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SITE MANAGEMENT PLAN
CONTAMINATION ASSESSMENTS
AND REMEDIAL ACTIVITIES
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

July; 1990

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2165 Eagle Drive, P.O. Box 10068
Charleston, South Carolina 29411-0068

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ecology and environment, inc.
316 SOUTH BAYLEN STREET, PENSACOLA, FLORIDA 32501, TEL. (904) 435-8925
International Specialists in the Environment

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1. INTRODUCTION

The purpose of this Site Management Plan is to outline management procedures for field activities to be conducted as part of contamination assessments and remedial activities at 37 sites of possible uncontrolled hazardous substance disposal at Naval Air Station (NAS) Pensacola, Escambia, County, Florida. Ecology and Environment, Inc. (E & E) will conduct this work as part of the Naval Installation Restoration Program (IRP) under Southern Division, Naval Facilities Engineering Command (SOUTHDIV) Contract No. N62467-88-C-0200.

Section 2 of this document provides background information on the NAS Pensacola facility. Section 3 describes the overall objectives of this program. Section 4 provides an overview of both the site-specific and program management issues.

Given that project conditions are expected to change throughout the course of this work, periodic updates of the Site Management Plan will be required. E & E will update this document on an as-needed basis.

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2. SITE BACKGROUND

[2.1 REGULATORY HISTORY]

The Naval IRP was established in 1983 to direc. the investigation and remediation of uncontrolled hazardous waste disposal sites associated with naval operations. Prior to 1983, these investigation/remediation activities had been directed under the Navy Assessment and Control of Installation Pollutants Program (NACIP).

In accordance with the National Contingency Plan (NCP), the Naval IRP is currently being implemented in full compliance with statutory . requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Furthermore, given that CERCLA/SARA specifies the inclusion of all applicable or relevant and appropriate requirements (ARARs), the Navy IRP also incorporates compliance with other laws and regulations, in particular, the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments of 1984 (HSWA).

[2.2 SITE BACKGROUND]

The NAS Pensacola installation occupies an area of approximately 5,800 acres on a peninsula in southern Escambia County, 5 miles southwest of the City of Pensacola. This peninsula is bounded on the north by Bayou Grande, and on the east and south by Pensacola Bay. Figure 2-1 is a location map of NAS Pensacola.

Located at the installation are various housing, training, and support facilities and a Naval Aviation Depot (NADEP), a large industrial complex for major repairs and refurbishment of aircraft engines and frames. The main industrial operations conducted at NAS Pensacola are concentrated in the older portion of the base, on the eastern end of the

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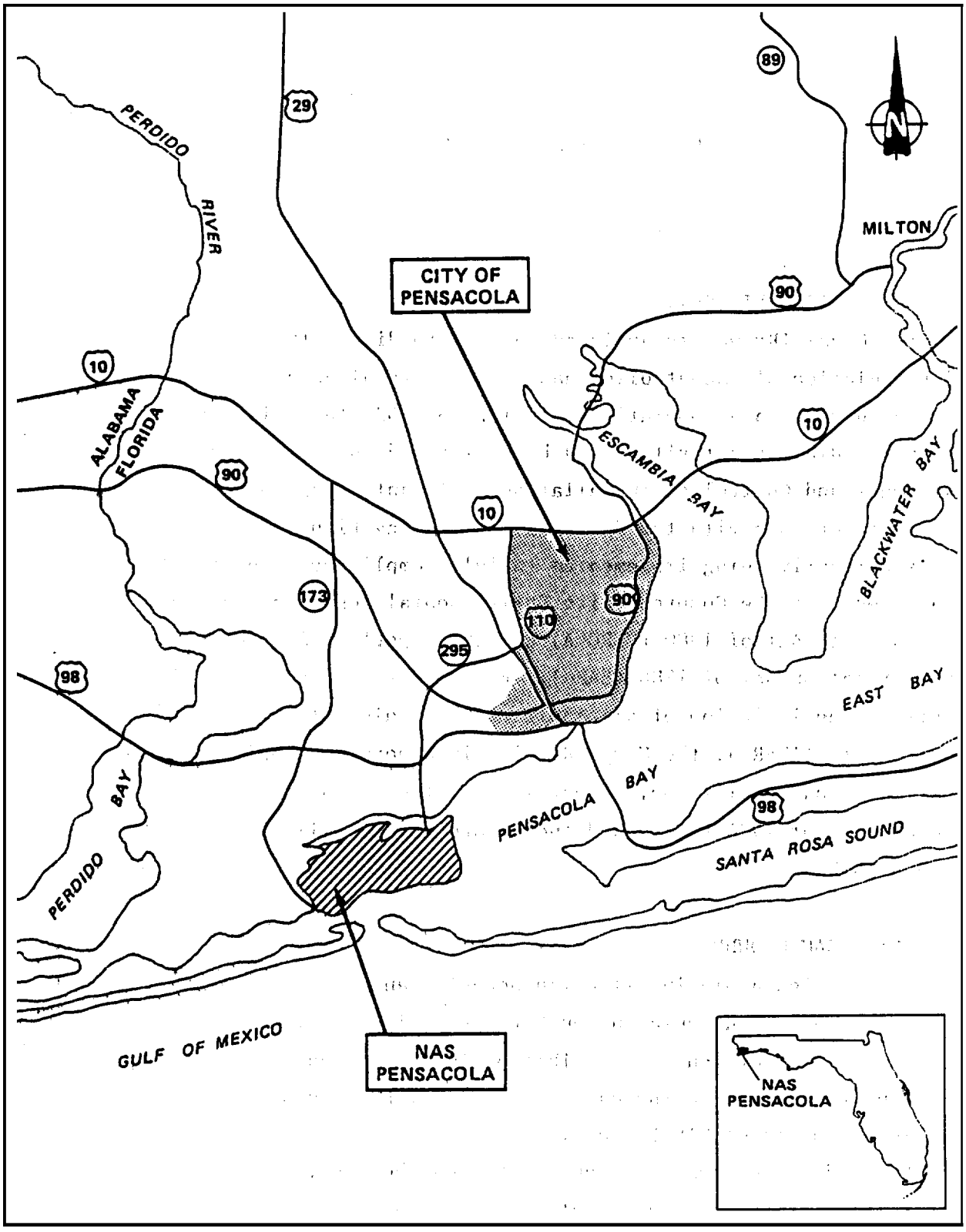

