1990	This document provides information from eight OECD countries on technical information dealing with decommissioning.
OECD Document	Decommissioning of Nuclear Facilities: Analysis of Decommissioning cost	This document provides information on the variance of decommissioning cost due to political, institutional, technical, and economic factors.
OTHER STANDARDS		
ASTM E 1167-87	Standard Guide for Radiation Protection Program for Decommissioning Operations	This document provides information on the development and implementation of a radiation protection program for decommissioning activities. It also can be used as a supplement to existing radiation protection programs. It also defines program elements so that the goals and objectives of the decommissioning project are met within the radiological limits imposed by applicable governing and regulating agencies.
ASTM E 1278-88	Standard Guide for Radioactive Pathway Methodology for Release of Sites Following Decommissioning	This document provides guidance in determining site-specific conversion factors for translating between dose limits and residual radioactive contamination levels on equipment, structures, and land areas. It also serves as a guide to acceptable methodology for translating the yet to be determined dose limits into allowable levels of residual radioactive materials that can be left at a site following decommissioning.
ASTM E 1281-89	Standard Guide for Nuclear Facility Decommissioning	This document provides information on preparing a decommissioning plan.
ASME NQA-1 1989	Quality Assurance Program Requirements for Nuclear Facilities	This standard sets forth requirements for the establishment and execution of QA programs the siting, design, construction, operation and decommissioning of nuclear facilities.

Appendix F

References for Facility Transition

F.1 - Topics of Review

F.2 - EM-40/EM-60 Transition Working Group Documents

F.3 - Surplus Facility Transfer Order

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Appendix F.1
(Suggested Topics of Review)

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I. Physical Plant

- A. Facility Safety Status: Status of hazards, including results of most recent hazard screening, and identification of areas where human entry for inspection or work is restricted, routinely avoided, or requires special safety precautions, equipment, or procedures.
- B. Operability: Actions required to operate facilities to the extent for required cleanout.
- C. Deactivation: Assessment of deactivation plans and conceptual alternatives to identify areas where cost effectiveness could be improved.

II. Material Inventories

- A. Radioactive and Hazardous Material Contamination: Identification of the location, quantity, extent, and type of contamination within each facility. Contamination includes radioactive, hazardous, and toxic materials, substances, and waste. These include such items as process chemicals and residues, removable surface contamination, fixed PCB contamination PCB in electrical apparatus, plutonium in ductwork, and friable asbestos in insulation and building material. Assessment of plans to stabilize contamination.
- B. Radioactive and Hazardous Waste/Materials Inventory: Inventory of hazardous waste present within the facility, including sorted radioactive waste, stored hazardous chemicals, and such other materials capable of being discarded as waste, and the status of work packages, including a schedule to remove these wastes. Inventory of material now surplus to the defense mission.
- C. Special Nuclear Material (SNM) Plans: Plans to identify, remove, or consolidate SNM (and in the case of residues, process to more stable form if necessary) should be described. An optimal removal/treatment/disposal plan should be identified and work packages detailing current activities associated with the optimum plan provided. These plans should include difficult to process materials, special case materials, and by-product materials.

III. Compliance Status

- A. Standards Program: Evaluate the facility or operation authorization basis relative to Defense Nuclear Facility Safety Board Recommendation 90-2 standards (i.e., Have the Recommendation 90-2 expectations been addressed).
- B. Compliance with DOE Orders: Status of Compliance with DOE Orders, especially Conduct of Operations, Maintenance Management Program, GOCO Radiation Control (Radcon) Manual, Waste Management, and Capital Assessment Management Process.
- C. Compliance with Permits: Status of existing permits, including NPDES, air permits, RCRA, and others.
- D. Compliance with Regulatory Requirements: Status of compliance with applicable regulations promulgated pursuant to statutes such as OSHA, RCRA, CERCLA, and NEPA and the remediation process in the National Contingency Plan.
- E. Interagency Agreements: Identification of the terms and milestones of agreements pending and entered into by DOE with Federal, State, and local agencies and the status of compliance. This includes settlement agreements, administrative or consent orders, and compliance plans to settle outstanding notices of violation.
- F. Corrective Actions: List of corrective actions, completed and outstanding, from previous audits, inspections, and other similar activities e.g., Tiger Team, DNFSB, regulatory agencies, self-assessments, business systems review, etc.), including identification of those items that need to be evaluated and reviewed with respect to the facility's surplus condition. Evaluate occurrence reports for trends or root causes.
- G. Safety Envelope: Description of the safety envelope currently in place. Status of planned actions related to SARs, OSRs, TSRs, and implementing procedures covering the current status of the facility. Copy of TSR surveillance program description and statement of compliance status with TSRs. Definition of the scope and estimate of the costs to bring the facility into compliance with OSRs in force, or recommended to be in force, and work packages to accomplish such compliance.

IV. Administrative Planning

- A. Manpower Planning: Personnel skill and expertise inventory mix for personnel transitioning with the facility, along with short-range and long-range manpower plans addressing manpower baselines, projections, and training to match and accomplish deactivation, clean-up, and transition activities. Type of skill shortfalls and excesses.
- B. Budget/Planning Schedule: Analyze basis and details of current planning to determine probability of achieving planned activities within the planned budget. Identify areas that may be over or under-budgeted. Identify overly optimistic or conservative assumptions and potential impact to budget and schedule. Identify potential costs and schedule savings from alternative technical approaches.
- C. Performance Indicators: Evaluate performance indicators to determine areas where additional focused management may be needed.

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Appendix F.2

(EM-40/EM-60 Transition Working Group Documents)

DRAFT

memorandum

DATE: February 8, 1995

REPLY TO: EM-44 (J. Lehr, 427-1757)
ATTN OF:

SUBJECT: Facility Transition Documentation

TO: Eugene Schmitt, EM-62

At the Transition Working Group meeting on January 26, 1995 your office reported the development of a Facility Management Report. This report, to be available in draft by February 15, 1995, would include a list of facilities expected to be transferred to the Office of Environmental Restoration (EM-40) in FY97, excluding Savannah River facilities, along with estimated resource needs. We believe that this report will provide the basis for the establishment of a "Transition Memorandum" that has been discussed at several meetings of the Transition Working Group. We further believe that such a memorandum will provide significant assistance to both of our offices.

A Transition Memorandum will enable our program managers to plan and budget with confidence for surveillance and maintenance and other near-term activities required for facilities transitioning into the EM-40 inventory. The combination of the regular issuance and the use of an appropriate planning period in such a document will provide (1) documentation of projected facility transfers to appropriate parties and, (2) sufficient notification to allow for incorporation of planned activities into program baselines and for revising schedules and budgets. This Memorandum would also enable Operations Office managers to time procurements and plan staff and other resource allocations for cost effective accomplishment of objectives.

Our program managers have given considerable thought to how they would use such a Transition Memorandum and the kinds of information essential for it to include. I am forwarding their ideas for your consideration in development of the February 15th report or other appropriate transition documentation. They include:

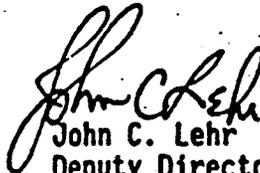
- Proposed formats for three reports that would make up the Transition Memorandum: (1) a list of facilities expected to transition to EM-60 from the PSOs within the next two to five years, (2) a list of facilities expected to transition to EM-40 in the next two to five years, and (3) a list of facilities actually transitioned from EM-60 to EM-40 since the last report (Attachment 1).
- Draft guidance for EM-40 personnel on use of these reports (Attachment 2).

While these materials include our thoughts on the report listing facilities transitioning into EM from the PSOs, we recognize that EM-60 will not be reporting transitions from the PSOs into EM in the February 15th report.

The attachments also refer to Office of Waste Management's prospective interest in these reports, as we have discussed briefly.

We request that your office review our proposal for the establishment of a regularly issued Transition Memorandum.

I suggest that we meet prior to the next Transition Working Group meeting to discuss these ideas and how we might mesh our respective interests and information needs.



John C. Lehr
Deputy Director
Office of Northwestern Area Programs
Environmental Restoration

2 Attachments:
Transition Memorandum Formats
Transition Memorandum Guidance

cc:

J. Baublitz, EM-40
L. Weiner, EM-60
A. Szilagyi, EM-62
J. Fiore, EM-40
W. Murphie, EM-42
S. Warren, EM-43
N. Larson, EM-45

(DRAFT TEXT OF MEMO PROVIDING GUIDANCE TO EM-40 ON TRANSITION MEMORANDUM)

Guidance on the Use of the Surplus Facility Transition Memorandum

Background

The EM-60/EM-40 Transition Working Group has developed a Surplus Facility Transition Memo to assist EM managers and staff in planning for transfers of surplus facilities into the Office of Environmental Management and specifically into the Waste Management (EM-30) and Environmental Restoration (EM-40) programs. The objective of the Transition Memo is to alert EM-30 and EM-40 of facilities coming into EM from the Program Secretarial Offices (PSOs) and to notify them of proposed transfers from the Office of Facility Transition Management (EM-60) to their own organizations.

Purpose

The purpose of this memorandum is to provide guidance to EM-40 managers and staff on the use of the Transition Memorandum in surplus facility transfers.

Transition Memorandum Scope and Content

The Transition Memorandum will be prepared and issued by EM-60 twice each year, in conjunction with budget planning. Each Transition Memorandum will contain the following information:

- Candidate facilities for transfer from PSOs to EM: The purpose of this section is to alert EM-40 to surplus facilities that may be coming into the EM inventory for eventual decommissioning. Each facility will be identified by site, name, and SFIA asset number. Information on the current owner, expected EM program owner, status at the time of proposed transition (e.g., safe shutdown, deactivated), expected transition year, required surveillance and maintenance (S&M) costs for the transition year, and proposed funding for the transition year will be included for each facility identified.
- Candidate facilities for transfer from EM-60 to EM-40: The purpose of this section is to identify facilities slated for decommissioning that transfer into the EM-40 program within the next two to five years. Each facility will be identified by site, name, and SFIA asset number. Information on facility status, proposed transfer year, required S&M costs for the transfer year, proposed funding for the transfer year, expected work for the transfer year (e.g., S&M, roof maintenance, decontamination, dismantlement), and changes since the last Transition Memorandum will be included for each candidate.
- Facilities transferred from EM-60 to EM-40 since the last Memorandum: The purpose of this section is to verify that previously scheduled transitions from EM-60 to EM-40 have actually taken place. Each transferred facility will be identified by site, name, and SFIA asset

number. Information on funding required for S&M for the transition year, funding actually transferred in the transition year (or proposed for future years), and the actual transfer date will be included for each facility.

Schedule for Issuance and Review

EM-60 will issue the Transition Memorandum in (month TBD) and (month TBD) each year. Issuance is timed to coincide with budget planning.

Copies of the Transition Memorandum will be provided to the Deputy Assistant Secretary of Waste Management and the Deputy Assistant Secretary of Environmental Restoration. They will have 30 days in which to review the contents of the Transition Memorandum and concur in or identify questions or issues of concern. If no questions or concerns are identified within 30 days, the Transition Memorandum will be assumed to be accepted by the Offices of Waste Management and Environmental Restoration.

EM-40 managers and staff will work directly with their EM-60 counterparts to address identified questions and issues. In most cases, these are expected to be resolved within the 30-day window. Exceptional situations should be referred to (name TBD) for discussion at the next scheduled Transition Working Group meeting. This referral must take place within the 30-day period.

Use of the Transition Memorandum

Review of the first section of the Transition Memorandum, which identifies candidate facilities for transfer from the PSOs into EM, will ensure that EM-40 managers and staff are aware of the transfer of these facilities into the EM inventory and are providing appropriate input to transition decisions, consistent with the Transition Process Implementation Guide.

Review of the second section, which identifies candidate facilities for transfer from EM-60 to EM-40, will ensure that EM-40 managers and staff (1) are aware of the anticipated transfer and have participated as appropriate in transition decisions and planning to date, including determination of deactivation end states, and (2) amend the appropriate planning and baseline documents to account for the transfer date, the expected work and costs required for surveillance and maintenance or decommissioning, and the level of funding associated with the facility transfer.

Review of the third section, which lists facilities transferred since the last Transition Memo was issued, will serve to verify that individual facility transfers have taken place and that the information is correct. EM-40 program managers at headquarters will use this list as the basis for semi-annual updates to the EM-40 Decommissioning Inventory.

Related Information

Development and use of the Transition Memorandum is consistent with the EM-

F.2-4

Pre-decisional Draft

60/EM-40 Surplus Facility Transition Policy issued on (date TBD) and with the EM-60/EM-40 Transition Process Implementation Guide issued on (date TBD).

This guidance is in effect as of today's date. Questions about this guidance or the purpose, schedule, and use of the Transition Memo should be directed to (name TBD).



SURPLUS FACILITY TRANSITION MEMO

F.2-6

MM/DD/YY

Office of Facility Transition and Management

2/7/95
9:54 am

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TRMEMO.PRS

TRANSITION CANDIDATES: FROM PSOs TO EM

Location	Facility Name	Asset No.	Current Owner	Expected EM Owner	Tran. Year Required S&M Costs ('000)	Proposed Tran. Year Funding ('000)	Status	Tran. Year
INEL	ARMF	A0090	NE	30	999	999	NA	FY96
SRS	Reactor, 105-P	S0148	DP	40	999	999	Shutdown	FY95

F.2-7

(Illustrative data only)

TRANSITION CANDIDATES: FROM EM-60 TO EM-40

Location	Facility Name	Asset No.	Tran. Year Required S&M Costs (000)	Proposed Tran. Year Funding (000)	Status	Tran. Year	Expected Work	Changes Since Last Memo
RM1	Boiler Plant	A1111	999	999	Shutdown	FY99	NA	---
RM1	Admin Bldg	A1112	999	999	Deactivated	FY97	S&M, Decon	Some
Head	Pump House	77779	999	999	Shutdown	FY99	NA	---

F.2-8

(Illustrative data only)

COMPLETED TRANSFERS: EM-60 TO EM-40

Location	Facility Name	Asset No.	Tran. Year Required S&M Costs ('000)	Proposed Tran. Year Funding ('000)	Date Transferred
K-25	Air Model Test Facility	A0101	\$999	999	MM/YY
ORNL	Decon Facility	E0199	\$999	999	MM/YY

F.2-9

(Illustrative data only)

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Appendix F.3
(Surplus Facility Transfer Order)

DRAFT

memorandum

DATE: November 30, 1994

REPLY TO

ATTN OF: FM-20

SUBJECT: DOE Order 4330.5, SURPLUS FACILITY TRANSFER, 11-04-94

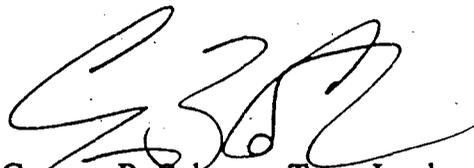
TO: Facilities Management Points of Contact

The subject Order (Attachment 1) is delivered for your information and implementation. In addition to our several hundred points of contact at Headquarters, Field/Operations Office, and contractor levels; regular distribution throughout the Department is also being done by the Directives organization. The Order was developed at the behest of the field as well as several Headquarters Program Offices. It was developed by a Process Improvement Team using total quality principles.

The Team's efforts were coordinated with the Directives organization. A Directives Management Document was issued Department-wide, and no "showstopper" comments on the creation or need for the policy were received. The team put the Order itself through two Department-wide review cycles, held two teleconferences on the drafts, and responded to all comments.

This Order is designed to provide a framework and consistent checklist for present Program Secretarial Offices and Environmental Management to use in negotiating facility transfers. Please note, however, that each transfer will be different and the Order is not intended to mandate the degree of detail required.

A list of points of contacts for clarification on any aspect of the Order, broken down by section number, is provided as Attachment 2. Specific questions can be directed to the points of contact identified, and any general questions regarding the process can be directed to me at 202/586-9693 or faxed to 202/586-0233.



Gregory B. Coleman, Team Leader
Facilities Management
Office of Field Management

Attachments

Attachment Z
DOE 4330.5, SURPLUS FACILITY TRANSFER
Points of Contact:

<u>Section #</u>	<u>Section Title</u>	<u>Contact</u>
5.a.	Surplus Determination: (***Your 1 st Call!!!***)	Jim Cayce, FM-20 202/586-1191 Barry Clark, EM-62 301/427-1566
5.b.	Candidate for Transfer:	Barry Clark, EM-62
5.c.(1)	Transfer Agreement Components:	
5.c.(1)(a)	-List of Facilities	Jim Cayce, FM-20
5.c.(1)(b)	-Nuclear Materials	Barry Clark, EM-62 Xavier Ascanio, DP-31, 301/903-5697
5.c.(1)(c)	-Roles & Responsibilities	Jennifer Marek, SRS, 803/725-9596
5.c.(1)(d)	-CAS	Gregory Coleman, FM-20, 202/586-9693
5.c.(1)(e)	-Characterization	Barry Clark, EM-62
5.c.(1)(f)	-Safe Shutdown	VaNita Boston, ORO, 615/576-9577 Kevin Shaw, NE-52, 301/903-4232
5.c.(1)(g)	-Human Resources	Jennifer Marek, SRS
5.c.(1)(h)	-Budget	Bob Savino, CR-132, 202/586-3748 VaNita Boston, ORO, 615/576-9577
5.c.(1)(i)	-Material/Equipment Disposition	Anna Trujillo, AL, 505/845-6387
5.c.(1)(j)	-Stakeholder Involvement	Anna Trujillo, AL
5.c.(1)(k)	-Date of Transfer	Bob Savino, CR-132
5.c.(2)	-Termination of Operations	Xavier Ascanio, DP-31
5.d.	-Arbitration	Dick Earl, FM-20, 202/586-9157
6.	-Objectives	Gregory Coleman, FM-20
7.	Responsibilities & Authorities	Gregory Coleman, FM-20
8.	Flowchart	Any of the above referenced contacts
Sample Memorandums of Agreement		Barry Clark, EM-62

U.S. Department of Energy
Washington, D.C.

ORDER

DOE 4330.5

11-4-94

SUBJECT: SURPLUS FACILITY TRANSFER

1. PURPOSE. To provide a structured and cost-effective approach for transferring surplus facilities to the Office of Environmental Management.
2. SCOPE. This Order applies to facilities DOE owns, leases, or controls for production, operation, research, development, or demonstration; except for the exclusions stated below or as otherwise provided by statute or by separate delegation of authority from the Secretary of Energy. The provisions of this Order apply to all Departmental Elements and to covered contractors to the extent implemented under a contract or other agreement.
3. EXCLUSIONS.
 - a. Executive Order 12344, (Order), Title 10 Code of Federal Regulations (CFR) 445.1 et seq., reprinted in Title 42 United States Code (U.S.C.) § 7158 note, establishes the responsibilities and authority of the Director, Naval Nuclear Propulsion Program, Office of Nuclear Energy, over all facilities and activities that comprise the joint Navy-DOE program. In view of the unique nature of Naval nuclear propulsion applications, the Director shall determine the appropriate policy applicable to this program's facilities. Such determination shall include consideration of appropriate parts of the criteria set forth in this Order. Public Law (P.L.) 98-525, Title XVI, § 1634, directs that provisions of this Order pertaining to the Naval Nuclear Propulsion Program shall remain in force until changed by law.
 - b. In accordance with Section 302 of the Department of Energy Organization Act of 1977 (P.L. 95-91, 91 Stat. 578), the Secretary operates and maintains the Power Marketing Administrations (PMA) electric power transmission systems by and through the PMA Administrator. The PMAs have policies in place that are geared to the special needs of utility operations, responsive to coordinated multi-utility system requirements, and in conformance with prudent utility practices. Administrators shall determine the appropriate policy for their facilities including consideration of appropriate parts of the criteria set forth by this Order.
4. DEFINITIONS. See Attachment 1.

F.3-3

DISTRIBUTION:
All Departmental Elements

INITIATED BY:
Office of the Associate Deputy
Secretary for Field
Management

5. REQUIREMENTS.

- a. **SURPLUS DETERMINATION:** Facilities determined to be surplus to the current Program Secretarial Officer (PSO) shall be reported to the Office of Field Management (FM) for the following disposition process:
- (1) In accordance with DOE Order 4300.1C, REAL PROPERTY MANAGEMENT of 6-28-92, FM determines if the facility is surplus to the Department as a whole.
 - (2) If the facility is surplus to the Department and qualifies for disposition by the General Services Administration (GSA) in accordance with 41 CFR 101, FEDERAL PROPERTY MANAGEMENT REGULATIONS, then the facility is disposed of accordingly.
 - (3) If a facility does not qualify for disposal by GSA under 41 CFR 101, it may become a candidate for transfer to the Office of Environmental Management (EM).
- b. **CANDIDACY FOR TRANSFER:** Candidates for transfer shall include:
- (1) Contaminated facilities for which DOE has responsibility or owns.
 - (2) Contaminated portions of facilities, if structurally independent and with separate utilities and support systems.
 - (3) Real property or related personal property that is ancillary to a candidate facility.
 - (4) Facilities otherwise agreed to by the DOE parties involved.
- c. **PREREQUISITES FOR TRANSFER:** The following prerequisites shall be met prior to the transfer:
- (1) A Facilities Transfer Agreement shall be executed by the current PSO and EM-1. Level of detail and items covered shall be negotiated between the current PSO and EM and shall be commensurate with the complexity of the transfer. In addition, existing information shall be used to the greatest extent possible. The Transfer Agreement shall address, but not be limited to, the following issues:
 - (a) A list of facilities to be transferred.

11-4-94

- (b) A list of special and other nuclear materials, contained in the above facilities, which are to be transferred to EM.
- (c) The organizational roles and responsibilities of the current PSO and EM, before and after transfer.
- (d) A Condition Assessment Survey (CAS), in accordance with DOE Order 4320.2A, CAPITAL ASSET MANAGEMENT PROCESS (CAMP), 2-10-94.
- (e) A characterization whose intent is to provide the new owner an understanding of the nature, level, and probable extent of contamination. This shall include a hazardous and radiological material/waste inventory to be transferred.
- (f) A safe shutdown implementation plan that, at a minimum, shall address the following issues: safety envelope, surveillance and maintenance requirements, safeguards and security, preservation of equipment and facilities, and compliance with applicable regulations and requirements.
- (g) A human resources plan that addresses Federal and contractor personnel impacts, the need to retain critical skills, and funding necessary to meet socioeconomic challenges. The DOE and contractor personnel associated with the facilities to be transferred will be identified and the resources allocated.
- (h) A budget resources plan to manage the facility until EM funding is provided through the normal budgeting process. If the facility is to be transferred in less than two (2) years from the date of formal notification, the plan shall address the allocation of funds to EM to support this accelerated transfer.
- (i) A material and equipment disposition plan that addresses the removal of personal property, related personal property, or non-excess equipment and material from the facility.
- (j) A stakeholder plan to inform and notify the stakeholders of all planned activities.

11-4-94

- (k) **Transfer Date.** To match the Departmental budget cycle, the normal date of transfer shall be the first October 1 after the two year anniversary of the date EM is notified, unless the parties reach another agreement.