SCALE

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Figure 2–1 LOCATION OF NAS PENSACOLA

peninsula. The western end primarily contains the main airfield (Forrest Sherman Field) and undeveloped forest land.

Many activities involving hazardous materials have historically been conducted at NAS Pensacola. Some of the activities are no longer performed, and to a large extent there are no records of the former activities. Solid wastes have been disposed of primarily at two landfill areas: one west of the golf course site (Site 1, Sanitary Landfill), and the other north of Chevalier Field (Site 11, North Chevalier Disposal Area). Liquid wastes from the NADEP operations were discharged to storm sewers until 1973, when an industrial'sewer system and industrial wastewater treatment plant (IWTP) were installed. Other activities involving hazardous materials include pesticide application, use of radioactive materials, storage of transformers, transport and storage of fuel, and firefighting/crash crew training.

Previous environmental studies of NAS Pensacola were conducted under the NACIP Program, and consisted of an Initial Assessment Study (IAS) followed by a two-part Confirmation Study. The on-site survey portion of the IAS was performed in 1982 by a team of Navy environmental specialists. The IAS final report was released in June 1983. Geraghty & Hiller, Inc. (G & M), was retained in 1984 to perform the Confirmation Study, which consisted of a Verification Study followed by a Characterization Study. Final reports were issued in July 1984 and March 1986, respectively. Groundwater, surface water, sediment, and soil samples were collected and analyzed during both parts of the Confirmation Study.

Table 2-1 is a list of the 37 sites to be investigated as part of this study. Figure 2-2 is a map showing site locations.

[2.3 FEDERAL FACILITIES AGREEMENT

The Federal Facility Agreement (FFA) is an interagency agreement which exists between the Navy, the U.S. Environmental Protection Agency (EPA), and the Florida Department of Environmental Regulation (FDER). The FFA outlines the conditions and schedules to be followed during the course of the investigations at NAS Pensacola,

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Table 2-1

NAVY IRP SITES AT NAS PENSACOLA

Site No.	Site Name/Description	Investigation Priority
1*	Sanitary Landfill	A'
2*	Waterfront Sediments Area	A
3*	Crash Crew Training Area	B
4	Army Rubble Disposal Area	C
5	Borrow Pit	D
6	Fort Redoubt Rubble Disposal Area	D
7	Firefighting School Area	D
8	Rifle Range Disposal Area	C
9	Navy Yard Disposal Area	D
10	Commodore's Pond	D
11*	N. Chevalier Disposal Area	A
12	Scrap Bins	B
13	Magazine Point Rubble Disposal Area	C
14	Dredge Spoil Fill Area	D
15*	Pesticide Rinsate Disposal Area	A
16	Brush Disposal Area	D'
17	Transformer Storage Yard	C
18	PCB Spill Area	D
19*	Fuel Farm Pipeline Leak Area	B
20	Pier Pipe Leak Area	B
21*	Sludge at Fuel Tanks	B
22	Refueler Repair Shop	C
23	Chevalier Field Pipe Leak Area	C
24	DDT Mixing Area	D
25	Radium Spill Site	C
26*	Supply Department Outside Storage Area	A
27*	Radium Dial Shop Sewer	B
28	Transformer Accident Area	C
29*	Soil South of Building 3460	A
30*	Buildings.649 and 755	C
31*	Soil North of Building 648	B
32*	IWTP Sludge Drying Beds	C
33*	Wastewater Treatment Plant (WWTP) Ponds	C
34*	Solvent Area North of Building 3557	C
35*	Miscellaneous IWTP SWMUs	C
36*	Industrial Waste Sewer	A
37	Sherman Field Fuel Farm	C

*Listed for further investigation under RCRA/HSWA permit.