(2) Program operations shall be terminated.

- d. **ISSUES RESOLUTION:** If there are disputes concerning ownership, candidacy for transfer, or transfer agreement contents, the Associate Deputy Secretary for Field Management (FM-1) shall convene and chair a board of arbitration consisting of DOE Elements deemed appropriate.

6. **OBJECTIVES.** The objective of this Order is to standardize a process by which surplus facilities are:

- (a) Evaluated under DOE 4300.1C for potential reuse prior to transfer to EM.
- (b) Determined to be candidates for transfer to EM.
- (c) Transferred to EM.

7. **RESPONSIBILITIES AND AUTHORITIES.**

- a. The Secretary has overall responsibility and authority for the Department's property and shall take necessary management actions, through the Associate Deputy Secretary for Field Management, to ensure that Departmental property is effectively managed and maintained.
- b. The Associate Deputy Secretary for Field Management serves as the Department's official point of contact relating to disposal of real property and related personal property and shall provide management direction and coordination of the process to transfer ownership of surplus Departmental facilities from the current PSOs to the Office of Environmental Management.
- c. Assistant Secretary for Environmental Management, in conjunction with the current PSOs of facility candidates for transfer, has the responsibility to ensure that the requirements of this Order are implemented.
- d. Program Secretarial Officers, as current owners of facility candidates for transfer, and in conjunction with the Assistant Secretary for Environmental Management, have the responsibility to ensure that the requirements of this Order are implemented. Until the date of transfer, the current PSOs of facility candidates remain fully responsible for the facilities.

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5 (and 6)

e. Heads of Field Elements shall ensure that the transfer of facilities under their purview is managed consistent with this Order.

8. FLOWCHART. See Attachment 2.

BY ORDER OF THE SECRETARY OF ENERGY:



ARCHER L. DURHAM
Assistant Secretary for
Human Resources

11-4-94

REFERENCES

41 CFR 101, FEDERAL PROPERTY MANAGEMENT REGULATIONS

DOE 4300.1C, REAL PROPERTY MANAGEMENT, of 6/28/92

DOE 4320.2A, CAPITAL ASSET MANAGEMENT PROCESS, of 2/18/94

ABBREVIATIONS and ACRONYMS

CAS - Condition Assessment Survey

CFR - Code of Federal Regulations

DOE - Department of Energy

EM - Office of Environmental Management

FM - Office of Field Management

GSA - General Services Administration

PSO - Program Secretarial Officer

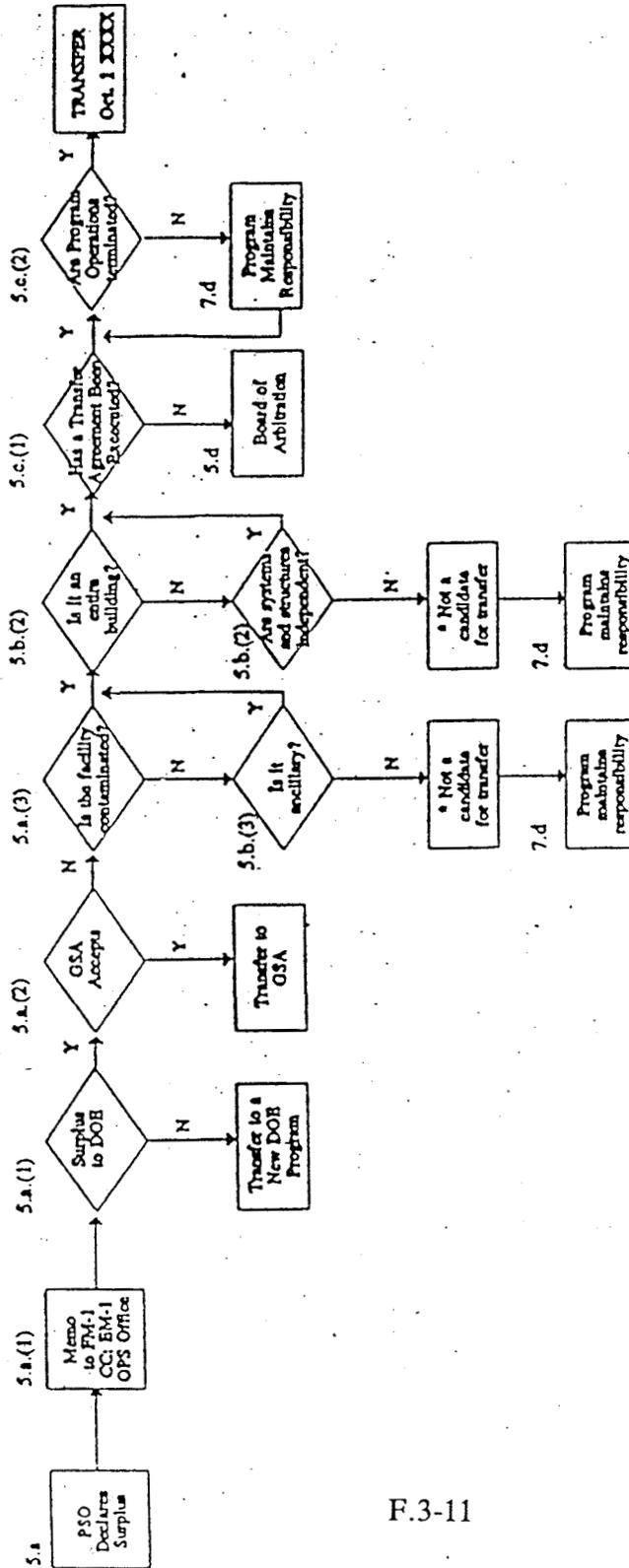
DEFINITIONS

1. ANCILLARY. Supporting facilities, utilities, safety systems, and security systems that provide direct support and are solely dedicated to the operational aspects of the facility.
2. BOARD OF ARBITRATION. A board set up by the Associate Deputy Secretary for Field Management to resolve disputed issues.
3. CONTAMINATION. As defined in 41 CFR 101-47.202, *Reporting of Excess Real Property*, through reference to Environmental Protection Agency regulations at 41 CFR 373.
4. COVERED CONTRACTORS. A seller of supplies or services under a contract.
5. FACILITIES. Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features. (DOE 6430.1A)
6. PERSONAL PROPERTY generally means movable items, which are not permanently affixed to or considered to be an integral part of the real property. Generally, but with exceptions, items remain personal property if they can be removed without serious injury either to the real property or to the items themselves. (DOE 4300.1C)
7. PROGRAM SECRETARIAL OFFICER. Heads of DOE Offices which have responsibility for specific facilities. These includes the Assistant Secretaries for Defense Programs, Energy Efficiency, Environmental Management, and Fossil Energy; and the Directors of Civilian Radioactive Waste Management, Energy Research, and Nuclear Energy. (DOE 5480.18A)
8. REAL PROPERTY OR REAL ESTATE, for purposes of this Order, are synonymous. Real estate means land and anything permanently affixed to the land such as buildings, fences, and those things attached to buildings such as light fixtures, plumbing and heating fixtures, or other such items, which would be personal property if not attached. (DOE 4300.1C)
9. RELATED PERSONAL PROPERTY is any personal property, which is an integral part of real property or is related to, designed for, or specially adapted to the functional or productive capacity of the real property and whose removal would significantly diminish the economic value of the real property. (DOE 4300.1C)
10. SPECIAL NUCLEAR MATERIAL. Plutonium, uranium-233, uranium enriched in the isotope 235, and any other material which, pursuant to the provisions of Section 51 of the Atomic Energy Act of 1954, as amended, has been determined to be special nuclear material, but does not include source material; it also includes any material artificially enriched by any of the foregoing, not including source material. (DOE 5633.3A)

DOE 4380.5
11-4-94

Attachment 1
Page 3(and 4)

11. SURPLUS. Any facility declared by the PSO as available for other use.



F.3-11

SURPLUS FACILITY TRANSFER PROCESS FLOWCHART

Note: Numbers above blocks refer to the related Section and Paragraph of the Order

* Unless otherwise agreed to by the parties involved [5.b.(4)].



Appendix G

Suggestions for Contents of Various Documents

Appendix G

Suggestion for Contents of Various Document

This Appendix contains suggestions for the contents of the following documents used in a decommissioning project:

<u>Appendix</u>	<u>Document Title</u>
G.1	Suggested Contents of a Project Plan
G.2	Suggested Contents of a Characterization Plan
G.3	Suggested Contents of an Analysis of Removal Alternatives
G.4	Suggested Action Memorandum Format Documenting the Decision on the Selection of the Removal Alternative
G.5	Suggestions on the Functions, Purposes and Contents of a Decommissioning Plan
G.6	Suggested Checklist for a Readiness Review

Full application of the graded approach is encouraged in the preparation of these documents (see Chapter 1, Section 1.4.5.2 in the body of this manual).

To facilitate the exchange of information and "lessons learned," it is essential that the type of documents described in this appendix be widely available throughout DOE. The best mechanism for accomplishing this is to provide copies to the Remedial Action Program Information Center in Oak Ridge, TN. Information is provided below.

Remedial Action Program Information Center
P.O. Box 20003
Oak Ridge, TN 37831-7298
Phone: 615-576-0568 or 7764
Fax: 615-576-6548
Internet: rapic@ornl.gov

Appendix G.1

Suggested Contents of a Project Plan

The decommissioning project plan describes the project and establishes the technical, cost and schedule baselines. It is the initial definitive document for the start of a decommissioning project. The technical description in the decommissioning project plan will constitute the conceptual engineering approach for the project. If a separate conceptual or baseline design report (not specified by this Resource Manual) has been prepared, it should be referenced or attached to the project plan. The body of the document should be limited to 25 pages, with details in appendices or attachments.

The individual decommissioning project plans will need to relate to the MSA project plans at the various DOE sites; but a unique plan should be prepared for each identified decommissioning Subproject - either as a stand-alone document or a separate part or section of the MSA plan.

A project plan should contain the following sections:

- I **Introduction.** A brief background and history of the project and facility to date and a description of the deactivation and transition process which has occurred. This section should include a description of the removal site evaluation report, from Step 11 of the Decommissioning Framework. It may be appropriate to attach the actual report.

- II **Scope and Objective.** A precise statement of the scope and objective of the project. The section should start with a description of the facility in its initial condition, including contamination, and conclude with the projected end condition and building/land use. Any relationship of the decommissioning action (removal action) to subsequent site remedial action to clean up groundwater and soils should be included. This section should serve as a justification of mission need.

- III **Technical Approach.** Because a formal decision on the approach to be followed in carrying out a decommissioning removal action is made through the process provided for in the NCP—culminating in the Action Memorandum in Step 31 of the decommissioning framework, or through the NEPA process for non-CERCLA actions—this section should address the various alternatives. It should also include the following information:

- A brief description of the potential alternative approaches to be followed in completing the project. Describe each phase, stage or portion of the project, the work to be accomplished, and the general manner for accomplishing the work. Emphasis should be placed on the physical activities to be performed and not on management concepts or regulatory issues. In selecting the alternatives, the factors of 40 *CFR* 300.415(b)(2) should be consulted and the types of actions described in 40 *CFR* 300.415 (d)¹ considered, among others. This list of potential types of removal actions focuses on soil and water bodies. However, actions related to decommissioning may be inferred in such areas as Groups (7), removal of and (8) containment, treatment, etc.
- A description of any technology development efforts (on-going or new ones needed) relevant to the project and their potential impact on the cost/schedule of the project.
- A summary of the WBS in this section and a detailed structure and dictionary in an attachment.
- If appropriate and useful, include a logic diagram of major elements of the project to show significant interdependencies and interrelationships among project elements/activities.
- List the concepts and approaches that constitute the technical baseline for the project.

IV

Environmental Compliance. Based on current knowledge of the facility and the current technical plan, briefly state the environmental statutes which apply and the plan to comply with the statutes and related DOE orders. While performance of decommissioning as a non-time critical removal action under CERCLA is the basic environmental statute issue, other laws may have impact and should be considered. As applicable, include: National Historical Preservation Act (NHPA), RCRA, Clean Air Act (CAA), Clean Water Act (CWA), Toxic Substance Control Act

¹ The following types of removal actions may be appropriate, among others: (1) fences, warning signs, or other security or site control precautions; (2) drainage controls; (3) stabilization of impoundments or drainage of lagoons to maintain integrity; (4) capping of soils or sludges to reduce migration; (5) using chemicals and other materials to retard the spread of the release or to mitigate its effects; (6) excavation, consolidation or removal of highly contaminated soils; (7) removal of drums, barrels, tanks or other bulk containers; (8) containment, treatment, disposal or incineration of materials; or (9) provision of alternative water supply until local authorities can satisfy the need for a permanent remedy. (NCP provisions are paraphrased here to improve readability. Refer to the NCP for actual wording.)

(TSCA), and others. In a separate portion of this section describes the plan to interact with appropriate regulators, the public and other stakeholders during the formulation, planning and execution of the project. Specific reference should be made to the local agreement between DOE and EPA on the manner of interacting for decommissioning removal actions. Also, it is be appropriate to reference existing community relations plans. A more detailed discussion of this issue is provided in Chapter 6.

V **Safety and Health.** The general approach to be followed to ensure the safety and health of workers and the public. Consider the specific hazards presented by the facility and the decommissioning approach. Describe, at a minimum, what safety analyses will be performed, what safety plans will be prepared and the plan for conducting one or more readiness reviews prior to initiating field operations.

VI **Risk Assessment.** This section should deal briefly with the risks that are presented by the facility at the time of acceptance by the Office of Environmental Restoration: those risks identified by the preliminary hazards analysis. It may be appropriate to perform a new assessment, if some years have elapsed since the preliminary hazards analysis was performed.

Environmental safety and health risks at decommissioning removal action sites should be assessed using the graded approach. The scope and depth of such assessments should be in proportion to the potential threat resulting from actual conditions at the site.

An evaluation of potential risks related to technical issues, schedule, cost, safeguards and security, regulatory issues and other matters during the various phases of the project, as they can be addressed in this early stage of the project, should also be included.

The DOE *Decommissioning Handbook* (DOE/EM-0142P) provides more detailed risk assessment guidance for hazards and decommissioning cost estimates and schedule. In addition to the Handbook, the Remedial Action Program Information Center (RAPIC) at PO Box 2003, Building K-1210, MS-7256, Oak Ridge, TN 37831-7256, may be able to provide risk assessment reference material and lessons learned on other decommissioning projects.

VII **Management Approach.** This section should address the organization responsibilities, decision delegations, other management arrangements, and management control systems under which the project will be carried out. Maximum reliance on, and reference to the MSA project plans and project management plans, is encouraged. The anticipated contractual arrangement and organizational relationships for decommissioning operations should also be described.

VIII **Acquisition Strategy.** Include present information on plans for long-lead time actions and additional details of the manner of contracting for decommissioning operations.

IX **Project Schedule.** This section should be a brief summary of the project schedule, with details provided in an attachment, to the extent that such details are known at this early stage of planning.

It is encouraged that schedules be of the critical path type and, as details become known, be organized in several levels as follows:

- Level 1 - An executive level schedule describing the major stages of the project and the key milestones.
- Level 2 - An additional level of detail showing the relationship between the principle project elements. In particular, if several contractors or organizational elements are involved, their interrelationship should be shown.
- Level 3 - An additional level showing details of the work activities for individual contractors or organizations.
- Level 4 - Additional detail, if appropriate.

For initial issues of project plans, Level 1 will be appropriate, with additional levels added as more details become known.

X **Resource Plan.** This section should summarize the total project costs for the most likely decommissioning alternative, by year and WBS element, with details in an attachment. The costs should include all elements of work remaining to be accomplished to achieve final disposition of the facility, such as:

- Surveillance and maintenance,

- Characterization,
- Safety and risk assessments,
- Analysis of removal alternatives,
- Engineering and planning,
- Decommissioning (removal action) operations (implementation),
- Project integration
- Project management,
- Treatment, storage and disposal of wastes, and
- Closure.

XI **Controlled Baselines.** The cost, schedule and technical (scope) baselines should be presented and approval thresholds identified for change control authority purposes. Baselines should be compatible with MSA plans and programs.

XII **Project Charter.** A separate charter may be prepared for individual projects if the MSA Charter does not adequately cover the project.

Appendices or Attachments - As appropriate, to address environmental, regulatory, safety or other specific issues that may be pertinent to the project; and to provide details of WBS, schedule, cost estimate, organization charts, organizational relationships, etc.

Note: Need for a Project Management Plan

A decommissioning Project Management Plan (PMP) typically describes how the project is to be managed. It sets forth the plans, organization and systems for managing the project. In many cases, this requirement will be satisfied by the MSA PMP prepared at each major DOE site. If unique requirements need to be added for a given project, an addendum can be prepared and included in the MSA PMP or the subject may be adequately addressed in Section VII of the project plan and updated in the Decommissioning Plan. Unless specifically directed, a separate PMP is not recommended for decommissioning projects.

Appendix G.2

Suggested Contents of a Characterization Plan

The Characterization Plan should describe the sampling and analysis and other investigations and reviews conducted to characterize the facilities for a decommissioning project (removal action). To the extent not covered elsewhere, characterization should include radiological contamination, hazardous contamination, and physical condition of structures. The purposes of the characterization effort are to collect sufficient information: 1) to support the Analysis of Removal Alternatives; 2) to support the preparation of the Decommissioning Plan (including measures to protect workers and the public); and 3) to estimate the amount of waste to be generated during decommissioning.

Steps 17 and 18 of the Decommissioning Framework provide for submitting the Sampling and Analysis Plans to EPA for review and approval, if environmental samples are to be collected. These Plans are defined collectively as the Field Sampling Plan and the Quality Assurance Project Plan. These two plans require the following:

- The Field Sampling Plan should describe the number, type and location of samples and the type of analyses to be performed.
- The Quality Assurance Project Plan should describe policy, organization, functional activities (including instrumentation and methodologies), data quality objectives, documentation requirements, and other measures necessary to achieve adequate data to meet the objectives stated above. In conformance with the graded approach, an appropriate quality level should be chosen to avoid unnecessary complexity and cost for the effort, yet be consistent with general EPA quality practices.

Other elements which should be included in a Characterization Plan are:

- Health and Safety Plan (HASP). A project specific HASP is appropriate if site-wide plans are not sufficient. The HASP will ensure the characterization work is performed in conformance with the general safety requirements of Order 5480.4, and, in particular, the radiation protection standards and procedures, the ALARA concept, and training requirements as embodied in Order 5480.11 and the DOE *Radiological Control Manual* (DOE/EH-0256T).
- Special project-specific requirements. For example, if sufficient current data are not available on the physical condition of buildings or structures, such data should be collected during characterization.
- Schedule and Budget Information

While individual data points should be valid and supportable, it should be recognized that, in application of the graded approach, "100% coverage" is not required and it is not necessary to know the total quantities of contamination present with a high degree of certainty. Sufficient data, of an appropriate quality, should be collected to meet the three objectives stated in the first paragraph.

Appendix G.3

Suggested Contents of an Analysis of Removal Alternatives

1. **Executive Summary**

2. **Facility Characterization**

- Facility and site description and general background information.
- A description of the transition/deactivation process and the end condition achieved.
- A brief review of the S&M program and activities.
- Previous removal actions and/or cleanup work.
- Source, nature and extent of contamination, including analytical data, where appropriate.
- A summary of the safety analysis documentation in effect for the facility.

3. **Identification of Removal Action Objectives**

- Scope of the decommissioning removal action.
- General end condition/criteria to be achieved.
- Relationship to soil/water remedial action in the vicinity.

4. **Identification and Description of Removal Action Alternatives**

- Scope and features of each alternative.
- Specific end condition, release criteria or facility reuse plans.
- Risks and safety issues.
- NEPA Values (cumulative, off-site, ecological and socioeconomic impacts).
- Effectiveness. Include such matters as the ability to protect the

environment (or, if appropriate, a description of the reverse - the environmental impact of the alternative) and the health and safety of workers and the public; the attainment of ARARs; and the achievement of removal objectives.

- **Implementability.** Include such matters as technical feasibility; availability of equipment, personnel, and support services, if applicable; and administrative feasibility of licenses, easements, and institutional (administrative) controls.
- **Nature and amount of waste generated and disposal plans.**
- **Material recycle/reuse opportunities.**
- **Cost.**
- **Schedule.**

5. NEPA Process for Non-CERCLA Actions

For decommissioning proceeding as DOE actions outside the CERCLA process, conduct appropriate environmental reviews under NEPA to prepare Categorical Exclusion (CX), Environmental Assessment (EA) or Environmental Impact Statement (EIS).

6. Comparative Analysis of Removal Action Alternatives.

As a minimum, compare effectiveness, implementability and cost.

7. Recommended Removal Action Alternative

- **Include rationale for the recommendation.**
- **For non-CERCLA actions, refer to the appropriate NEPA decision document.**

Appendix G.4

Suggested Action Memorandum Format Documenting the Decision on the Selection of the Removal Alternative

The memorandum should be addressed to the appropriate DOE official requesting approval of the selection of a decommissioning removal action alternative.

1. **Purpose.**

Request approval of the selection of a decommissioning removal action. Identify and briefly describe the removal action and give its location.

2. **Facility Conditions and Background.**

Summarize the Facility Characterization section from the Analysis of Removal Alternatives.

3. **Rationale for the Decommissioning Decision**

Describe the threat being addressed and any programmatic aspects of the decision

4. **Proposed Actions and Estimated Costs**

- Briefly describe the alternatives considered (as necessary, refer to the attached Analysis of Removal Alternatives).
- Describe public comments received.
- Describe DOE responses to public comments and how the comments affected the selection decision.
- Describe the NEPA process completed and the resulting decision document (for non-CERCLA actions).
- Describe the alternative selected and principal reasons for the selection.
- Describe any outstanding technology issues.

- Comment on the applicable or relevant and appropriate requirements (ARARs) and list in an attachment (CERCLA actions).
- Provide cost and schedule.

5. **Recommendation**

- That the selection of the removal action be approved.
- It is recommended that the following statement appear in this section (for CERCLA actions):

This decision document represents the selected removal action for the (name) facility, in (location), developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. The decision is based on the administrative record for the facility.

6. **Approval**

Space for the approval signature and date.

Attachments

Attach documents referred to in the body of the Action Memorandum. Typical documents might include:

- Analysis of Removal Alternatives.
- Significant public comments.
- DOE responses to significant public comments.
- Other documents from the Administrative Record.
- NEPA Decision Document (non-CERCLA actions).

Appendix G.5

Suggestions on the Functions, Purposes and Contents of a Decommissioning Plan

1. **Functions/Purposes of a Decommissioning Plan**

- Functions as the detailed design for the project.
- If provided for in local agreements, serves as the document to communicate to regulators and other stakeholders the scope and intent of the decommissioning removal action to be taken.
- Describes the physical work to be done and the release (end condition) criteria to be achieved. Describes to the performing organization WHAT is to be done, less on the HOW to do it.
- Describes the measures to be taken to comply with environmental regulations and requirements for the protection of workers, the public and the environment.

2. **Precursors to a Decommissioning Plan (as provided for in the Decommissioning Framework)**

- Removal Action Confirmation.
- Project Plan defining the scope of the project, setting technical, cost and schedule baselines and describing how the project will be managed.
- Analysis of Alternatives
 - Characterization
 - Risk Assessment (of the various alternatives)
 - Hazards Analysis (of the various alternatives)
 - Public/Stakeholder/Regulator input
 - Analysis Document (Analysis of Removal Alternatives)
 - Decision Document (Action Memorandum).
- Continuing S&M.

3. **Key Supporting Documents for a Decommissioning Plan**

- Engineering studies to make technical decisions.
- Waste Management Plan (waste minimization, disposition etc.).
- Safety Analysis (graded - related to the risk. Focused on decommissioning operations).
- Risk Assessment (focused on decommissioning operations).
- Mitigation Action Plan (if applicable).
- Health and Safety Plan.
- ALARA Plan.

4. **Suggested Contents of a Decommissioning Plan**

- Introductory Material.
- Facility Description and History. Focus initially on the operating/functional history. Include the planning and assessment activities that have occurred up to the present (see Decommissioning Framework). Recount the interaction with the public/stakeholders/regulators and the impact this has had on the project.
- Scope and Objectives of the Decommissioning Removal Action. The release (end condition) will be specified. Reuse/recycle criteria included.
- Summary of Characterization. Radioactive and hazardous material contamination as well as physical condition and status.
- Technical Approach
 - Alternatives considered
 - General decommissioning approach to be followed
 - Reference to Activity Specifications or other documents specifying details of the work
 - The technical baselines and assumptions for the project.

- **Project Management**
 - Management approach (M&O contractor in-house forces, contract out, use of construction manager, etc.) Include cost/schedule control and reporting system to be employed, configuration control, and productivity improvement
 - Organization
 - Training
 - Quality Assurance
 - Cost
 - Schedule.

- **Worker and Environmental Protection**
 - HASP: Occupational safety, industrial hygiene, health physics
 - ALARA Program (include how it was applied during planning)
 - Occupational exposure estimates
 - Emergency preparedness and response program
 - Environmental compliance program, including any mitigation action commitments
 - Safety analysis and review of decommissioning activities.

- **Waste Management**
 - Waste minimization
 - Waste handling, packaging, transport and disposal
 - Waste estimates.

- **Final Site Survey**
 - Plans and criteria
 - Independent Verification.

Attachments: (typical items)

Activity Specifications
 Engineering Studies
 Details of WBS
 Details of Cost Estimate
 Details of Schedule

Appendix G.6

Suggested Checklist for a Readiness Review

Item	Status
Decommissioning Plan with supporting engineering studies and Activity Specifications	Complete and approved.
Cost and Schedule Baselines	Approved, work packages complete, supporting budget approved.
Operating procedures/systems status	Tailored for decommissioning operations. Complete and approved. Appropriate compliance with Conduct of Operations (DOE Order 5480.19). Where appropriate, tests and calibration have been verified; and systems are in satisfactory operating conditions.
NEPA Documentation	Complete and approved, with an appropriate record of decision.
RCRA, CERCLA, other related statutes documentation, as appropriate	Complete and approved.
Permits	Obtained, if appropriate.
Quality Assurance	Program/manuals/procedures complete and approved.
Contractor/Subcontractor Procurement	Proceeding as planned on schedule.
Equipment and special material	Available as needed or on procurement schedule.
Safety/Hazards Analysis	Complete and approved. See DOE-EM-STD-5502-94 and Chapter 7 of this Manual.
Safety and Health	Program/manuals/plans/procedures complete and approved. A program exists that promotes a site-wide culture in which personnel exhibit an awareness of, and take appropriate action to protect public and worker safety and the environment.
Emergency Preparedness/Response	Program/manuals/procedures complete and approved.
Personnel Training/Qualifications	Complete and documented. Qualifications consistent with assigned responsibility.
Health Physics	Program/manuals/procedures complete and approved.
Environmental Monitoring	Program in place and functioning with appropriate data quality objectives satisfied.
Notification to HQ Property Management	Notify when facilities are to be demolished.

Appendix H

Decommissioning Requirements of the Nuclear Regulatory Commission and the International Community

Appendix H

DECOMMISSIONING REQUIREMENTS AND PRACTICES OF THE NUCLEAR REGULATORY COMMISSION AND THE INTERNATIONAL COMMUNITY

For general information, this appendix describes decommissioning requirements and practices of the NRC and the international community, as prescribed by the IAEA. The information has no direct relevance to the DOE decommissioning program unless a specific site has an NRC license or unless otherwise directed by competent authority. However, this information serves to demonstrate the DOE decommissioning Program is consistent with the NRC requirements and with international practice.

1.1 Nuclear Regulatory Commission Requirements

The process and phases of performing decommissioning under NRC jurisdiction is somewhat different than what is proposed for the DOE sites. *The Code of Federal Regulations*, Title 10, Part 50 provides the top level regulatory guidance on this subject for production and utilization facilities. The principle paragraphs for decommissioning requirements within 10 *CFR* 50 are 50.33(k), 50.75, and 50.82.

Paragraph 50.33(k) requires that a decommissioning report be submitted with the license application. This report certifies how reasonable assurance will be provided that funds will be available to decommission the facility at the end of its useful life. This report must be in the form as described in paragraph 50.75. Paragraph 50.75 provides a formula for the amount of financing that must be provided for different types of nuclear facilities for their decommissioning.

Paragraph 50.82 requires that a decommissioning plan be submitted with the request for the termination of the facility license. This paragraph prescribes that a decommissioning plan consists of the following parts:

- A choice of decommissioning alternative, with a description of the involved activities;
- A description of the controls and limits on procedures and equipment to protect the health and safety of the workers and the public;
- A description of the planned final radiation survey;
- A cost estimate for the decommissioning ;

- A description of the security plans to be used during decommissioning; and
- Schedules for the decommissioning work.

Not many details for the decommissioning plan are provided in the *CFR*. An industry standard guide for nuclear facility decommissioning plans, ASTM E 1281 - 89 provides additional information on the contents of a decommissioning plan. However, this standard is not mandatory.

From the description of the contents of the decommissioning plan for NRC-licensed facilities, one can infer many similarities to the DOE decommissioning framework. Some differences are contrasted in the table below.

ITEM	DOE FRAMEWORK	NRC REQUIREMENTS
Pre-decommissioning	Assessment of CERCLA applicability, S&M	Information related to the funding of decommissioning and the accumulation of the funds.
Baselines	Preparation of a Project Plan	No counterpart, except for internal utility accounting and accumulation of the decommissioning fund
Characterization	Formal step in the framework	Not specifically separated out
Safety/Hazards Analysis	Formal step in the framework	Not specifically separated out

The NRC is developing a standard EIS format for decommissioning, and preparing rulemaking to ensure "Timeliness in Decommissioning of Materials Facilities." Also, in 1989, Regulatory 3.65, "Standard Format and Content of Decommissioning Plans for Licensees Under 10 CFR Parts 30, 40, and 70," and draft regulatory guide Task DG-1005, "Standard Format and Content of Decommissioning Plans for Nuclear Reactors" were issued.

1.2 Practices of the International Community

At present, many Member States of the IAEA regulate decommissioning activities on a case-by-case bases, using the regulations and standards for routine operations and maintenance. As decommissioning becomes more frequent, it is recognized that more formal and specific standards will be needed for decommissioning. This will be accomplished using the IAEA RADioactive Waste Safety Standards (RADWASS) program. This program establishes a

hierarchical structure of four levels of safety documents. The top level is a Safety Fundamentals document which provides the basic safety objectives and fundamental principles that are to be incorporated into the waste management programs of Member States. Lower level documents are Safety Standards, Safety Guides, and Safety Practices. IAEA currently foresees 55 documents in RADWASS: One Safety Fundamentals, six Safety Standards, twenty-eight Safety Guides and Twenty Safety Practices

A Safety Standard on Decommissioning of Nuclear Facilities is in preparation. Current drafts of the document define the main objectives of decommissioning to be:

- Cleanup the site so that it can be released for unrestricted use in a way that would ensure that all radiation exposures are kept as low as reasonably achievable and below prescribed limits;
- Protect workers, the public and the environment from all radiological and non-radiological hazards during all decommissioning activities. This should include the inherent hazard of some particular activities during decommissioning, such as the cutting and handling of large equipment; and
- Manage waste to minimize quantities for disposal. For example, materials and equipment arising from dismantling should, where practicable, be reused or recycled.

Auxiliary benefits discussed include the ability to reuse a valuable site, and the achievement of aesthetic improvement.

It is expected that six Safety Guides will be derived from the Standard, as follows:

- Decommissioning of nuclear power and large research reactors;
- Decommissioning of medical, industrial and small research facilities;
- Decommissioning of nuclear fuel cycle facilities;
- Safety assessment for the decommissioning of nuclear facilities; and
- Two safety guides on environmental restoration aspects.

The IAEA Safety Standard on Decommissioning requires Member States to develop a national strategy for decommissioning of their radioactive facilities and for the management of waste arising from decommissioning. This national strategy is to include the following:

- A legal framework within which a program for the safe decommissioning of

radioactive facilities and the management of radioactive and other hazardous wastes from decommissioning can be developed. Included in this, is the identification of the parties involved, their responsibilities and liabilities;

- The resources and expertise required to regulate and decommission the country's radioactive facilities;
- Appropriate research and development to support the operational and regulatory needs; and
- Financial provisions to ensure that all objectives of decommissioning can be safely achieved.

A requirement is specified for Member States to establish a legal framework and regulating body for the use of radioactive materials and the decommissioning of facilities and enforcement of regulatory provisions. This legal framework is to be based on internationally accepted practices as they apply to radioactive materials and decommissioning. The responsibilities and functions of the regulatory body and the Licensee or Operator, depending on the Member State's designation, are defined.

The Standard requires the decommissioning choice be based on the results of a comparison of various alternatives. The comparison should be made in the light of the national policy of the Member State and take into account public opinion. The following points are to be considered when analyzing the alternatives:

- The radiological status of the facility after final shutdown and how it changes with time;
- The physical status of the facility and how it is expected to change, including, if required, an estimate of the long-term integrity of buildings, structures and systems;
- The radiological and industrial safety requirements including the results of a corresponding safety analysis, including exposure estimates of personnel;
- Issues connected with waste management (inventory, treatment, conditioning, transport, storage, and disposal, including minimization of secondary waste);
- The availability of experienced personnel and well-proven decontamination, cutting and dismantling techniques and remotely operated equipment;
- The possibility of reusing and/or recycling materials and components;

- Planned use of the buildings and site and areas adjacent to the site;
- Cost estimates and the availability of funds; and
- The social and environmental impacts of the proposed activities.

The planning for decommissioning provided in the standard is similar to the NRC's approach. Planning is to be considered in the various stages of the nuclear facility. The standard describes three phase of planning: Initial Planning (at time of submission of permit application), Ongoing Planning (during the operating life of the facility), and Final Planning (as the time for decommissioning approaches.) In the Final Planning stage, the decommissioning plan will be submitted to the regulatory body. The decommissioning plan would typically include the following:

- A description of the nuclear facility, the site and the surrounding area including all details of the facility's operational history which could affect its decommissioning;
- The life history of the nuclear facility, reasons for taking it out of service, and the planned use of the site;
- Reference to the legal and regulatory framework within which decommissioning will be carried out;
- A description of the proposed decommissioning activities, including time schedule;
- The rationale for selecting the preferred decommissioning option;
- Safety, performance and environmental impact assessments, including the radiological and non-radiological hazards to workers, the public and the environment, and details of emergency preparedness during decommissioning;
- A description of the proposed environmental monitoring programme to be undertaken during decommissioning;
- An assessment of the amount, type and location of residual radioactive and hazardous non-radioactive materials in the nuclear facility, including calculational methods and measurements used to determine the inventory;
- A general description of the credentials, experience, resources and responsibilities of the decommissioning organization including a discussion of the technical qualification/skills of the staff;

- An assessment of the availability of special management, engineering, and decommissioning techniques required, including any decontamination, dismantling, and cutting technology as well as remotely operated equipment needed to complete decommissioning safely.
- Details of managing the waste from decommissioning, including items such as:
 - estimation of sources, types and volumes of waste and characterization of this waste;
 - proposed treatment, conditioning, transportation, storage and disposal methods;
 - anticipated discharges of radioactive and hazardous non-radioactive materials to the environment;
 - the potential to reuse and recycle materials, and related radiological criteria; and
 - criteria for segregating materials.
- Details of the proposed radiological protection and safety procedures to be used during decommissioning;
- A description of the quality assurance programme for decommissioning and other important technical and administrative considerations such as safeguards, where applicable, and physical security arrangements;
- A description of the monitoring program, equipment and methods to be used to verify that the site will comply with the release criteria; and
- Details of the estimated cost of decommissioning, including waste management, and the source of funds required to carry out the work.

For safe enclosure periods during phased decommissioning, the following additional items may be added to the list:

- The proposed surveillance and maintenance programme for the buildings and structures;
- Existing or new systems necessary for maintaining the nuclear facility under proper control, including engineered barriers, ventilation, drainage and monitoring systems;

- Systems to be installed or replaced to carry out deferred dismantling; and
- The proposed frequency at which the above items would be reviewed.

The amount of detail in a decommissioning plan depends on, among other things, the nature and size of the nuclear facility and the selected decommissioning option. The foregoing extensive list is intended to be applicable to the dismantling and removal of a large, complex nuclear facility like a nuclear power plant rather than to a small facility.

The IAEA Safety Standard on Decommissioning also addresses many of the other matters treated by the NRC in the US. A waste management program is required to collect, characterize, treat, condition, transport, store and dispose of the waste arising from decommissioning of facilities. Consideration is to be given to reducing occupational exposure.

Decommissioning activities should be planned to ensure that radiation protection and safety practices consistent with international recommendations are implemented. Appropriate attention to Quality Assurance and physical security and safeguards is required. Adequate funding must be demonstrated. In addition, policies and procedures should be implemented to foster the growth of a "safety culture." This refers to the dedication to safety and the accountability of all individuals and organizations engaged in decommissioning. Finally, the standard requires a final decommissioning report which, as a minimum, should contain:

- A description of the completed decommissioning activities;
- A description of any remaining systems or structures, including foundations;
- A final radiological survey including details of any residual activity, supported by an independent verification and certification;
- Project objectives, including the radiological release criteria for equipment, materials and the site;
- Status of compliance with project objectives with regulatory and other statutory requirements;
- Details of significant abnormal events that occurred during decommissioning and safety considerations applied;
- Occupational and public doses received during decommissioning;
- The characterization, including quantities, and destination of radioactive waste generated and what and how radioactive materials were reused or recycled; and

- A characterization, including quantities, of other materials released for reuse, recycling or for disposal as non-radioactive waste.

It is clear that the international community, as led by the IAEA, is moving toward a comprehensive, systematic approach to decommissioning with many parallels with the US practice. DOE Headquarters engages in regular information exchanges with IAEA and other international officials.

Appendix I

Verification and Certification Protocol

**VERIFICATION AND CERTIFICATION PROTOCOL
FOR THE
OFFICE OF ENVIRONMENTAL RESTORATION
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM
AND
DECONTAMINATION AND DECOMMISSIONING PROGRAM
(Revision 3, November, 1990)**

I. INTRODUCTION

This protocol outlines the procedures for the verification and certification of remedial action projects performed under the Formerly Utilized Sites Remedial Action Program (FUSRAP) and projects performed under the Decontamination and Decommissioning (D&D) Program within the U.S. Department of Energy (DOE) Office of Environmental Restoration (EM). The ultimate goal of any remedial action or D&D action is to ensure that resulting radiological and chemical conditions at the site or facility are in compliance with established criteria, standards and/or guidelines and that the public and environment are protected. The procedures contained in this protocol provide the means for DOE to ensure this goal is met.

The concepts of verification and certification have been used by DOE for many years to allow release of facilities for use without radiological restrictions. The purpose of the certification process is to ensure that:

- o final site or facility conditions meet the cleanup objectives
- o specific data and information are collected and assembled to understand the actions taken and document the final conditions
- o the documentation is archived and made available to the public

The detail and specific requirements of the certification process are outlined in this protocol. The majority of the elements of the certification process are implemented by the responsible DOE field office and its contractors, including collection of the post-cleanup data, preparation of documentation, and coordination with the U.S. Environmental Protection Agency, State and regional authorities. The DOE field office is responsible for the documentation of the certification effort and recommendation for certification; DOE Headquarters makes the final determination that certification is complete and that the site may be released from EM.

An integral part of this certification process is the concept of verification. Verification is an independent evaluation of the final site or facility conditions to assure that the cleanup criteria, standards, and/or guidelines are appropriately applied and met. The purpose of independent verification is to validate the accuracy and completeness of field measurements and the credibility of the procedures followed, resulting in an independent assessment of resulting site conditions versus project plans and release criteria prior to project closeout. The Decontamination and Decommissioning Branches of the Eastern, Northwestern, and Southwestern Areas Programs Divisions and the Off-

Site Remediation Branch of the Eastern Area Programs Division are the DOE Headquarters (HQ) organizations¹ within EM that implement and directly manage the independent verification effort as part of the certification process for D&D and FUSRAP projects. While data collected during independent verification may be used to supplement the certification data, such data are not a substitute for complete certification data, which the DOE field office and its contractors must collect.

All FUSRAP remedial action and D&D actions conducted by the EM organization are subject to independent verification. The size of the verification effort will vary from site to site and will typically involve document and procedure reviews, split sample analysis, and spot check surveys. A number of factors including type of cleanup, complexity of the operation and various site specific issues may be taken into consideration in determining the scope and intensity of the verification activity for a specific site or facility.

Because much of the data for both the verification and certification efforts is obtained before and during project operations, it is essential that the requirements be considered at the beginning of projects and that these requirements be integrated into the overall project schedule. This will ensure timely completion of verification and certification documentation activities prior to project closeout.

The following common terminology is used in this protocol to describe organizational responsibilities:

Administrative Record refers to the file which EPA requires for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) actions taken under section 104 or 106 of CERCLA. It includes all documents that form the basis for the selection of the response action. For Federal facilities the lead agency (DOE, in this case) shall establish the administrative record. EPA may furnish documents which the federal agency shall place in the administrative record file to ensure that it is complete. The administrative record is properly archived for permanent retention as a public record.

Certification refers to the process that ensures that the resulting radiological and chemical conditions at the remedial action or D&D site (or facility) are in compliance with established criteria, standards, and/or guidelines and that the public and environment is protected.

Certification Docket refers to the documentation resulting from the certification process. This documentation is archived for permanent retention as a public record.

DOE Headquarters refers to the responsible program office residing in the appropriate division and branch within the EM organization, which in the case of FUSRAP is the Eastern Area Programs Division, Off-Site Remediation Branch.

¹ These HQ elements are generally referred to as the program offices for simplicity.

Field Office refers to one of eight DOE Operations Offices or an element of a DOE Operations Office (area office, site office, or project office) responsible for management of site and/or project activities. In the case of FUSRAP, the responsible field office is the Oak Ridge Operations Office, Former Sites Restoration Division (successor to the Technical Services Division).

Independent Verification Contractor (IVC) refers to a contractor managed by HQ responsible for validation of the cleanup and certification process activities conducted by the Remedial Action Contractor (RAC) and field office.

Radiological Contractor refers to a contractor (or an element of the RAC) responsible for providing radiological (or chemical) survey support to the remedial action contractor collecting the data required to support operations and certification.

Remedial Action refers to all response actions (including interim actions) taken to effect cleanup at DOE sites and their vicinity properties.

Remedial Action Contractor (RAC) refers specifically to the contractor responsible for conducting either the D&D operation or the remedial action, which in the case of FUSRAP is the Program Management Contractor;

Validation refers to the review of laboratory data packages to determine whether, and to what extent the reported analytical data conform with the objectives of the sampling QA/QC Plan.

Verification refers to the independent assessment by DOE Headquarters that site conditions following cleanup by the RAC and field office meet approved project plans and release criteria.

II. VERIFICATION AND CERTIFICATION

A. GENERAL

The verification and certification process is integrated with the overall remedial action or D&D process and begins in the early stages of the project. The verification and certification process begins with project data collection during the site characterization phase and proceeds through final closeout of the project. Successful completion of verification is required for completion of certification, which in turn allows project closeout. Although verification and certification activities begin prior to the start of physical cleanup activities, the bulk of the verification and certification effort is conducted during and after the physical completion of remedial action or D&D operation.

While specific details may change from project to project, the generic steps of a remedial action or D&D project can be summarized as:

The site identification and characterization phase consisting of actions taken to locate the site, to assemble background information and operations data, and to gather site information required to perform engineering studies and environmental analyses supporting selection of a course of action;

The environmental and engineering studies phase consisting of actions taken to assure compliance with environmental regulations, selection of the appropriate course of action; completion of remedial designs, and project planning and procurement activities;

The remedial action or decontamination and decommissioning operations phase consisting of performance of cleanup and required restoration activities according to project plans; and

The certification phase consisting of final project documentation and closeout activities resulting in the release of the site.

This protocol emphasizes the project activities during and after the remedial action or D&D operations phase, when most verification and certification activities are performed. Attachments 1 and 2 are verification checklists for the field office and RAC, and the IVC, respectively. These checklists are intended to be used as general reminders of when interaction with the RAC or IVC is required. Certain project data and information generated in each phase become subject to verification and a part of the final certification docket. Some examples of this information include: site designation and authority reviews, remedial action and D&D plans, environmental (NEPA, CERCLA) documentation, excavation/decontamination control measurements, supportive sampling and analysis (with chain-of-custody information), and post-remedial action or project completion reports, all of which are essential to provide a record of cleanup activities and a source of data for the certification process. In the final certification phase, the essential data from all project phases, along with the verification report, are collected and assembled into a certification docket by DOE field office personnel.

Figure 1 is a conceptual diagram of the certification process and its relationship to the remedial action phase. The three major activities related to certification are: 1) decontamination measurements, 2) independent verification, and 3) certification docket preparation; they are discussed in detail below. Section B describes the decontamination measurements activities, while Section C and Section D describe independent verification by DOE and by others, respectively. Section E provides a detailed description of the certification docket preparation process.

An understanding of the relationships in Figure 1 between these three major activities is important. The excavation/decontamination activities associated with remedial action must be supported by decontamination measurements to gauge completeness and control. This information becomes available for independent verification, and in summary fashion is an important component of the certification docket, since it documents project completeness. In addition, Figure 1 illustrates that the independent verification activity is a subset of the certification process, and that information from verification activities provides feedback to the remedial action activity.

B. REMEDIAL ACTION MEASUREMENTS SUPPORTING CERTIFICATION

Following completion of the environmental and engineering studies phase, the remedial action or D&D project operations are initiated and conducted by the RAC, i.e., excavation, decontamination, stabilization and disposal. The radiological contractor and/or RAC supports these operations by performing excavation/decontamination control measurements, sampling, and analysis. This process is documented through field logs, analysis records, and chain-of-custody documentation. Reports shall be generated to summarize radiological and chemical contaminant conditions and cleanup progress or completion. This information becomes a part of the certification docket (and as applicable, the administrative record). An administrative record is required for all remedial action projects conducted under the CERCLA process in addition to a certification docket. The administrative record provides legal documentation of the response action selected. The certification docket documents the completion of the response action and is used to obtain approval, as necessary, for project closeout or delisting. The administrative record is complete when all the documents that form the basis for the selection of the response action have been compiled. The activities, related to the certification docket, culminate in preparation of the post-remedial action report. This portion of certification is performed by the RAC and radiological contractor under the direction of the DOE field office.

Excavation/decontamination control measurements are used by RAC or radiological contractor field personnel to guide the remedial action or D&D and to make the preliminary determination as to the extent of the excavation and/or decontamination required. For cases of soil contamination, upon completion of each planned segment (or operable unit) of a remedial action the on-site contractor will take representative samples for analysis. If these analyses confirm that the remedial action criteria have been achieved, final closeout of site operations can proceed, upon agreement by the IVC. The IVC may schedule a site visit to take independent samples or arrange for split samples from the radiological contractor and/or RAC. If the samples indicate that additional actions are required, the remedial action contractor will be

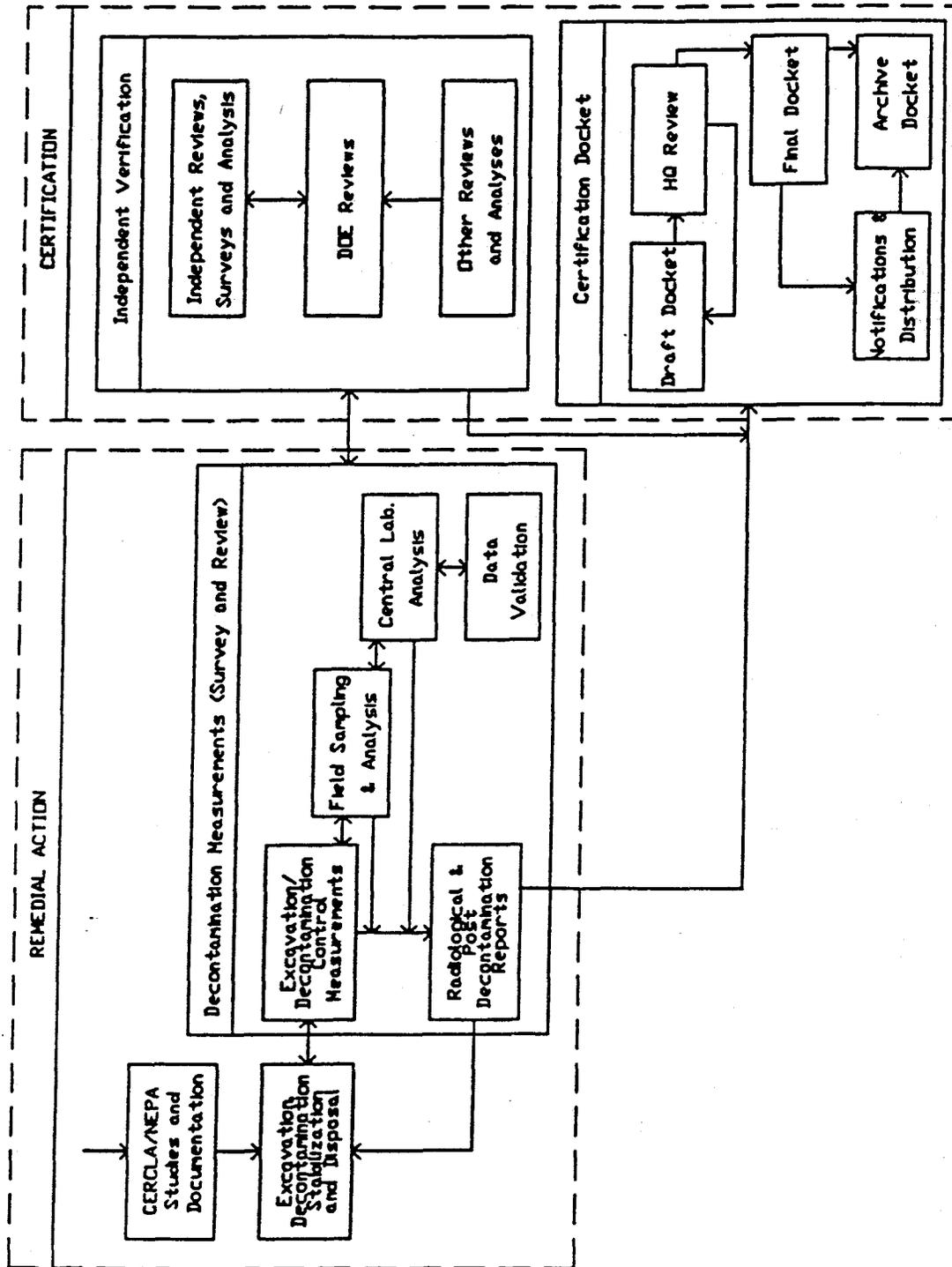


FIGURE 1. Conceptual Diagram of Certification and Its Relationship to the Remedial Action

informed of the requirements and will take appropriate action. Finally, if actions involve the release of materials or salvageable equipment off-site, or the disposal of contaminated materials off-site, the radiological contractor or RAC must develop and implement procedures to ensure that only acceptable material is released from the site in accordance with DOE Orders, all applicable or relevant and appropriate requirements (ARARs), and site operating procedures.

A representative number of the remedial action soil samples are sent to a central laboratory for final sample confirmation by the RAC or radiological contractor. The results of these analyses will be compared with the field data to ensure compliance with the remedial action criteria. Compliance with criteria for decontamination and release of equipment, structures or buildings is demonstrated by field measurements including wipe samples of surfaces, beta/gamma measurements and other appropriate measurements. Surface contamination and beta/gamma measurements will be taken to ensure compliance with the DOE and EPA guidelines or standards referenced therein. As appropriate, representative samples will be taken from the air, water, and residue samples that were analyzed in the field and used to support the confirmation of the site's condition. Again, as appropriate, samples are sent to a central laboratory for confirmatory analyses. It is important that all analytical data are validated to determine the quality and usefulness of the data. All analytical efforts should include specific quality assurance and quality control requirements, which should set forth acceptance criteria for final data. The quality control results are reviewed by independent laboratory chemists and/or statisticians to ensure that the data are of acceptable quality.

These activities will also include the review of radiological data by appropriate organizations within the DOE field office and the review of chemical contamination data by EPA regional personnel for National Priorities List (NPL) sites. The results of the RAC or radiological contractor surveys and confirmatory analyses shall be documented and included as part of the post-remedial action or final project report. Drafts of these reports shall be provided to the DOE field office, the IVC, and the HQ program office for review within 3 months of completion of the remedial action. The final report is published about one month following receipt of comments, presuming DOE and IVC comments and issues are resolved within a 3-week period. The final report is distributed to DOE and, as appropriate, to Federal, State, and local agencies. Distribution to other parties and the general public is made with issuance of the Certification Docket, when appropriate.

If chemical contamination is present, and the site is remedied pursuant to CERCLA, the post-remedial action report should contain the documentation necessary to support deletion of the site from the National Priorities List (NPL). In such instances the report should contain, at a minimum:

- 1) a brief description of outstanding construction items from the prefinal inspection and an indication that the items were resolved,
- 2) a synopsis of the work defined in the Statement of Work for the project and certification that this work was performed,

- 3) an explanation of any modifications to the work in the Statement of Work and a discussion of why these were necessary for the project,
- 4) certification that the remedy is operational and functional, and
- 5) documentation necessary to support deletion of the site from the NPL.

C. INDEPENDENT VERIFICATION BY DOE

All independent verification activities will be managed by the HQ program office. An IVC will be assigned by HQ early in the project planning phase to conduct any required independent measurements, sampling and analyses, and to review remedial action plans and procedures and other documents concerning the establishment of cleanup limits and the application of ALARA and Applicable or Relevant and Appropriate Requirements (ARARs) as required by DOE guidelines and DOE Orders.

Figure 2 is a general flow chart of activities within the certification process, showing the principal activities with emphasis on the certification phase of the project. The bottom row of blocks in Figure 2 represents the activities associated with the independent verification contractor.

The first block in the bottom row of Figure 2 represents all IVC activities during the characterization and planning phases. Initially, the independent verification contractor reviews relevant information from site characterization, environmental compliance reports, engineering, and project planning documents to ensure that the project release criteria (radiological as well as chemical) and specific procedures are adequate to demonstrate compliance with DOE requirements. It is extremely important that the IVC be integrated into the early planning stages of the project. Adequate early planning and close cooperation between the IVC and the RAC will ensure that the verification process proceeds smoothly through project completion. The RAC will provide the IVC with copies of draft characterization reports, decommissioning plans, project plans, and site-specific residual radioactivity pathways analyses for review in parallel with HQ review. The IVC staff will utilize this information to develop a general understanding of the project and to review proposed site survey procedures, equipment, and project release criteria for land, structures and equipment. Comments on these documents or procedures are provided directly to the project from the IVC for resolution prior to finalization of documents and subsequent initiation of remedial action activities. The RAC will provide the IVC with copies of these documents when final, incorporating IVC and DOE comments.

Remedial actions and D&D operations involve activities to cleanup or stabilize radioactively and chemically contaminated land and structures. Remedial actions and D&D operations are conducted to ensure that no user of the site

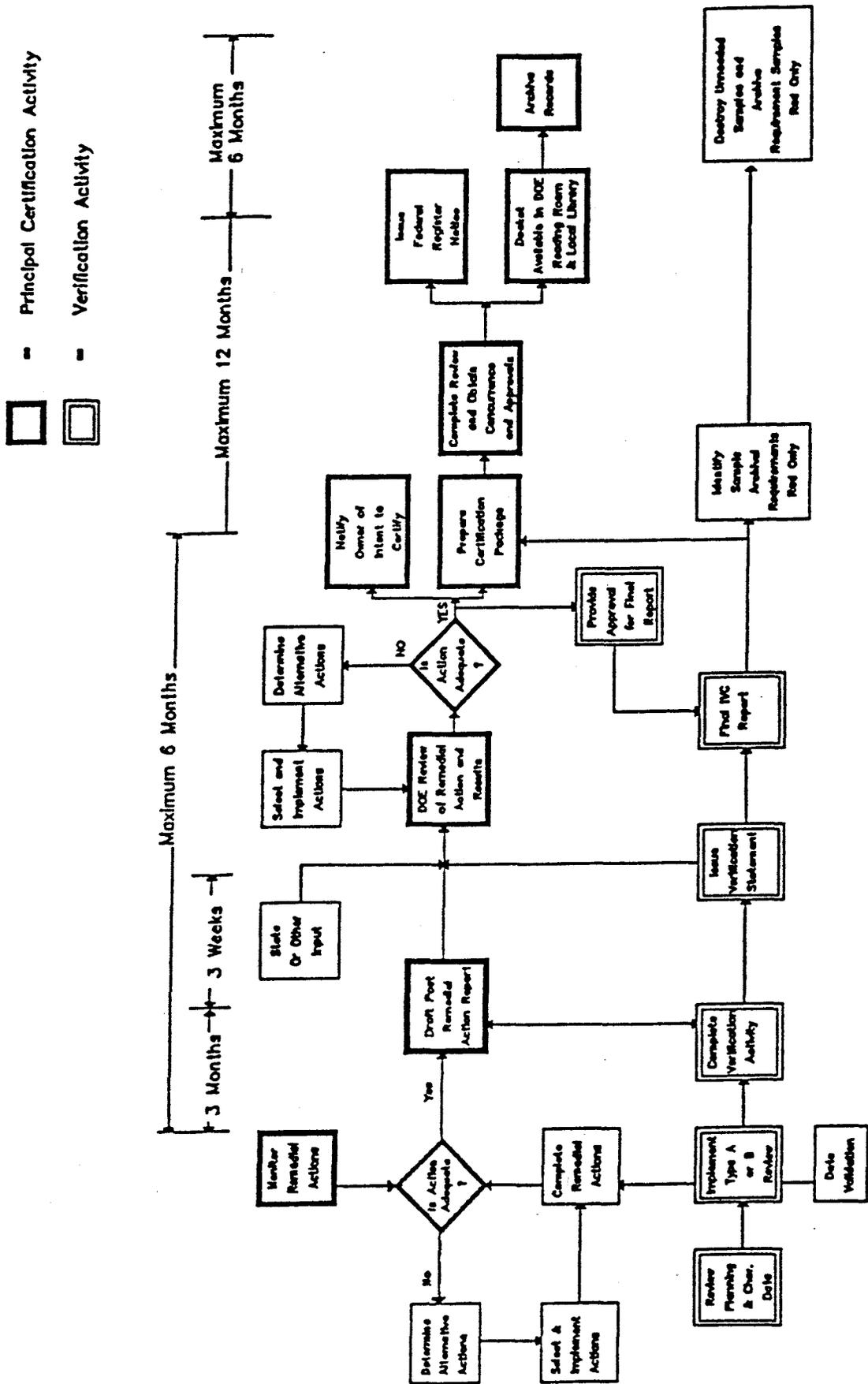


FIGURE 2. General Flow Chart for Certification Process

would receive radiation doses in excess of limits found in DOE Orders, e.g., DOE 5400.5 (Reference 1), DOE Guidelines (Reference 2), OSHA regulations (40 CFR 1910), and other criteria applicable to the project under CERCLA (i.e., ARARs). The criteria for cleanup of structures and equipment differ from those used for the cleanup of land or soil. Criteria used in the decontamination of structures and equipment are primarily surface contamination guidelines and external gamma exposure limits. Maximum permissible concentrations of radionuclides in the air and radon daughter limits are also used. For open areas or vacant land, allowable soil concentration guidelines are used as remedial action criteria. Soil concentrations are derived on a site-specific basis using pathways analysis techniques, with the exception of radium and thorium. As a result of the differences in the types of criteria and guidelines applied to structures, equipment, and open land cleanup, the requirements for verification sampling and analyses vary, depending upon application.

The level of verification required will be determined by the HQ program office with input from the IVC, based on a review of project characterization and planning documents. Off-site or vicinity property remedial actions may be verified in groups where so recommended by the IVC and approved by DOE. These independent evaluations will further verify that there is adequate information to demonstrate that the remedial action was accomplished in accordance with standards and criteria appropriate for each site. The IVC is responsible for the scope of its field investigations and will prepare a generic plan or document outlining the procedures to be used during verification activities. The plan is submitted to HQ for approval and the appropriate field office for information. Thereafter, the IVC provides the appropriate field offices and the HQ program office with a brief outline of site specific plans for each of the sites based on the review of the draft project planning documents. The outline will reference the generic plan and note special concerns. The generic plan will describe the types of verification actions that may be taken and the reasons for applying certain procedures to the specific site. The IVC may conduct two types of verification procedures at a site or group of properties.

Type A verifications will include review of remedial action plans, release criteria, procedures, final survey documentation and final project documentation, and if appropriate, will perform analysis of some split samples.

Type B verifications will include on-site visit(s) and survey(s) involving direct measurements and sampling and/or split sample analyses, as necessary, in addition to review of plans, release criteria, procedures, final survey documentation and final project documentation.

The primary purposes of both types of verifications are to confirm the adequacy of the procedures and methods used by remedial action contractors and to verify the results of the remedial action activities. In the field, the IVC may increase or decrease the independent verification survey on the basis of field data. The IVC will provide the field office with a site-specific plan of activities that the RAC must consider when preparing the final project baseline schedules.

With the initiation of remedial action or D&D operations, independent

verification activities continue as an integral part of remedial action (or D&D operations) and post-remedial action activities, utilizing much of the data collected for site certification.

The IVC will prepare monthly reports for HQ and provide short trip reports briefly documenting all field activities. These reports will indicate the areas investigated (total area covered by the remedial action and area covered by the verification) and any problems or concerns. All discrepancies will be identified along with field resolution of the problems. If these issues can not be resolved in the field or by further coordination between the IVC and RAC, the trip report should identify the issue as one that requires DOE action. While the trip reports should be very brief, they should clearly indicate the frequency and magnitude of discrepancy or anomalies so that DOE can determine if they are incidental or indicative of problems in the remedial action or D&D effort.

Appendix I outlines the procedures used by the IVC for independent verification of remedial action activities and those procedures used for correction of any deficiencies identified during the verification process. Field offices through their management function are responsible for assuring that the projects successfully integrate verification activities consistent with this protocol.

During the operations phase of the project, the field office shall send copies of project quarterly or monthly progress reports to the IVC. These reports will indicate whether plans or schedules were changed that would affect the site conditions or the conduct of the verification surveys. The IVC will identify in the site specific plan areas that will be surveyed and will schedule site visits as necessary prior to restoration of an area or following remedial action. The RAC will provide the IVC with at least 72-hours notice prior to initiating the final phases of any remedial actions (e.g., startup of treatment systems, backfill of excavations, painting or restoration) of these selected areas. Open communication between the project staff and the IVC staff will avoid delays in remedial action due to such interim survey activities.

Upon completion of remedial action and field verification activities, the field office will provide copies of the draft post-remedial action report to the IVC for review in parallel with the HQ program office. The field office staff shall resolve all HQ and IVC comments prior to issuing the final report.

Within four months after the completion of a remedial action, the IVC will issue a verification statement and provide copies to the HQ program office and the appropriate field office. In cases where vicinity properties were grouped and verifications were only completed on selected properties, the verification statement is written to cover all the properties in the group on the basis of the results of the selected properties. Upon receipt of this verification statement, the field office will send an interim letter (notification of intent to certify) to each property owner of the site or sites, in cases involving vicinity properties. This action is not required when the owner of the site is DOE.

The results of the independent verification process are summarized by the IVC in a final report which is reviewed by the HQ program office and distributed

to the responsible field office, and, as appropriate, State and other Federal agencies. The IVC report is a part of the final certification docket. If actions involve the release of materials off-site, the IVC review and report will include an assessment of procedures and, if applicable, spot checks of material prior to release. This verifies that the procedures used by the RAC ensure that only acceptable material is released from the site. In addition to the final report, representative samples from the remedial action survey and the verification survey will be properly labeled, retained and archived for an appropriate period (see Appendix II). The samples are not discarded until such time as the final certification package for the site is completed, undergoes review, and radiological samples are archived following an appropriate period of availability locally and at the DOE public document reading room (see Appendix II).

Throughout the planning, implementation, reporting and archival activities associated with this process, the IVC and RAC will make every effort to resolve scheduling conflicts that may arise and expedite information exchange and on-site activities. Procedures to handle minor discrepancies in the field shall be developed and agreed upon by the IVC and the RAC. The appropriate field office and HQ program office shall be notified, as far in advance of the verification report as possible, of any scheduling or technical problems that cannot be resolved by the IVC and the RAC. Resolution of problems shall be expedited to insure that the remedial actions or D&D operations are adequate and verification process is satisfied.

If it is determined by the IVC there is inadequate or insufficient data to demonstrate that the remedial action or D&D was successfully completed or that the technical data and supporting information or procedures are not adequate to allow certification of site, such findings will be reported to the HQ program office immediately. The appropriate field office, with assistance from HQ will review the problems and take appropriate steps to have deficiencies corrected or resolve issues raised by the IVC. The 4 month maximum time period from completion of remedial action to notification of the owner by DOE is not in effect in cases where adequacy of certification data is in question. The time limitation is back in effect once issues are resolved.

D. INDEPENDENT VERIFICATION BY OTHERS

Upon request made to DOE in advance of the initiation of remedial actions, certain Federal, State and Local agencies may be given the opportunity to perform independent measurements and analyses or to analyze split samples taken during site characterization operations. These agencies may also be given the opportunity to review RAC or radiological contractor measurements, sample collection and preparation, and analytical procedures, and the resulting data. Other groups desiring to implement such actions may do so by application through their State or local government. These verification activities are independent of the verification activities managed by EM. If any conflicting results are found, DOE will work with the agencies to resolve the issues.

E. CERTIFICATION OF SITE CONDITIONS

The certification of site conditions upon completion of remedial action or D&D is a DOE responsibility shared by the HQ program office and responsible field office. The formal certification process is initiated following an affirmative decision by DOE on the adequacy of the remedial action, represented by the decision block in the middle of Figure 2. The decision is based primarily upon data from the project presented in the post-remedial action and project completion reports, and results and recommendations from the verification process presented in IVC reports by DOE and other agencies. In practice, the decision making process is carried out in conjunction with the verification process and the initial phases of preparation of a draft certification docket.

The conceptual time line chart (Figure 3) shows the interrelationships and sequence of actions to be completed during the certification process. However, no attempt has been made to establish specific time frames for completion of actions identified in order to provide sufficient flexibility to accommodate the varied complexity of remedial action and D&D projects and the variation in responsiveness of other Federal, state and local agencies to the document review process. However, every effort should be made to expedite each step in the process in order to respond to the needs of the owners, reduce the propensity for loss of records and reports and the expertise of individuals with direct knowledge of the process.

The principal activities of the certification phase, shown by highlighted blocks following the decision block in Figure 2, are: 1) preparation of the certification docket, 2) concurrent individual and public notifications, 3) the review process, 4) distribution of the final certification docket, 5) archiving of the docket (as appropriate) as a public record, and 6) if facility involved chemical contamination, entering the certification docket as part of the Administrative Record for the site.

A draft certification docket is prepared by the responsible field office for each completed remedial action. The docket may be prepared by phase, if the remedial action is conducted in phases, and may include groups of vicinity properties as appropriate. However, in these cases, the docket should indicate the sites or actions completed and that they are only a part of the total action required. References to any previous dockets and schedules for future actions, if appropriate, are included. A docket will include records, reports and narrative as indicated in Figure 4.

In parallel with preparation of the draft certification docket, the field office provides the property owner with interim notification of the DOE's intent to certify the remedial action within four months after completion of the remedial action.

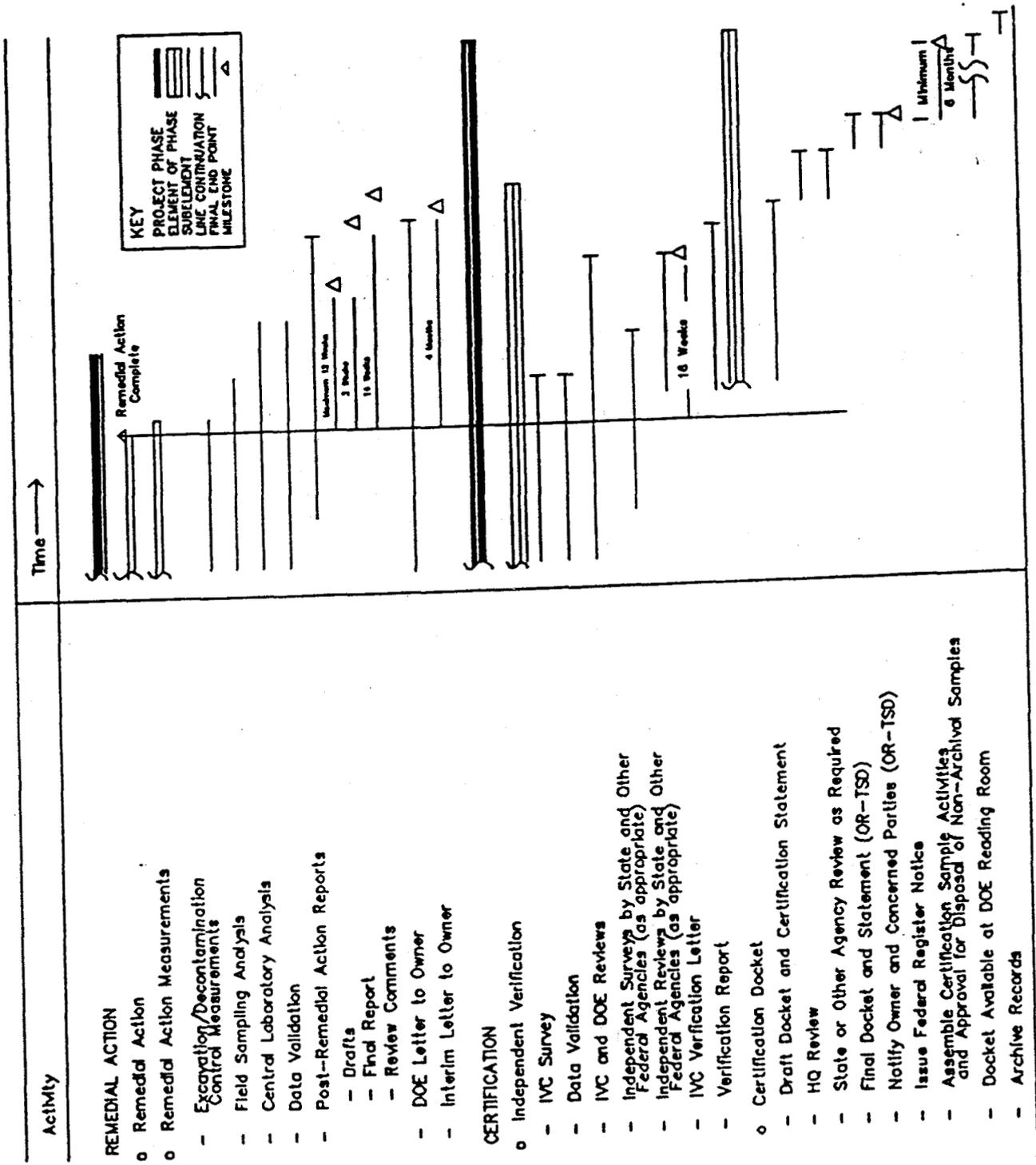


FIGURE 3. Conceptual Time Line Chart—Relationships of Relative Dates for the Certification Process

FIGURE 4 - CERTIFICATION DOCKET CONTENTS AND OUTLINE

- A. Introduction to the Docket
 - 1. Purpose and Contents of the Docket
 - 2. Property Identification (general description and drawings for property being certified)
- B. Exhibit I - Summary of Activities at the Specific Site
 - 1. Site History (DOE use; ownership history and use; and previous FUSRAP or D&D activities at site)
 - 2. Site Description (past and current)
 - 3. Radiological (and Chemical where appropriate) History and Status (survey and monitoring information, and criteria for determining need for remedial action or D&D)
 - 4. Selection of Remedial Action or Decommissioning and Decontamination Activity (option selected; criteria for the action; cost-benefit and/or cost effectiveness analysis; and health effects evaluation, where appropriate)
 - 5. Summary of the decontamination (what was done; waste volume and waste types; disposition of equipment and salvageable materials; costs; disposal; and occupation and public exposures)
- C. Exhibit II - Documents Supporting the Certification of the Site

These include but are not limited to:

 - 1. Decontamination or Stabilization Criteria,
 - 2. Designation or Authorization Documentation,
 - 3. Characterization Reports,
 - 4. NEPA/CERCLA Documents,
 - 5. Agreements (with owner, State, and so forth)
 - 6. Post-Remedial Action Survey and Monitoring Report,
 - 7. Verification Report and Interim Verification Letter to the Owner,
 - 8. State, County, and Local Comments on Adequacy of Remedial Action (and others as appropriate),
 - 9. Recommended Restrictions and Actions Taken to Implement them,
 - 10. Federal Register Notice, and
 - 11. Approved Certification Statement.
- D. Exhibit III - Diagram and/or Figures or Tables Supporting the Certification
- E. Other Relevant Documents

The sequence of activities for assembly of the certification docket and sign-off is outlined below (note that the Federal Register notice is not required for sites remaining under DOE ownership):

1. The field office transmits to the HQ program office within EM a draft certification docket, including a transmittal memorandum to the Director of the Office of Environmental Restoration (EM-40) from the appropriate EM Division Director recommending certification, the draft Federal Register notice, and certification statement with appropriate signature block for the Director of the Office of Environmental Restoration;
2. The HQ program office reviews and revises the draft Federal Register notice and draft certification statement. Comments on the certification docket are transmitted to the field office;
3. The HQ program office prepares a transmittal memorandum with appropriate concurrence block and sends the draft Federal Register notice to the Office of General Counsel (GC-11) and Office of Organization and Management Systems (AD-122.2) for review and concurrence;
4. The HQ program office resolves comments from GC-11 and AD-122.2 and revises the Federal Register notice and certification statement accordingly. Comments are retained for later reference;
5. The HQ program office transmits the original and three copies of the Federal Register notice and certification statement to EM-40 for signature.
6. The Director of the Office of Environmental Restoration signs the original plus three duplicate copies of the Federal Register notice and certification statement, and returns the originals and copies to the HQ program office.
7. The HQ program office transmits the original and two signed duplicate copies, along with a copy of the concurrences by GC-12 and AD-122.2, to AD-122.2 through GC-12 for publication in the Federal Register. The other signed duplicate copy of the notice and certification statement, along with the original concurrences by AD-122.2 and GC-11, are retained in the program files. A copy of the signed Federal Register notice and certification statement is transmitted to the field office for inclusion in the final certification docket.
8. The field office inserts copies of the signed memorandum, the certification statement and the Federal Register notice into the certification docket, finalizes references to the date of certification by EM-40 as appropriate, and binds the docket. Relevant documents and documents referenced in Exhibit II of the bound docket are assembled.
9. The field office makes distribution, as appropriate, to the administrative record, to the local public document room, State, or other Federal agencies, as required, of the docket and referenced published documents. Seven copies of the bound docket, along with the referenced published documents are sent to the HQ program office for HQ distribution.

Coordination with other federal, State or Local agencies regarding any required land record annotations or similar actions is the responsibility of

the field office. The land record may be used to establish a permanent record of the certification process and to record that either the radiological and/or chemical requirements have been achieved for release of the site, or that restrictions are required for access or continued use of the site. When use restrictions are required, the field office is responsible for insuring that a mechanism is in place to implement the restrictions.

Upon completion of the docket, and publication of the Federal Register notice, five copies of the certification docket containing a complete historical review of the remedial action, the certification statement, and the final project reports are transmitted to the DOE Public Document room at Washington, DC by the HQ program office for a suitable period of time before it is permanently archived.

References

1. DOE Order 5400.5, Radiation Protection of the Public and the Environment
2. The U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program sites (Rev. 2, March 1987).
3. ORNL/TM-8600 "Procedures Manual for the ORNL Remedial Action Survey and Certification Activities (RASCA) Program."

APPENDIX I

Procedure for Independent Verification of Remedial Action/D&D and Correction of Discrepancies Identified

INTRODUCTION

Independent verifications will be carried out for remedial action (FUSRAP) and D&D sites and vicinity properties in order to provide additional assurance that the authorized limits for the remedial action have been achieved. The FUSRAP remedial action activities are managed by the DOE Oak Ridge Operations Former Sites Restoration Division (OR/FSRD). D&D activities are managed by DOE field offices assigned responsibilities for separate sites and activities. On-site verification surveys are carried out for some vicinity properties, or properties where independent surveys are requested by the owner, State or Local officials. The procedure for conducting and reporting the independent verification is described below.

INDEPENDENT VERIFICATION PROCEDURE

The Independent Verification Contractor (IVC) will perform all or some of the following verification activities as described in the separate subsections that follow:

- o Review of Remedial Action
- o Site Visits
- o Gamma Scanning and Discrete Measurements
- o Other Direct Measurements
- o Soil Samples
- o Air and Water Samples
- o Comparison of Results
- o Corrective Action for Discrepancies
- o Verification for Post-Remedial Action Report

The number of these activities and the detail to which they are conducted will depend on the type of verification activity being implemented. Type A verifications in general will include the review of the radiological and remedial action contractor results and, in some cases, an analysis of split samples. Where necessary to confirm results after the restoration, a visit to the site may be warranted.

Type B verification will be more thorough and may include all of the above verification activities depending on the site conditions and magnitude of the action. The verification letter and report are prepared for both types of verifications.

Review of Remedial Action

The remedial action contractor (RAC) will provide all site designation and characterization reports, remedial action plans, progress reports, and survey data pertaining to the specific site of interest to the IVC for review. These reviews will be conducted as part of Type A verifications, to plan the Type B verification surveys, and to determine whether the remedial action plans were changed during the course of remedial action in the manner which would affect

the site conditions or the conduct of the verification survey. Post-remedial action data is also provided to and reviewed by the IVC for both Type A and Type B verifications. The post-remedial action data will be provided to the IVC in a timely manner such that review of the information is completed and the verification letter sent within 3 months of the completion of remedial action.

Site Visits

A visit will be scheduled to a selected vicinity property or site undergoing remedial action or D&D prior to restoration or immediately following the remedial action. Every effort will be made to establish an open communication by both the IVC and the remedial action contractor to avoid interruption or delay of the construction schedule. The IVC will notify the field office and/or the RAC of those vicinity properties and site areas which will be sampled or surveyed for verification prior to closure. The field office or the RAC, as appropriate, will notify the IVC at least 72-hours prior to initiating final closure activities at these selected sites. The notice may be given on the basis of a group of properties, not necessarily for each vicinity property. The IVC is responsible to accomplish any verification survey and sampling without interfering with the construction schedule providing at least a 72-hour advance notice is given. The IVC will prepare a brief trip report for each site visit to summarize its findings and any issues or problems. The reports are submitted to the HQ program office.

Gamma Scanning and Discrete Measurements

A gamma scan and possibly a set of discrete measurements will be performed on either excavated vicinity properties or site areas. The survey is performed to the site characterization and remedial action survey grids and will be performed in accordance with ORNL/TM-8600 (Reference 3), its equivalent, or other guidance approved by the DOE. The exposure rates are recorded on a map of the property or site area for comparison with the data taken by the remedial action contractor. This map is compared with the authorized limits.

Other Direct Measurements

Beta-gamma and alpha measurements performed, as required, in areas, structures, and/or equipment affected by the remedial action or decontamination, are incorporated with previous project related surveys. These measurements and scans are performed in accordance with procedures in Reference 3, or its equivalent. For chemical contamination, wipe samples will be taken from contaminated equipment and structures, and direct field measurements will be taken as necessary to ensure the remedial action has achieved the desired results. The results are recorded on maps, drawings, or tables of the structures, equipment, or areas and compared to criteria.

Soil Samples

Typically, about five verification soil samples are taken from a selected excavated vicinity property or site area on a systematic pattern. The number may change according to the size of the vicinity property or site area and the nature and extent of contamination. The soil samples are generally obtained from the surface (0-15 cm. depth) or subsurface (15-30 cm. depth and/or

subsequent 15 cm. layers) of the decontaminated area. These soil samples are analyzed by the IVC for the radionuclides and chemical species specified in the project plan and will be compared with the authorized limits for the site. If no soil samples are taken for radiological tests from a property or area by the IVC, an independent analysis is performed by the IVC using selected soil samples taken from the RAC or radiological contractor's archive. The samples are selected and analyzed in accordance with the procedures in Reference 3, its equivalent, or other guidance approved by DOE.

Air and Water Samples

Representative verification samples of air or water are collected and analyzed when determined necessary through reviews of the site data. A sufficient number of samples are collected at discrete locations by the IVC to confirm the RAC results and verify compliance with the appropriate criteria. The samples are collected and analyzed in accordance with procedures in Reference 3, its equivalent, or other guidance approved by DOE.

Comparison of Results

Procedures for comparison of IVC results to those of the RAC and/or radiological contractor should be presented in the IVC's project plan. In general, comparison of split samples is done on a sample to sample basis. The IVC and RAC or radiological contractor results should agree within the expected statistical deviations of the analysis methods used. IVC survey results (direct measurements, sampling and analysis) are compared to the remedial action contractor results on the basis of the sampling and analysis consideration. All samples must be independently verified to conform with quality control requirements. Only those samples meeting quality control requirements may be used in the comparison of results.

Corrective Action for Discrepancies

If the IVC verification survey or sample analyses show that any result is above authorized limits for the remedial action (a discrepancy), a corrective action to resolve this discrepancy is taken by the field office or the RAC. The IVC will notify the HQ program office and the appropriate field office of the discrepancy as soon as possible. The field office will make a determination on additional cleanup action required or will seek an exception as specified in the DOE Guidelines. The field office is responsible for implementation of further cleanup actions by the RAC. The IVC will re-verify the property or site area after corrective action. The corrective action and any exception will be recorded in a corrective action section of the final report or closeout report prepared by the RAC. Whether or not the discrepancy is resolved in the field, the IVC must report it in its trip reports for the specific survey.

Verification for Post-Remedial Action Report

After the completion of the post-remedial action activities (surveys, reviews, laboratory analyses, etc.), a verification letter and report are prepared by the IVC for each vicinity property or site. The authorized limits for the site and the background levels of radiation are compared to the verification results. The verification letter will address the comparative results of the

verification activities and include a statement of verification. The verification report will include the field and laboratory analyses results and any anomalies that were noted during the independent verification survey and any reverification survey. Appropriate tables and a listing of results will be included as well as illustrations of the area surveyed; (i.e., soil sample locations and identifications, gamma levels, chemical contamination levels, etc). In the case of the Type A verifications the report will summarize the basis for the IVC's finding of the adequacy of the action (or discrepancy) and reference supporting data or reports. The conclusion of the verification report, whether Type A or B verification, is a finding of whether the data are sufficient to establish that the authorized limits for the remedial action were met and a statement of any exceptions.

Where data are available, the post-remedial action report may include (summarize) the findings of the verification report or, as appropriate, reference the verification report and/or letter. However, the data collected by the RAC should be sufficient to support certification on its own.

APPENDIX II

Verification and Certification Sample Maintenance and Archiving Process

All radiological samples collected by the remedial action contractor (RAC) and the independent verification contractor (IVC) for the purposes of verification and certification at a specific site or property will be logged and maintained by them until the certification process is complete.

Six months following the issuance of the Federal Register notice of certification and the availability of the docket in the public document room, the certification/verification sample archival process will be initiated. At that time or thereafter, the IVC will assemble, log, and archive a representative number (as defined below) of samples at least 500 g. per sample, if possible) to be maintained by the IVC over a 5-year period. These samples will be held as evidence of the adequacy of the remedial action/D&D project and to backup the certification docket. All other samples must be disposed of (in an appropriate manner) by the contractors following the establishment of the sample archives for the particular site and/or vicinity properties.

The majority of the archival samples are expected to be derived from the IVC collection of samples; however, the IVC will review their samples and those of the RAC and radiological contractor to determine if any of their samples should be consolidated into the archives.

The IVC will provide the RAC with guidelines and specific directions regarding samples required for the archive from their inventory. The remedial action contractor is responsible for the correct labeling, packaging, and transmittal of these samples to the IVC and for providing information accurately identifying the locations where the samples were derived. Guidance is available in documents prepared or referenced in the generic verification plan by the IVC. The IVC will assume the chain-of-custody for all samples relinquished by the RAC.

The IVC will take similar actions with their samples and will consolidate the two sets of samples into one group with common keys and legends identifying the sampling locations. These samples are then archived by the IVC. The IVC may then take steps to approximately dispose of any excess samples and will notify the RAC that they are free to do the same. The archived samples will be held for a minimum period of five years and the IVC will notify the DOE program office and obtain approval prior to disposal of the archived samples.

Sample Selection

The selection of samples for the archives is done in a systematic manner. Approximately 10 percent, but not less than five samples, of all certification or verification samples taken for each site, vicinity property, or each group of properties will be archived. Proper care shall be taken to ensure that adequate samples are taken from each site. Grouping of vicinity properties for the purpose of sample archiving is permissible in cases where many small vicinity properties are located near one another, contamination removed from

the area is of a similar nature, or the remedial actions were completed during the sample construction period or season without any significant interruptions. Samples from a site and vicinity properties which are contiguous with the site and were decontaminated during the same period may also be included in the same sample selection process and archived together.

In general, samples will be selected out of the total sample population with the only restriction being that the samples should provide representative area cross section of the site or properties being certified.

For cases where some special circumstances exist, a greater number of samples may be selected to better represent the post-remedial action conditions at the location of interest. Examples of such locations include:

- o Areas that had exceptionally high concentration of radionuclides prior to remedial action;
- o Areas that were the subject of some conflicts, question, or discrepancies between DOE and other groups, including owners, state agencies, other Federal agencies, or local groups;
- o Areas at which the IVC and the radiological contractor data initially disagree or area where the independent verification survey identified discrepancies that had to be resolved; and
- o Areas for which exception to the designated site criteria were requested.

The number of samples archived is proportional to the area of the site. If the area of concern covered a large area (several hundred square meters) and was not uniform in nature (varied isolated depths, varied concentrations and radionuclide make-up) extra samples would be represented.

CHECKLIST FOR FIELD OFFICE AND RAC COORDINATION WITH IVC

___ Provide documentation of technical aspects of project to IVC for comment. Documentation includes but is not limited to the following:

- ___ Decommissioning Plan
- ___ Annual Environmental Monitoring Reports
- ___ Readiness Review Documentation
- ___ Project Plan
- ___ Preliminary Assessment/Site Investigation
- ___ Remedial Investigation
- ___ Feasibility Study
- ___ Site Characterization Plans
- ___ Site Release/Cleanup Criteria
- ___ Risk Assessment

___ Provide quarterly or monthly progress reports to the IVC.

___ Provide IVC with at least 72 hour notice prior to closure of selected areas identified by IVC for site visits.

___ Provide IVC with draft Post-Remedial Action Report.

VERIFICATION CHECKLIST FOR IVC

- _____ Review and provide comments to the DOE field office or the RAC on specific sections of planning documents covering the activities required for certification. Examples of such activities include pathways analyses, establishment of cleanup criteria, sampling techniques, and procedures for release of scrap equipment. The following documentation should be reviewed, as appropriate:
- _____ Decommissioning Plans
 - _____ Annual Environmental Monitoring Reports
 - _____ Readiness Review Documentation
 - _____ Project Plan
 - _____ Site Characterization Plans
 - _____ Site Release/Cleanup Criteria
- _____ Prepare input into determination of type of verification required.
- _____ Prepare a generic plan outlining procedures to be used for verification activities.
- _____ Provide DOE-HQ, field office and RAC with a brief outline for site-specific plans for each site based on draft project planning documents, noting specific concerns.
- _____ Identify in a site-specific plan the areas that will be surveyed and schedule site visits.
- _____ Prepare monthly reports for DOE-HQ.
- _____ Provide DOE-HQ with brief trip reports documenting field activities.
- _____ Review and comment on draft Post-Remedial Action Report.
- _____ Issue Verification Statement (if applicable).
- _____ Issue Final Report.



Appendix J

Department of Energy Budget Process and Responsibilities

Appendix J

Department of Energy Budget Process And Responsibilities

1.0 INTRODUCTION

In any given fiscal year, the Department of Energy (DOE) may be working on three different budgets at one time: planning the outyear budgets, formulating the President's budget, and executing the operating year budget. Exhibit J-1, The Budget Planning Cycle, shows the cycle of the budget from an outyear budget, to the President's budget, and to an execution year budget. These activities and the legislative processes required throughout the budget planning cycle are referred to as the DOE Federal budget process. Exhibit J-2, DOE Budget Process, details the timing of budget activities within the Federal budget cycle. Because of the complexity of the budget cycle and related activities and the need to defend our budgets, both internally and externally, it is important for EM-40 Program Managers and Field Office Project Managers to understand the budget process and the interrelationships of budget and program management activities, and to work together to develop the highest quality budget and program management documentation for which to defend their budgets.

The purpose of this appendix is to provide Project Managers with an overview of the DOE budget process and budget terminology; and to briefly describe current EM-40 Program Office and Field Office responsibilities with respect to the budget process. It does not provide detail regarding the development or revision of documents used to determine EM-40's budget needs, such as project baselines, Key Activity Summaries, Project Data Sheets, Activity Data Sheets (ADSs), Project Plans (PPs), and Program Management Plans (PMPs). Since the budget process and project management activities are subject to change as EM-40 continues to mature, Field Office Project Managers should consult with their Headquarter Program Management counterparts for current guidance on these activities and more detailed information on their responsibilities.

2.0 BUDGET RESPONSIBILITIES

Budget formulation and execution should be in accordance with the DOE Order 5100 Series and should follow EM-10 procedures for planning, budget, and control. EM-10 will work with EM-40 to develop initial budgets and update them based on internal DOE, Office of Management and Budget (OMB), and Congressional reviews. EM-40 should justify all budget requests by taking into account such factors as:

- Environmental Restoration Program strategic objectives,
- EM-wide priorities,
- Legal drivers,

**Exhibit J-1
The Budget Planning Cycle**

FY 1995	FY 1996	FY 1997
FY 1995 = Execution Year		
FY 1996 = President's Budget Year	FY 1996 = Execution Year	
FY 1997 = Planning Year	FY 1997 = President's Budget Year	FY 1997 = Execution Year
	FY 1998 = Planning Year	FY 1998 = President's Budget Year
		FY 1999 = Planning Year

The chart above provides an example of a budget planning cycle representing the current fiscal year as FY 1995. The underlined fiscal year, 1997, shows how a single budget progresses from an planning year budget to the President's budget, and finally to an execution year budget. Note that in any one fiscal year EM-40 is working with three budgets concurrently. All Federal Budgets follow this cycle.

- Health and safety requirements,
- Performance measures (in support of the *Government Performance and Results Act of 1993*),
- EM-40 initiatives (e.g. site acceleration strategies), and
- Individual project plans.

The following sections describes the responsibilities of EM Program and Field Offices with respect to the Budget Formulation, Enactment, and Execution Phases.

2.1 Budget Formulation Phase

EM-40 Program Offices are responsible for:

- Issuing timely Program guidance and training (as appropriate) to Program and Project Managers that clearly describes near-term objectives, funding scenarios, program initiatives, and the budget review schedule. The guidance and training will help managers to understand the interrelationship of program and budget-related activities and how these contribute to the budget process (i.e., project baselines, ADSs); to review or prepare the deliverables that result from these activities; and to develop near-term objectives in order to meet the budget review schedule
- Coordination of efforts by Program and Project Managers in completing budget deliverables according to guidance
- Reviewing baselines and ADS submittals for compliance with guidance and agreement to budget control totals where appropriate
- Coordinating any changes to ADSs (that were submitted to EM-10 for review and reconciliation with budget control totals) with Project Managers
- Preparing the Internal Review Budget (IRB), OMB, and Congressional budget material based on ADSs, Project Data Sheets, Key Activity Summaries, and other budget-related documents received from the field
- Briefing OMB on the EM-40 budget year funding request
- Providing press briefings, testimonies, and congressional reports in support of the President's Budget, as requested.

The Field Office (FO) is responsible for:

- Requesting clarification and training on EM-40 Program guidance as needed
- Preparing quality deliverables consistent with guidance objectives in a timely and accurate manner
- Coordinating with Program Managers to develop budget-quality ADSs that are supportable by technical, cost, and schedule baselines; and that support program initiatives.
- Preparing documentation that supports the budget (i.e., work scopes, schedules, cost estimates, and carryover analysis) for budget validations
- Providing additional information to assist EM-40 in the preparation and defense of the budget year funding request.

2.2 Budget Enactment Phase

EM-10 is responsible for:

- Defending the Environmental Restoration Program and justifying the funding request amounts in response to Congressional inquiries
- Coordinating the enactment of a Continuing Resolution with Program and Project Managers.

The FO is responsible for:

- Providing additional information to support EM-10 responses to Congressional inquiries
- Maintaining levels of effort which do not exceed obligational authority ceilings mandated by a Continuing Resolution.

2.3 Budget Execution Phase

EM-40 is responsible for:

- Prioritizing the execution year funding appropriation and providing Program Execution Guidance to Project Managers
- Reviewing and approving Current Year Work Plans (CYWP)

- Reviewing and approving CYWP changes
- Providing oversight of field activities by reviewing monthly status reports from the Progress Tracking System (PTS)
- Coordinating with Project Managers the corrective actions required to accomplish work so that variances at completion will be minimized.

EM-10 is responsible for:

- Issuing the initial Approved Funding Program (AFP) to the FO
- Reviewing, approving, and processing AFP changes
- Issuing notification to Congress of formal reprogramming of funds

The FO is responsible for:

- Issuing Work Authorization memoranda to contractor organizations consistent with EM-40 Program Execution Guidance and DOE Order 5700.7C Work Authorization System
- Submitting CYWP for the execution year to the Program Managers for review and approval prior to the start of the execution year
- Coordinating changes to the monthly AFP with EM-40 Program Managers and EM Office of Financial Management, Budget Operations Division (EM-131)
- Submitting CYWP revisions to Program Managers
- Submitting requests to Program Managers for reprogramming of funds
- Monitoring work accomplishments performed by contractor organizations
- Reviewing monthly status reports to ensure information is timely and accurate
- Providing timely and accurate data for the PTS.

3.0 EM-40 APPROPRIATIONS

EM-40 funds are approved by Congress under three appropriations: (1) Defense Environmental Restoration and Waste Management (Defense), (2) Energy Supply, Research & Development

(Non-Defense), and (3) Uranium Enrichment Decontamination and Decommissioning Fund (UE/D&D). At the Subproject Summary Level within an MSA/MP Defense, Non-Defense, or UE/D&D account, funds are distributed among the following types of subprojects: Remedial Action, Decommissioning, Management and Technical Support and Site-Wide Activities, Surveillance and Maintenance, Landlord, and Treatment/Storage/Disposal (TSD) Facilities.

EM-40 funds are considered "No-Year Money," meaning these can be carried over into successive fiscal years and do not expire until all authority has been used. In addition, EM-40 funds are appropriated for Operating Expenses only; not for Capital Equipment nor Construction.

The formulation phase to request funding consists of the sequence of activities (budget formulation, the IRB process, and the OMB process) necessary to develop an approved budget to be submitted as part of the President's annual budget request to Congress. Departmental planning and programming decisions are converted into an EM-40 budget, reviewed by the Department, and then rolled into an overall departmental budget during the IRB process. Finally, the departmental budget is submitted to the OMB where amounts requested are assessed against the President's fiscal and policy objectives. After submitting its budget to OMB, EM-40, working with EM-10, uses the information obtained from the IRB process to explain, document, and justify its budget request. Following OMB approval, the budget is submitted to Congress.

4.0 THE DOE BUDGET

When developing a budget under EM-40, the EM-40 Management Plan and Management Policies and Requirements documents (March 1992 - Rev. 1) should be used, since these documents provide formal guidance and references on EM-40's budget and program management policies and requirements. The submission of budget request documentation by Field Offices, as defined in DOE Order 5100.3 and other 5100 series orders (see references), initiates the budget development process at Headquarters.

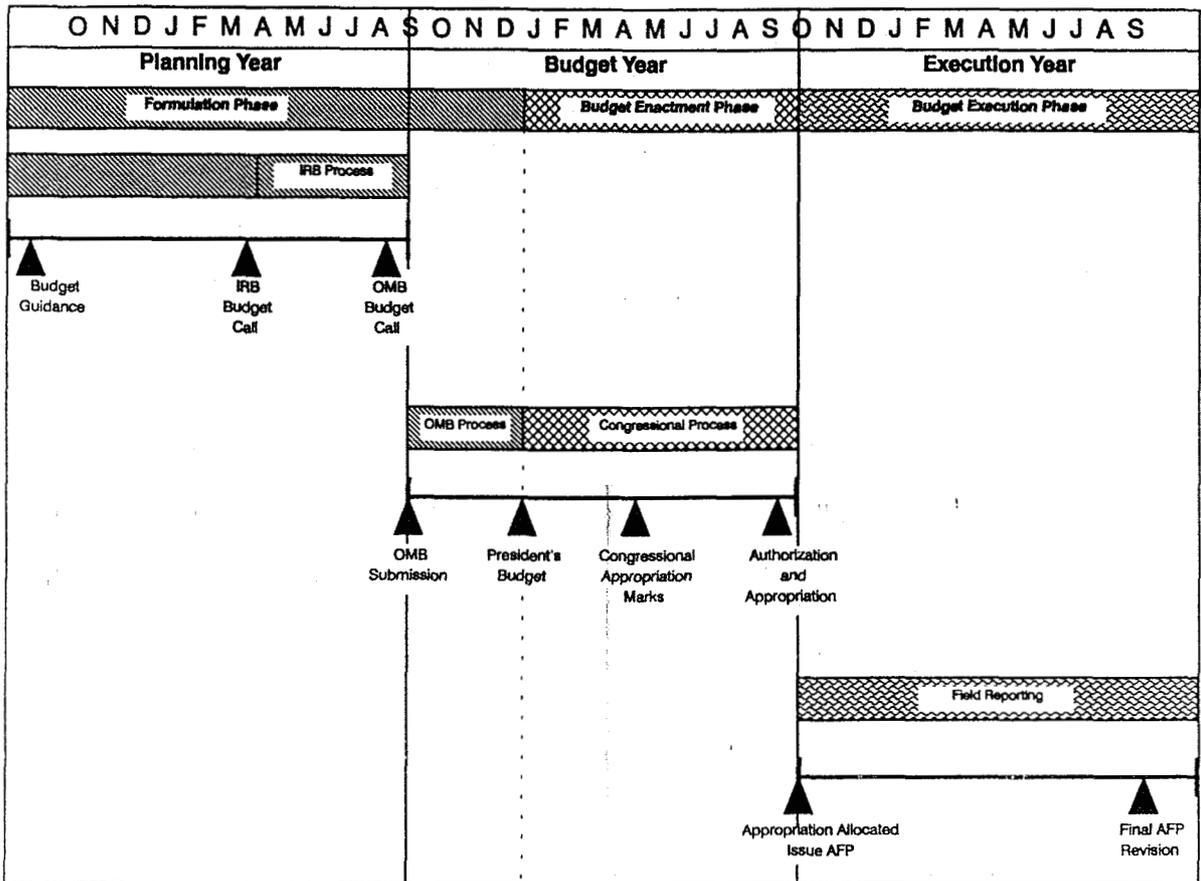
The DOE budget process consists of three consecutive phases: Formulation, Enactment, and Execution. These phases are described in the following sections (and are illustrated in Exhibit J-2, DOE Budget Process).

4.1 Budget Formulation

4.1.1 Internal Review Budget

During the budget formulation, organizations must rank various funding levels for each decision unit above 90% of the OMB target. Each Departmental organization will submit its budget request in the structure contained in the annual call letter. These budgets shall be submitted with written justifications of funding levels and potential impacts (in the case of decremental funding). Budget submissions for IRB shall address three levels of funding:

**Figure J-2
DOE Budget Process**



ecp:d&d1.ppt

- Program Planning Level - reflects decisions made as part of the strategic program planning process or, in absence of such decisions, reflects program desired level of funding
- OMB Target Level - typically a level of funding distributed by OMB to the decision unit level of detail
- Decremental Level - reflects a reduced level of funding for a decision unit which, when added together with other decremental levels of an organization's decision units, equals 90% of the OMB guidance for the organization.

4.1.2 OMB Budget Submission

The OMB Budget submission provides a mechanism for the annual OMB review of the Department's resource requirements. The OMB Budget represents an update of the IRB to reflect the Secretary's decisions on the Department's budget. The OMB Budget is broken into four categories:

- 1) Regular Request - consists of items for which funds are requested and which typically have existing substantive legislation authorizing the program. This represents the majority of the funds requested
- 2) Legislative Program - represents a notification to Congress that a request for funds will be submitted upon enactment of substantive legislation
- 3) Program Supplementals - includes amounts needed for the current year due to unanticipated increases in resource requirements
- 4) OMB Circular A-11, "Crosscut Materials" - includes specific analytical exhibits in specific subject areas.

4.1.3 Congressional Budget Request

Congressional review of the budget consists of several distinct phases in which the Department is involved to varying degrees. The activities in which DOE is involved include: (1) briefing of Congressional staff and press; (2) preparing and transmitting detailed budget justifications; (3) Congressional hearing and markup sessions; and (4) Congressional appeal process.

Congressional House subcommittees begin their review in mid-February by holding hearings where testimony is taken from DOE officials on areas within their jurisdiction. Senate subcommittees then proceed through a process similar to that of the House. Differences between the House and Senate measures are resolved through conferences between selected members of both House and Senate committees.

4.2 Budget Enactment Phase

This phase pertains to the Congressional response to the President's requested budget and the enactment of legislation appropriating funds for DOE programs during the succeeding fiscal year. No funds in the budget may be expended or obligated until such time as an appropriations act is passed by Congress and signed into law by the President.

Activities associated with this phase are characterized by Congressional hearings and consultation between Congress and DOE Program Managers. The process provides DOE with the opportunity to defend its programs and to justify the amounts requested.

4.3 Execution Phase

This phase is concerned with the current year budget and involves the use of appropriated funds. If Congress appropriates less money than EM-40 requests, some projects will be allocated less than their budget request. Consequently, those projects (typically D&D) will have to modify their budget year plans. Once EM-40 Program Managers have made allocation decisions, and the Office of the Controller has authorized the designated amounts, an AFP is prepared. During program execution, unforeseen events or conditions encountered may necessitate changes to the AFP. These reprogramming, restructuring, and appropriation transfer proposals should be made in accordance with DOE Order 5160.1B.

5.0 BUDGET TERMINOLOGY

Activity Data Sheets (ADSs) - the basic planning and reporting unit to be submitted for the budget development process. ADSs are a multi-year work plan generally covering a seven year planning period (including the current year). For EM projects, ADSs describe scope of work, overall schedule, and funding requirements for the budget year plus the five succeeding years. ADSs shall be in accordance with guidance issued by EM-14, and in consultations with your Area Office Director.

Appropriation - an act of Congress that permits Federal agencies to incur obligations and to make expenditures in specific amounts.

Appropriation Account - an account established in the Treasury to record amounts available to an Agency for obligation and outlay.

Apportionment - the distribution made to an agency by OMB of amounts available for obligation in an appropriation account. The distribution makes amounts available for specified time periods, programs, activities, and projects. The amounts apportioned limit the obligations that may be incurred.

Approved Funding Plan (AFP) - Once EM-40 Program Managers have made allocation decisions, and the Office of the Controller has authorized the designated amounts, an AFP is prepared allocating appropriated funds to the DOE Field Offices responsible for executing individual projects of the Program. The AFP is reviewed and changed monthly during the fiscal year through coordination between the Field Office Project Manager, EM-40 Program Manager, and EM Office of Financial Management, Budget Operations Division (EM-131).

Congress - appropriates money to Federal agencies based on President's budgets and congressional budget figures.

Continuing Resolution - legislation enacted by Congress to provide budget authority for specific ongoing activities in cases where the regular fiscal year appropriation for such activities has not been enacted by the beginning of the fiscal year.

Decision Unit - a program entity for which various funding requests may be developed; it represents a division of all of the activities for which managers are responsible into discrete elements.

Fiscal Year - a 12-month period beginning on October 1 and ending the following September 30.

Office of Management and Budget (OMB) - agent of the President; reviews proposed Federal agencies' budgets, revises the budgets, and creates passback budgets that are returned to Federal agencies; allocates dollars to Federal agencies based on Congressionally-approved budgets.

Operating Year Budget - the budget approved by Congress and the President for the present fiscal year; it establishes total authority available to DOE (also called the execution or current year budget).

Outyear Budget - a planning tool for the second fiscal year following the present fiscal year; it becomes the next fiscal year's President's budget.

Passbacks - amended budget received after it has been reviewed by a party involved in the budget process (e.g., DOE Controller [CFO], OMB) other than the one submitting it. Questions often accompany passbacks and as a result of the answers, passbacks may be further amended.

President's Budget - a planning tool for the year following the present fiscal year; it becomes the next fiscal year's operating year budget. Compilation of Federal Agencies approve budgets submitted to Congress.

Appendix K

Memorandum of Understanding between the Office of Waste Management and the Office of Environmental Restoration

September 15, 1992

memorandum

DATE: September 15, 1992

REPLY TO
ATTN OF: EM-30

SUBJECT: Memorandum of Understanding between the Office of Waste Management
and the Office of Environmental Restoration (MOU)

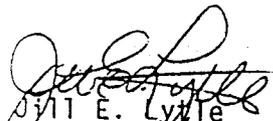
TO: Distribution

The Office of Waste Management, EM-30, and the Office of Environmental Restoration, EM-40, have completed the development of the subject MOU which defines the responsibilities for waste treatment, storage, and disposal (TSD) facilities. The main purpose of the MOU is the establishment of a mechanism for coordination between the two programs to assure an integrated approach for planning, siting, constructing and operating treatment, storage and disposal facilities.

For that purpose a Facility Planning Board has been established at Headquarters to review all recommendations for new facilities and to determine the need, scope, management and funding strategy for each recommendation.

It is requested that each field office establish a coordination mechanism for its environmental restoration and waste management program managers in order to support the Headquarters Facilities Planning Board. Please provide, by October 30, 1992, the name of your point-of-contact for this Planning Board to Joseph Coleman, EM-35. He can be reached on FTS 301/903-7410.

We look forward to working with you to develop a well-coordinated, efficient approach to the development of TSD facilities across the complex. This will assure that the capacities to meet the requirements of both programs will be on line when needed. Thank you for your cooperation.


Jill E. Lytle
Deputy Assistant Secretary
for Waste Management
Environmental Restoration
and Waste Management


Roger P. Whitfield
Deputy Assistant Secretary
for Environmental Restoration
Environmental Restoration
and Waste Management

Attachment

DISTRIBUTION:

James E. Bickel, Assistant Manager for Energy and Special Programs,
DOE Albuquerque Field Office
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DOE Albuquerque Field Office
D. L. Bray, Assistant Manager for Projects and Energy Programs,
DOE Chicago Field Office
W.D. Adams, Acting Manager for Fernald Office
T. F. Burns, Acting Assistant Manager for Environmental Restoration
and Waste Management, DOE Idaho Field Office
Joseph N. Fiore, Director Environmental Restoration and Waste Management
Division, DOE Nevada Field Office
R. M. Stallman, Assistant Manager for Nuclear Programs,
DOE Idaho Field Office
J. K. Magruder, Assistant Manager for Operations,
DOE Nevada Field Office
W. D. Adams, Assistant Manager for Environmental Restoration and
Waste Management, DOE Oak Ridge Field Office
J. P. Hamric, Deputy Manager for Operations,
DOE Richland Field Office
James K. Hartman, Assistant Manager for Environmental Management,
DOE Rocky Flats Office
Susan Brechbill, Acting Assistant Manager for Environmental Management and
Support, DOE San Francisco Field Office
L. C. Sjostrom, Assistant Manager for Environmental Restoration
and Waste Management, DOE Savannah River Field Office
L. Little, Assistant Manager for Environmental Management,
DOE Richland Field Office
J. Davis, Assistant Manager for Environmental Restoration and Waste
Management, DOE San Francisco Field Office

cc: Leo P. Duffy, EM-1
Paul D. Grimm, EM-2/10
Randal S. Scott, EM-20
Clyde W. Frank, EM-50
W. W. Bixby, EM-60
Lawrence H. Harmon, EM-32
James A. Turi, EM-33
Mark W. Frei, EM-34
Joseph A. Coleman, EM-35
John C. Tseng, EM-36
James J. Fiore, EM-42
William E. Wisenbaker, EM-43
Sally A. Mann, EM-44
Ralph G. Lightner, EM-45
Lynwood H. Henderson, CR-10
William Dennison, GC-10
Muriel L. Scarborough, PR-24
Raymond P. Berube, EH-20

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE
OFFICE OF WASTE MANAGEMENT
AND
OFFICE OF ENVIRONMENTAL RESTORATION**

I. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to assure an integrated approach for planning, siting, and managing waste treatment, storage, and disposal facilities between the Office of Environmental Restoration and the Office of Waste Management.

II. SCOPE

The MOU defines management responsibilities, data requirements, field coordination, and a Field Headquarters interface and decision mechanism for the development of an integrated, efficient, cost effective waste management system to achieve an acceptable overall risk to public health and safety and the environment.

III. RESPONSIBILITIES

General

The Office of Waste Management (EM-30) is responsible for all DOE facilities, operations, or sites which are used for the treatment, storage, or disposal of radioactive, hazardous, mixed waste, and sanitary waste which have been properly characterized, packaged and labeled. The Office of Environmental Restoration (EM-40) is responsible for remediating inactive potential release sites contaminated by past Department of Energy (DOE) nuclear activities and the decontamination and dismantling of surplus nuclear facilities. The treatment, storage, and disposal of waste generated by EM-40 in conducting its remedial activities is the responsibility of EM-30 unless otherwise agreed to in accordance with the MOU. EM-30 will manage all treatment, storage, and disposal (TSD) facilities on DOE installations where there is an established EM-30 presence. Where an EM-40 activity is not on a DOE installation or where there is no EM-30 presence on a DOE installation managed by EM-40, generally it will be more efficient and cost-effective for EM-40 to manage the relevant TSD facilities. In some instances, these facilities may also be appropriate for management of waste from EM-30 installations.

In cases where both EM-30 and EM-40 have responsibility for various TSD facilities at an installation, EM-30 will in general be responsible for the planning and implementation of site-wide waste management and regulatory compliance activities at the installation, unless otherwise agreed to by a site-specific agreement.

Contaminated media, such as groundwater and soil, when treated, stored or disposed of in a dedicated facility in the area of contamination, would generally not be considered "waste" for the purposes of this MOU. For example, a soil washing facility, groundwater pump-and-treat unit, or in situ treatment unit for contaminated media, along with associated interim storage in adjacent areas, will be managed by EM-40 as part of their remedial action project. Waste generated by such processes will be managed by EM-30 unless otherwise agreed to in accordance with the MOU.

1. The Deputy Assistant Secretary for Waste Management is responsible for:
 - a. Treating, storing, and disposing of the wastes generated by DOE activities in accordance with DOE Orders and applicable Federal, State, and local laws and regulations.
 - b. Planning, designing, constructing, budgeting, operating, and maintaining treatment, storage, and disposal facilities for wastes generated by DOE operations, unless otherwise delegated to EM-40.
 - c. Establishing criteria for accepting waste from generators in accordance with DOE Orders and applicable Federal, State, and local laws and regulations.
 - d. Coordinating with all waste generators to assure the availability of capacity and capability to accept waste.
 - e. Providing advice, consultation and assistance to EM-40 in the planning, design, construction, regulatory compliance, operation, and maintenance of waste treatment, storage, and disposal facilities managed by EM-40.
 - f. Conducting reviews of EM-40 waste treatment, storage, and disposal facilities as required by DOE Orders (e.g., DOE Order 5820.2A).

2. The Deputy Assistant Secretary for Environmental Restoration will be responsible for:
 - a. Providing annual plans and projections of anticipated volumes by waste type which are intended for shipment to EM-30 facilities so that EM-30 may assure availability of needed waste management capacity and capability.
 - b. Assuring interim management of waste generated as a result of EM-40 environmental restoration activities.
 - c. Characterizing, packaging, and labeling waste to be transferred to EM-30 in accordance with EM-30 waste acceptance criteria.
 - d. Transporting waste to the appropriate EM-30 facility.
 - e. Planning, designing, constructing, budgeting, operating, and maintaining treatment, storage and disposal facilities at EM-40 sites in coordination with EM-30.
 - f. Including life-cycle costs and other impacts for waste management when assessing remediation and D&D alternatives in coordination with EM-30.

IV. COORDINATION

DOE Field Office Environmental Restoration program managers will identify annually to their respective Field Office Waste Management program managers the types and quantities of waste and the associated waste generation schedule to ensure that EM-40 requirements are addressed in the local EM-30 waste management planning. During the feasibility study and the remedy selection process, the waste management impacts of various remediation alternatives under consideration will also be discussed with Waste Management program managers. The Field Office Waste Management program managers will coordinate with the Environmental Restoration program managers in the planning and design of new TSD facilities to assure that all potential requirements are identified and accommodated. The Field Office identified requirements will be coordinated with the cognizant EM-30 and EM-40 Headquarters program managers to validate the needs and ensure incorporation into long-term, complex-wide program plans.

V. REVIEW/APPROVAL

A Facility Planning Board chaired by EM-30 will review annually the data provided by Field Offices and make a determination on all facility recommendations. EM-30 and EM-40 shall each designate four members of the Board. The nine-member Board will examine, on a case-by-case basis, facility requirements identified by EM-30 and EM-40 and will determine the need, scope, management, and funding strategy for each recommendation.

The Board will address specific issues within the scope of the MOU and help coordinate and implement its provisions for both interim and long-term periods. The Board will evaluate the effectiveness of the provisions in this MOU and recommend changes as appropriate. Changes to the MOU will require an amendment to the MOU.

The Board will assist in the development of site-specific agreements consistent with the MOU. Site-specific agreements will need approval by the appropriate Field Office, the Board, and appropriate EM-30 and EM-40 Headquarters Program Managers.

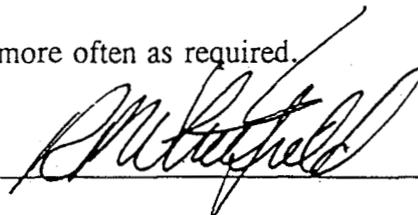
The Board may also review and comment on plans developed by a Field Office or its operator or contractors that implement provisions of the MOU or a site-specific agreement. The Board will make recommendations to appropriate EM-30 and EM-40 staff regarding documents selected by the Board for review.

The Board will hold meetings at quarterly intervals or more often as required.



Deputy Assistant Secretary for Waste Management, Office of Environmental Restoration and Waste Management

9/15/92
Date



Deputy Assistant Secretary for Environmental Restoration, Office of Environmental Restoration and Waste Management

9/15/92
Date

K-5

Appendix L

List of Acronyms

Appendix L

List of Acronyms

ACGIH	American Conference of Government Industrial Hygienists
ADM	Action Description Memorandum
ADS	Activity Data Sheet
AEA	Atomic Energy Act of 1954
ALARA	As-Low -As-Reasonably-Achievable
ALEA	As-Low-as-Economically-Achievable
ANSI	American National Standards Institute
API	American Petroleum Institute
ARAR	Applicable or Relevant and Appropriate Requirement
AS	Activity Specifications
ASA	Auditable Safety Analysis
ASME NQA-1	American Society of Mechanical Engineers Nuclear Quality Assurance
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
BCL	Battelle Columbus Laboratories
CA	Corrective Action or Corrective Activity
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAMU	Corrective Action Management Unit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMAA	Crane Manufacturers Association of America
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COG	Continuity Of Government
CONOPS	Conduct of Operations Requirements
COO	Conduct Of Operations
CWA	Clean Water Act
CX	Categorical Exclusion
CYWP	Current Year Work Plan
DOC	Decommissioning Operations Contractor
DOD	Department of Defense
DOE	Department of Energy
DOL	Department of Labor
DOT	Department of Transportation
DP	Office of Defense Programs
EA	Environmental Assessment
EAC	Estimate-At-Completion
EE/CA	Engineering Evaluation/Cost Analysis

EH	Office of Environment, Safety and Health
EIS	Environmental Impact Statement
EM	Office of Environmental Management
EM-30	Office of Waste Management
EM-40	Office of Environmental Restoration
EM-60	Office of Nuclear Materials and Facility Stabilization
EPA	Environmental Protection Agency
ER	Office of Energy Research
ERMC	Environmental Restoration Management Contractors
ES&H	Environmental Safety and Health
FE	Office of Fossil Energy
FFA	Federal Facilities Agreement
FFCA	Federal Facilities Compliance Act
FONSI	Finding Of No Significant Impact
FS	Feasibility Study
FSAR	Final Safety Analysis Report
FTE	Full Time Equivalent
FUSRAP	Formerly Utilized Sites Remedial Action Program
GEIS	Generic Environmental Impact Statement
GOCO	Government Owned Contractor Operated
GSA	General Services Administration
HAPs	Hazardous Air Pollutants
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HLMW	High Level Mixed Waste
HLW	High-Level Waste
HQ	Headquarters
HSWA	Hazardous and Solid Waste Amendments (to RCRA)
HVAC	Heating, Ventilation and Air Conditioning
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
IEEE	Institute of Electrical and Electronic Engineers
IRS	Interim Retrieval Storage
IVC	Independent Verification Contractor
LDR	Land Disposal Restriction
LLMW	Low Level Mixed Waste
LLW	Low-Level Waste
LTSM	Long-Term Surveillance and Maintenance
M&O	Management and Operating
MACT	Maximum Achievable Control Technology
MIP	Maintenance Implementation Plan
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

MSA	Major System Acquisition
MSHA	Mine Safety and Health Administration
NARA	National Archives and Record Administration
NARM	Naturally Occurring or Accelerator-produced Radioactive Material
NCP	National Contingency Plan
NDE/NDA	Non-Destructive Examination/Non-Destructive Assay
NE	Office of Nuclear Energy
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIEHS	National Institute of Environmental Health Sciences
NIST	National Institute of Standards and Technology
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NR	Office of Naval Reactors
NRC	Nuclear Regulatory Commission
	National Response Center
NUREG	NRC Acronym used for regulatory guidance documents
OMB	Office of Management and Budget
OO	Operations Office
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Requirement
OSWER	Office of Solid Waste Emergency Response
PA/SI	Preliminary Assessment/Site Inspection
PCBs	Polychlorinated Biphenyl Compounds
PEIS	Programmatic Environmental Impact Statement
PMP	Project Management Plan
POTW	Publicly-Owned Treatment Works
PTS	Project Tracking System
QA	Quality Assurance
QAP	Quality Assurance Plan
QAP	Quality Assurance Plan
QAPjP	Quality Assurance Project Plan
QAPP	Quality Assurance Project Plan
R&D	Research and Development
RA	Remedial Action
RAPIC	Remedial Action Program Information Center
RCM	Radiological Control Manual
RCRA	Resource Conservation and Recovery Act

RD	Remedial Design
RESRAD	Residual Radiation
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI/FS	Remedial Investigation/Feasibility Study
RI	Remedial Investigation
ROD	Record of Decision
RSM	Radioactively Contaminated Scrap Metal
RTR	Real-Time Radiography
S&M	Surveillance and Maintenance
SAR	Safety Analysis Report
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SEN	Secretary of Energy Notice
SNF	Spent Nuclear Fuel
SNM	Special Nuclear Material
SOPs	Standard Operating Procedures
STP	Site Treatment Plan
SWMUs	Solid Waste Management Units
TCLP	Toxic Characteristic Leaching Procedure
TMC	Technical measurement Center
TRU	Transuranic
TRUMW	Transuranic Mixed Waste
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage and Disposal
TSEDF	Treatment, Storage, or Disposal Facility
TSR	Technical Safety Requirement
UMTRAP	Uranium Mill Tailings Remedial Action Program
USDA	U.S. Department of Agriculture
USTs	Underground Storage Tanks
WAC	Waste Acceptance Criteria
WAP	Waste Analysis Plan
WBS	Work Breakdown Structure
WM	Office of Waste Management (EM-30)
WMPP	Waste Management Project Plan

Appendix M

Glossary

Appendix M Glossary

Sources of Definitions.

- [1] DOE/EM-0013P Environmental Restoration and Waste Management (EM) Program. An Introduction. Revised 12/92
- [2] The Environmental Management Project Manager's Handbook for Improved Project Definition, February, 1995
- [3] Working definitions, DOE/EPA working group on performance of decommissioning under CERCLA, 1995
- [4] Working definitions, EM-40/EM-60 working group on transition Memorandum of Understanding , 1993.
- [5] Environmental Guidance, CERCLA Removal Actions, DOE/EH-0435, September, 1994
- [6] Defined in this Manual; or modified in this Manual from another source (identified as [6][No.])
- [7] EM-40 Management Plan, DOE/EM/RM/02, March 1992

Atomic Energy Act [1]

The Act (1954) which placed production and control of nuclear materials within a civilian agency, originally the Atomic Energy Commission, now the Department of Energy.

Administrative Record [5]

A collection of documents established in compliance with the requirements set forth in section 113(k) of CERCLA, as amended, consisting of information upon which the CERCLA lead agency bases its decision on the selection of response actions. The Administrative Record file should be established at or near the facility at issue and made available to the public.

Analysis of Removal Alternatives [6]

The documented study and comparison of the alternative approaches (involving principally the alternative end condition criteria that are to be achieved) of completing a decommissioning project (removal action). If the action is being performed in accordance with CERCLA requirements, the analysis satisfies the requirement of 40 *CFR* 300.415(b)(4)(I) of the NCP. If decommissioning is being conducted as a non-CERCLA action, the analysis is prepared to support the environmental review of the action required under NEPA.

Applicable or Relevant and Appropriate Requirements (ARARs) [2]

(1) Those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental, state environmental, or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable (see NCP section 300.5). (2) Requirements promulgated under Federal or State law that specifically address the circumstances at a Superfund site. (3) A requirement that environmental laws other than those under CERCLA, may be either "applicable" or "relevant and appropriate", but not both. Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate.

Categorical Exclusion (CX) [7]

A class of actions which either individually or cumulatively would not have a significant effect on the environment and therefore would not require the preparation of an EA or EIS.

Characterization [6] [1]

Facility or site sampling, monitoring and analysis activities to determine the extent and nature of contamination. Characterization provides the basis for acquiring the necessary technical information to select an appropriate cleanup alternative; to prepare a Decommissioning Plan for safe decommissioning; and to estimate the volume of waste to be generated.

Clean Water Act of 1977 [1]

Amended the Federal Water Pollution Control Act passed in 1956. Its objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Act's major enforcement tool is the National Pollutant Discharge Elimination System (NPDES) permit. The CWA addresses surface water only.

Clean Air Act [1]

The purpose of this Act is to "protect and enhance the quality of the Nation's air resources." Its primary application is through permits to regulate new and existing facilities. Of increasing importance are the National Emissions Standards for Hazardous Air Pollutants (NESHAPs). The CAA was passed in 1970 and amended in 1977 and 1990.

Comprehensive Environmental Response, Compensation, and Liability Act [1]

Federal statute (also known as Superfund) enacted in 1980 and reauthorized in 1986, that provides the statutory authority for cleanup of hazardous substances that could endanger public health, welfare, or the environment. Program activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority level on the list, and conducting, and/or supervising the ultimately determined cleanup and other remedial actions.

Community Relations Plan [5]

A plan for all responses lasting longer than six months that addresses local citizens' and officials' concerns about a hazardous waste release and integrates community relations activities into the technical response at a site. The CRP should help prevent disruptions and delays in response actions and partially fulfill the National Environmental Policy Act requirement for public notification and participation. If decommissioning is performed outside the CERCLA process the normal community relations program in effect at the DOE office should be followed.

Contamination [6] [4]

Unwanted radioactive and/or hazardous material which is disbursed on or in equipment, structures, objects, soil or water. Contamination may be either surface or volumetric (i.e., contamination incorporated within a solid material). Surface contamination may be either removable or fixed.

Deactivation [3]

The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public, and the environment until decommissioning is completed. Actions include the removal of fuel, draining and/or de-energizing of nonessential systems, removal of stored radioactive and hazardous materials and related actions. As the bridge between operations and decommissioning, based on facility-specific considerations and final disposition plans, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition.

Decommissioning [3]

Takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken at the end of the life of a facility to retire it from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted release or restricted use of the site.

Decommissioning Framework [6]

The series of action steps to be followed in completing the decommissioning of a contaminated DOE surplus facility as described in the *U. S. Department of Energy, Environmental Restoration Program, Implementation Guide*, May 22, 1995 found in Appendix A of this Manual. The same framework applies whether the decommissioning is being performed as a removal action under CERCLA or as an environmental restoration action outside the CERCLA arena.

Decommissioning Plan [6]

The document that constitutes Title II design for a decommissioning project which specifies the work to be done.

Decontamination [3]

The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition.

Dismantlement [3]

The disassembly or demolition and removal of any structure, system, or component during decommissioning and satisfactory interim or long-term disposal of the residue from all or portions of a facility.

Disposal [1]

Final placement or destruction of toxic, radioactive, or other waste, surplus or banned pesticides or other chemicals, polluted soils, and drums containing hazardous materials from removal actions or accidental releases. Disposal may be accomplished through use of approved, secure, regulated landfills, surface impoundments, land farming, deep well injection, or incineration.

Environmental Impact Statement (EIS) [1]

A document required for Federal Agencies by the National Environmental Policy Act for major project or legislative proposals significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and lists alternative actions. The statement documents the information required to evaluate the environmental impact of a project. Such a statement informs decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the environment.

Environmental Assessment [1]

A written environmental analysis which is prepared pursuant to National Environmental Policy Act to determine whether a federal action would significantly affect the environment and thus require preparation of a more detailed environmental impact statement..

Environmental Restoration [1]

Cleanup and restoration of sites contaminated with radioactive and/or hazardous substances during past DOE production activities.

Facilities [3]

Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Graded Approach [10 CFR 830]

A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with:

- (1) The relative importance to safety, safeguards, and security;
- (2) The magnitude of any hazard involved;
- (3) The life cycle stage of a facility;
- (4) The programmatic mission of a facility;

- (5) The particular characteristics of a facility; and
- (6) Any other relevant factor.

Hazardous Substance [5]

The term "hazardous substance" means (A) any substance designated pursuant to section 311(b)(2)(A) of the Federal Water Pollution Control Act (FWPCA); (B) any element, compound, mixture, solution, or substance designated pursuant to section 102 of CERCLA; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 2001 of the Solid Waste Disposal Act (SWDA) (but not including any waste the regulation of which, under the SWDA, has been suspended by Act of Congress); (D) any toxic pollutant listed under section 307(a) of the FWPCA; (E) any hazardous air pollutant listed under section 112 of the Clean Air Act; and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under sub-paragraphs (A) through (F) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

Hazardous Waste Operations and Emergency Response (HAZWOPER) [5]

Regulations established by the Occupational Safety and Health Administration to govern the health and safety of employees engaged in hazardous waste operations and emergency response. The regulations are found in 29 *CFR* Part 1910.120.

Health and Safety Plan (HASP) [5]

A site plan, required by the HAZWOPER regulations and prepared and followed by any employer whose workers engage in hazardous waste operations, which addresses the safety and health hazards of each phase of site operation and includes the requirements and procedures for employee protection. Guidelines for a HASP can be found in the DOE limited standard DOE-EM-STD-5503-94

High-Level Waste [1]

The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations high enough to require permanent isolation. It also includes other highly radioactive material that the Nuclear Regulatory Commission, consistent with existing law, determines to require permanent isolation.

Information Repository [5]

A file containing current information, technical reports, and reference documents regarding a CERCLA site. The information repository is usually located in a public building that is convenient for local residents, such as a public school, library, or city hall. The Administrative Record is often a significant portion of the information repository.

Local Agreement [6]

An interagency agreement, tri-party agreement or other understanding that establishes a local relationship between DOE, EPA, and the State on environmental restoration.

Low-Level Waste [1]

Radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material.

Mixed Waste [1]

Contains both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act.

National Emission Standards for Hazardous Air Pollutants (NESHAPs) [1]

The Clean Air Act establishes limits on the release of hazardous pollutants for which no ambient air quality standard is applicable. Under the March 7, 1989 proposed ruling NESHAPs will also address radioactive releases to the air.

National Priorities List (NPL) [1]

The Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under CERCLA (Superfund). A site must be on the NPL to receive money from the Trust Fund for remedial action. The list is based primarily on the score a site receives from the Hazardous Ranking System. EPA is required to update the NPL at least once a year.

National Environmental Policy Act of 1969 [1]

The Act which established the requirements for conducting environmental reviews of Federal actions that have the potential for significant impact on the human environment.

National Contingency Plan (NCP) [6] [5]

A short title for the National Oil and Hazardous Substances Pollution Contingency Plan. The NCP, 40 CFR Part 300, outlines the responsibilities and authorities for responding to releases into the environment of hazardous substances and other pollutants and contaminants under the statutory authority of CERCLA and section 311 of the Clean Water Act. The NCP is the principal statutory source for the performance of DOE decommissioning as a non-time critical removal action, when CERCLA applies.

Natural Resources [5]

Land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government, any foreign government, any Indian Tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian Tribe.

Natural Resources Trustees [5]

Federal officials designated by the President to act on behalf of the public as trustees for natural resources when there is injury to, destruction of, loss of, or threat to natural resources as a result of a release of a hazardous substance or a discharge of oil.

Preliminary Assessment [1]

The process of collecting and reviewing available information about a known or suspected waste site or release.

Project Plan [6]

The document that defines the decommissioning project and sets the initial cost, schedule and technical baselines for the project.

Quality Assurance/Quality Control [1]

A system of procedures, checks, audits, and corrective activities to ensure that all research design and performance, environmental monitoring and sampling, and other technical and reporting actions are of the appropriate quality.

Readiness Review [6]

A management review of documents, organizational structure, personnel qualifications, physical preparations and other factors to confirm that decommissioning operations (removal action, if under CERCLA) are ready to proceed. If the facility being decommissioning is classified as a nuclear facility per DOE-STD-1027-92, a graded operational readiness review (ORR) may be required in accordance with DOE Order 5480.31.

Release [40 CFR 300.5]

"spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching dumping, or disposing" of a hazardous substance, pollutant, or contaminant into the environment (40 CFR 300.5). This includes the abandonment or disposal of barrels or other closed receptacles containing hazardous substances, pollutants, or contaminants. The NCP also defines the term release to include a threat of release (40 CFR §300.5)

Removal Action [6][1]

[CERCLA] "The cleanup or removal of released hazardous substances from the environment, such actions as may be necessarily taken in the event of the threat of a release ..., such actions as may be necessary to monitor, assess, and evaluate the release or threat of release ..., the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release."

Remedial Site Evaluation [5]

A process to determine if a removal action is necessary. This evaluation includes a preliminary assessment and, if necessary, a site inspection.

Resource Conservation and Recovery Act [1]

RCRA, an amendment to the Solid Waste Disposal Act, was passed in 1976 to address the problem of how to safely dispose of municipal and industrial solid waste generated nationwide. It establishes a national policy to reduce or eliminate hazardous waste and conduct treatment, storage, or disposal to minimize its threat. RCRA was amended by the Hazardous and Solid Waste Amendments in 1984 to expand RCRA's scope and add detailed requirements

Risk Assessment [1]

The qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and/or the environment by the presence or potential presence and/or the use of specific pollutants.

Safe Shutdown [2]

An integral part of deactivation.

Sampling and Analysis Plans [5]

If environmental samples are to be collected during a removal action, DOE must develop a sampling and analysis plan that provides a process for obtaining data of sufficient quality and quantity to satisfy data needs. Sampling and analysis plans consist of two parts:

- **Field Sampling Plan**, which describes the number, type, and location of samples and the type of analyses
- **Quality Assurance Project Plan (QAPP)**, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in planning and documenting the removal action.

Sanitary Waste [1]

Waste, such as garbage, that is generated by normal housekeeping activities and is not hazardous or radioactive. The waste is disposed of in sanitary landfills. Sanitary waste also includes liquids which are treated in sewage treatment plants.

Site Inspection [1]

The collection of information from a CERCLA (Superfund) site to determine the extent and severity of hazards posed by the site. It follows a preliminary assessment and is more extensive. The purpose is to gather information necessary to score the site, using the EPA Hazard Ranking System, and to determine if the site presents an immediate threat that requires prompt removal action.

Solid Waste [1]

Non-liquid, non-soluble material ranging from municipal garbage to industrial waste that contains complex, and sometimes hazardous, substances. Solid waste also includes sewage sludge, agricultural refuse, demolition wastes, and residues. Technically, solid waste also refers to liquids and gases in containers.

Surplus Facility [1]

Any facility or site (including equipment) that has no identified programmatic use.

Surveillance and Maintenance (S&M) [3]

A program established during deactivation and continuing until phased out during decommissioning to provide in a cost effective manner for satisfactory containment of contamination; physical safety and security controls; and maintenance of the facility in a manner that is protective of workers, the public, and the environment.

Toxic Substance Control Act [1]

TSCA was enacted was enacted in 1976 to protect human health and the environment from unreasonable risk due to exposure to, manufacture, distribution, use or disposal of substances containing toxic chemicals. For example, under TSCA, any hazardous waste that contains more than 50 parts per million of polychlorinated biphenyls (PCBs) are subject to regulations under this Act.

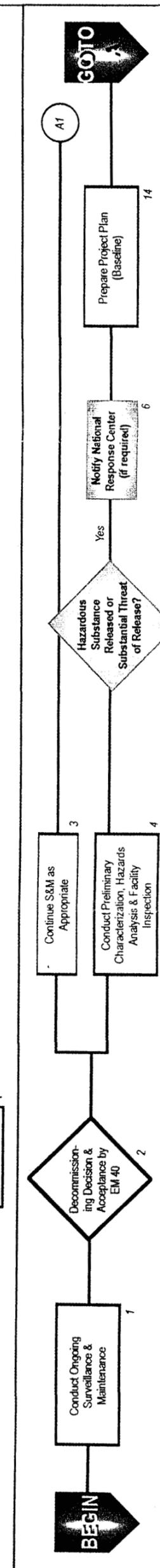
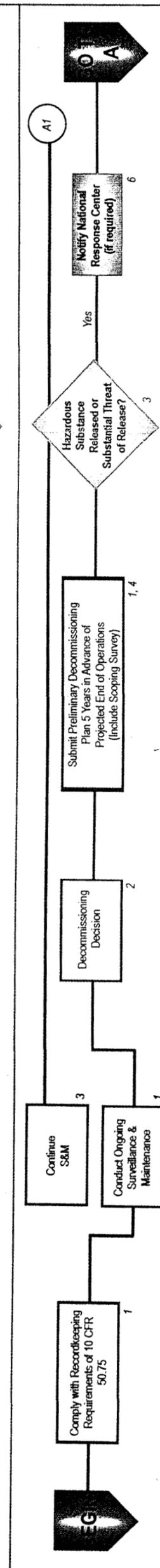
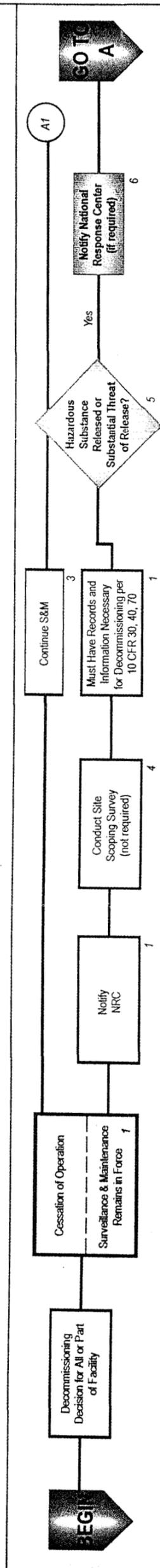
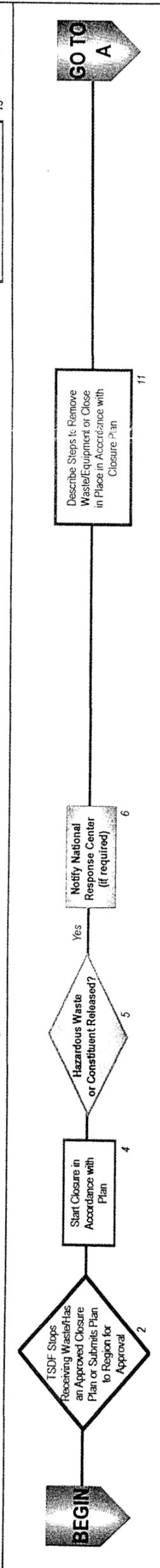
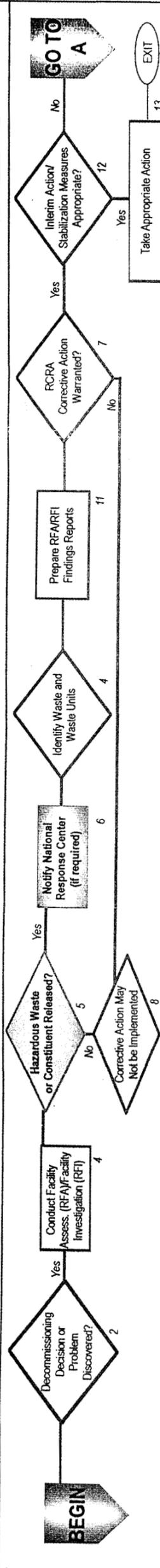
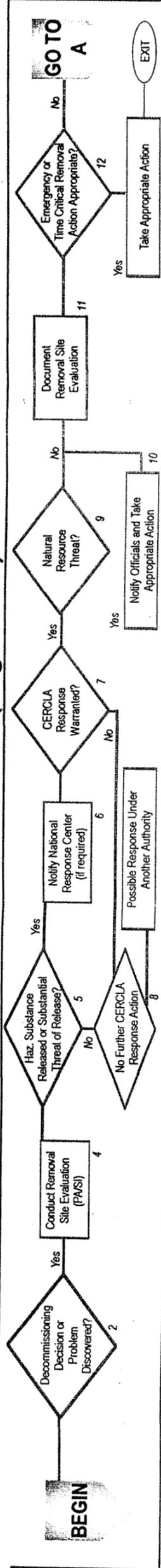
Transuranic Waste [1]

Waste that is contaminated with alpha-emitting transuranic nuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram of waste. Contact-handled TRU waste does not require shielding and has a surface dose rate of less than 200 millirem per hour. Remote-handled TRU waste has a surface dose rate greater than 200 millirem per hour and requires additional shielding because it presents an exposure hazard. the dose rates at the surface or remote-handled TRU waste packages fall within the 200 millirem to 1,000 rem per hour range. Some TRU waste was buried before these ranges were established. This is known as pre-1970 buried TRU waste.

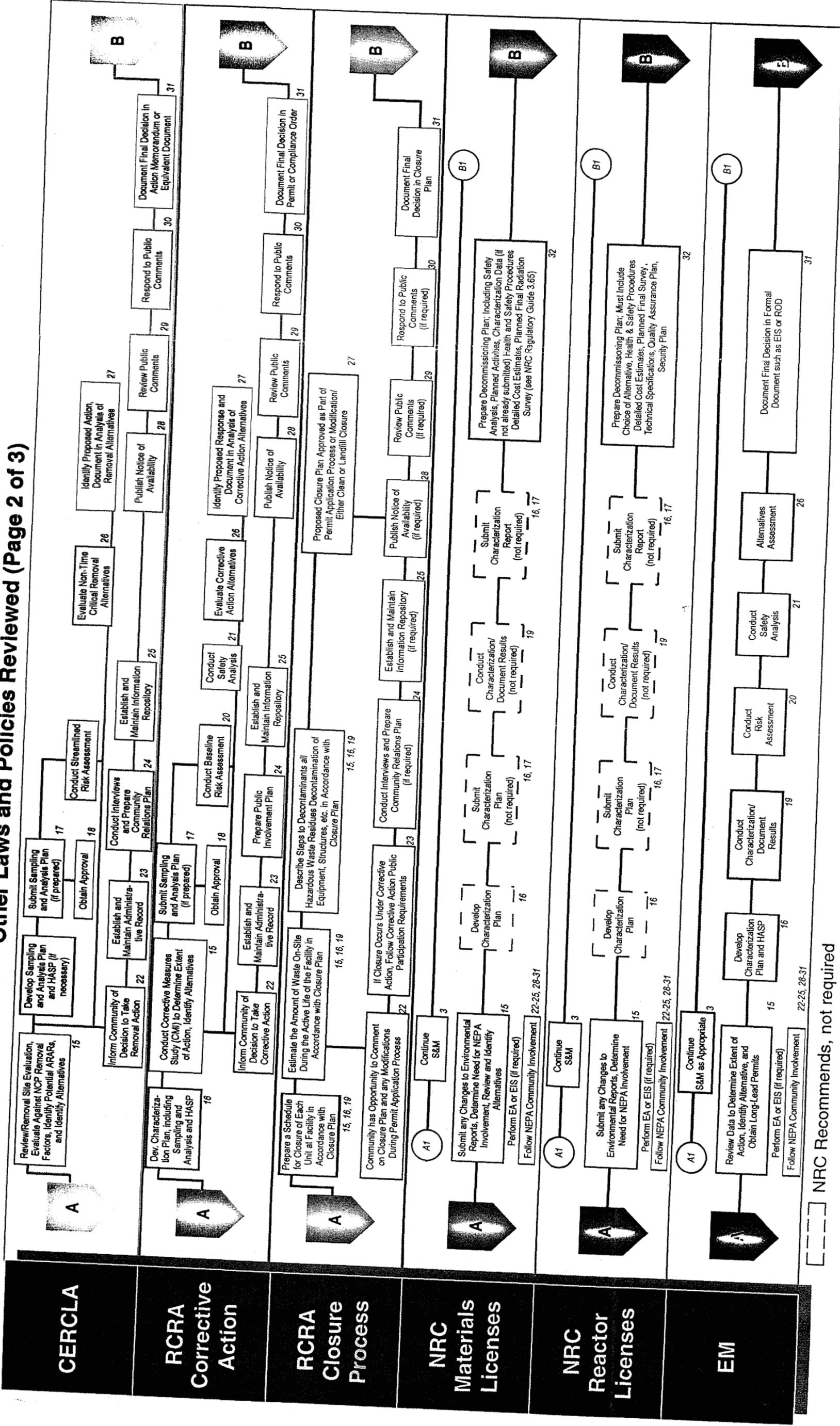
Waste Minimization [1]

The reduction, to the extent feasible, of radioactive and hazardous waste that is generated before treatment, storage, or disposal of the waste. Waste minimization includes any source reduction or recycling activity that results in either: 1) reduction of total volume of hazardous waste; 2) reduction of toxicity of hazardous waste; or 3) both.

APPENDIX C1 Other Laws and Policies Reviewed (Page 1 of 3)



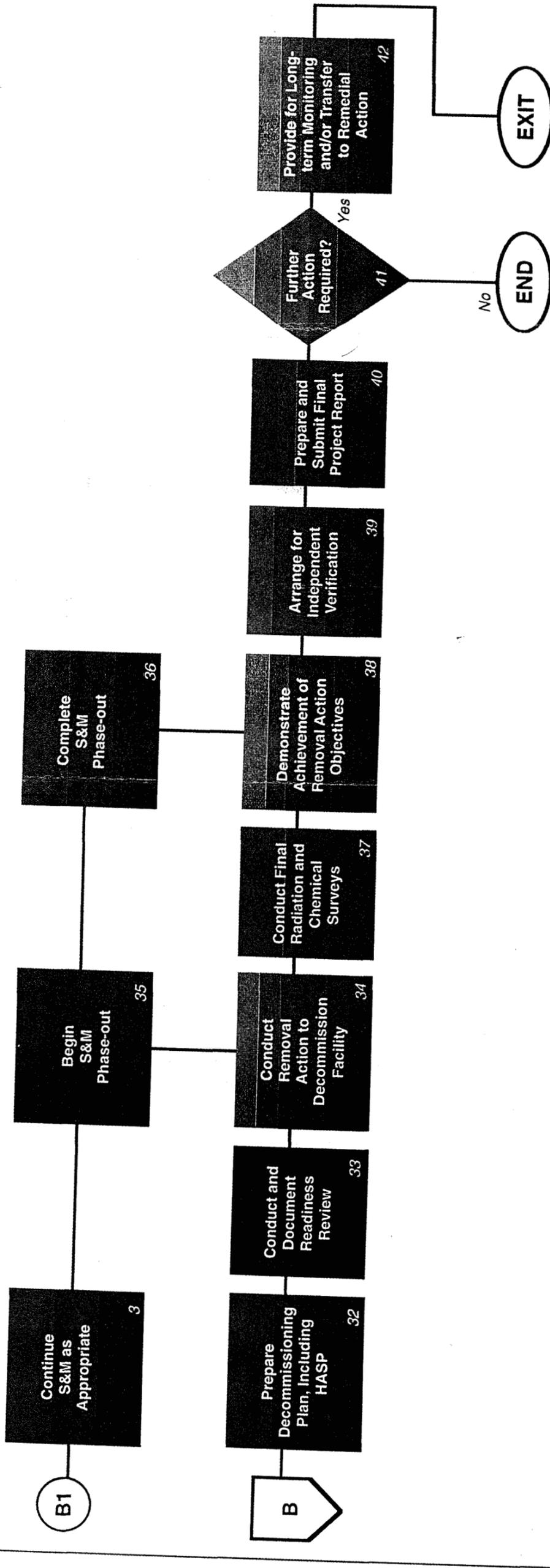
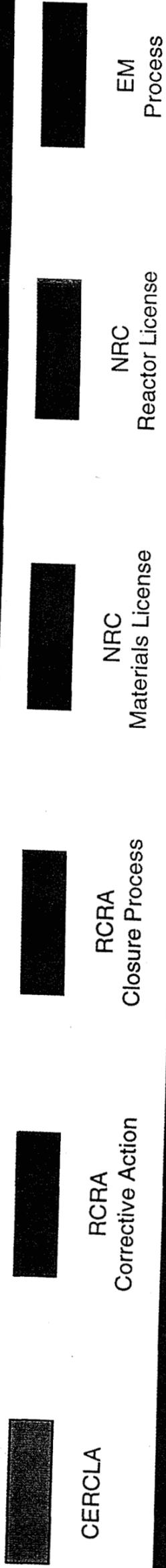
APPENDIX C1 Other Laws and Policies Reviewed (Page 2 of 3)



NRC Recommends, not required

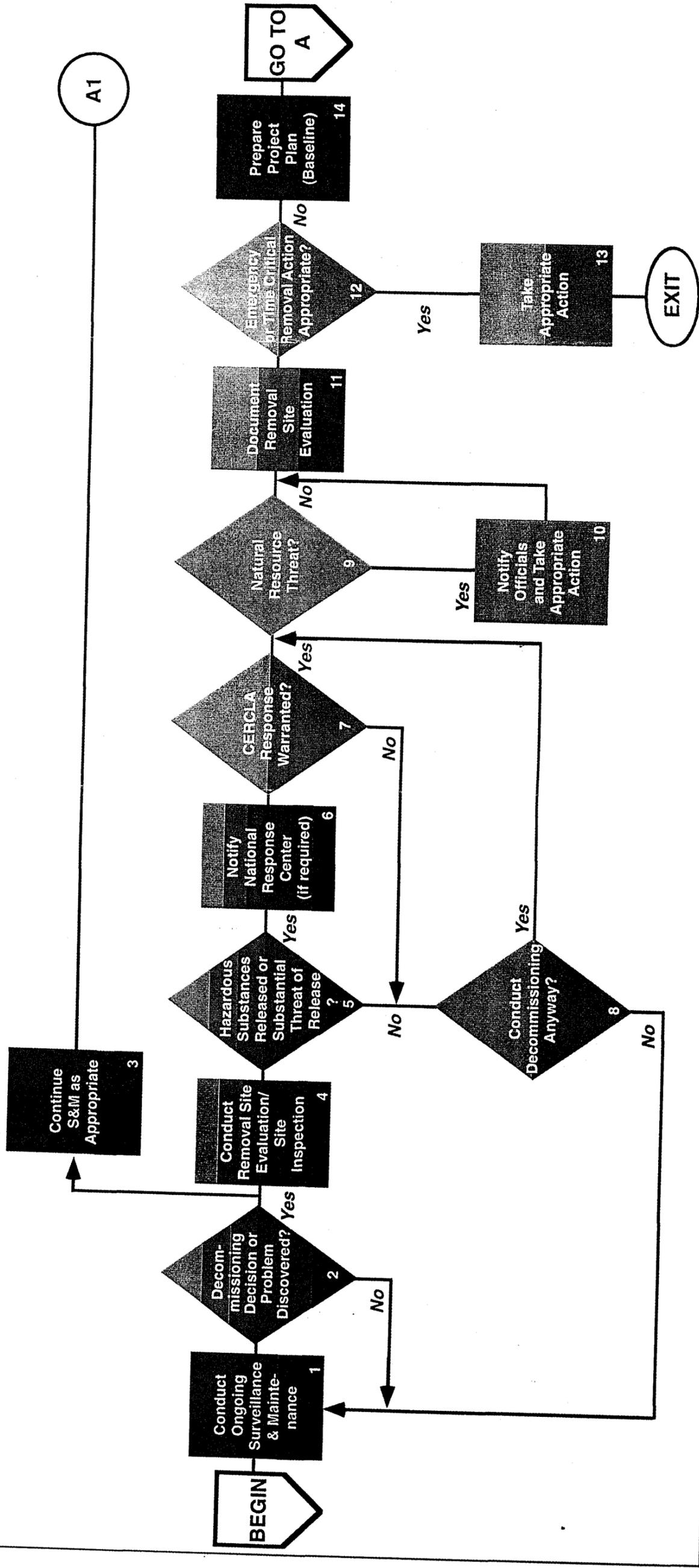
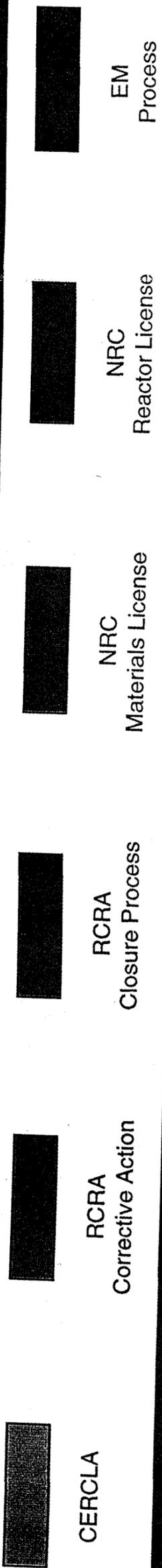
APPENDIX C2
Roll-Up of Other Laws and Policies Reviewed (Page 3 of 3)

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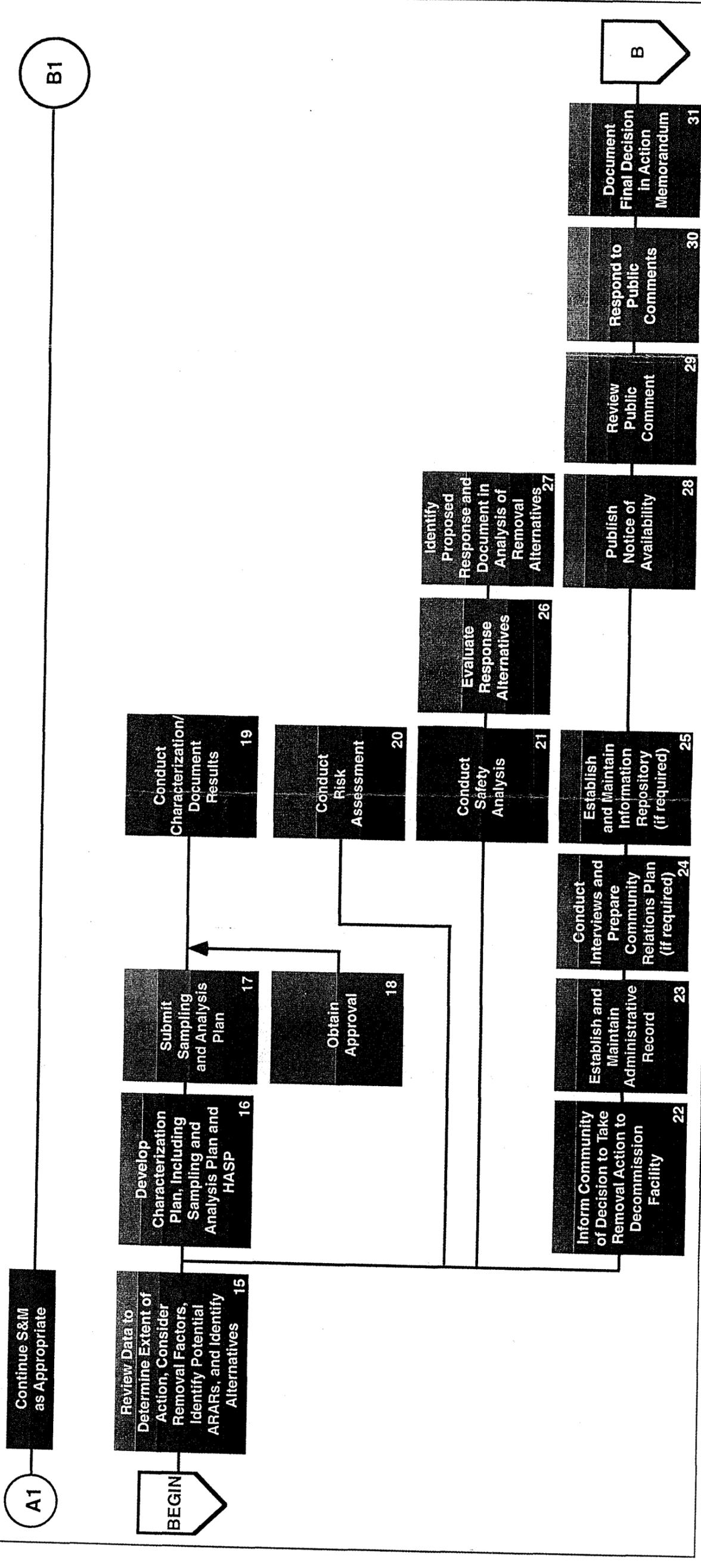
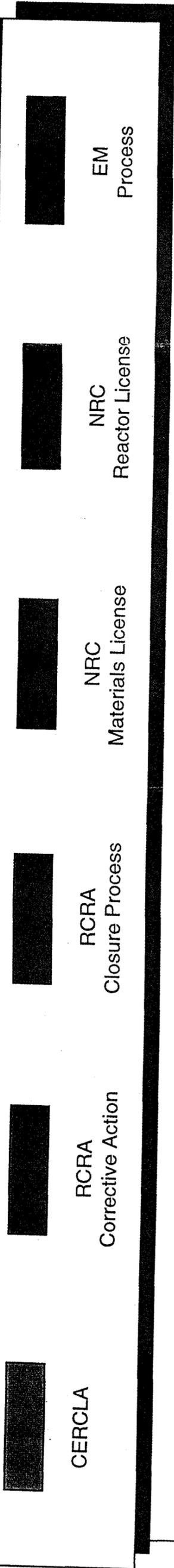
APPENDIX C2
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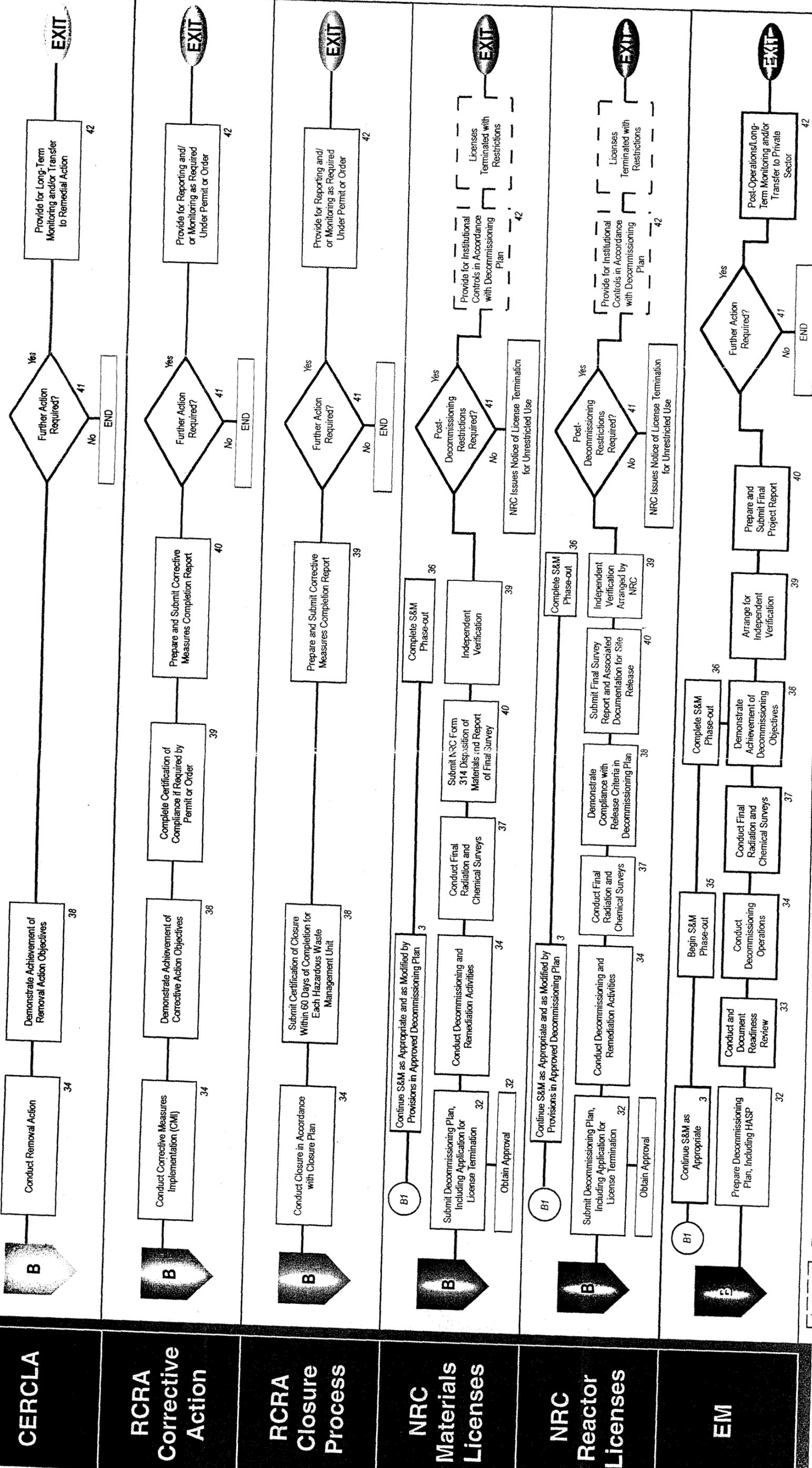


APPENDIX C2 Roll-Up of Other Laws and Policies Reviewed (Page 2 of 3)

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APPENDIX C1 Other Laws and Policies Reviewed (Page 3 of 3)



Proposed Rule 10 CFR 20.1405