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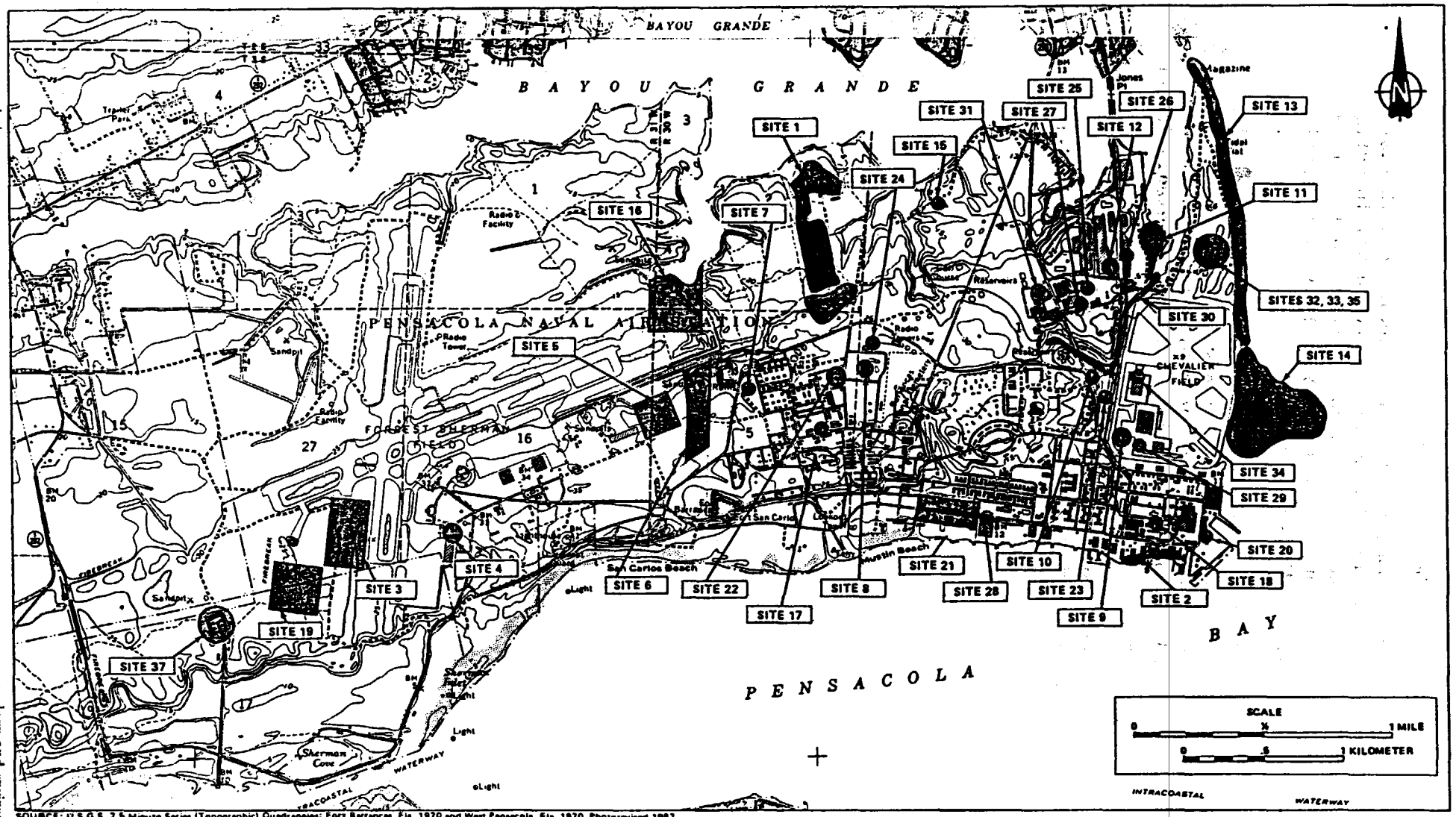

SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangles: Fort Barrancas, Fla. 1970 and West Pensacola, Fla. 1970, Photorevised 1987.

Figure 2-2 NAS PENSACOLA SITE LOCATIONS

The general purpose of the FPA is to:

- Ensure that the environmental impacts associated with past and present activities at NAS Pensacola are thoroughly investigated and appropriate CERCLA response/RCRA corrective alternatives are developed and implemented as necessary to protect the public health, welfare, and the environment;

- Establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response action at NAS Pensacola in accordance with CERCLA/SARA, RCRA, 'the NCP, and EPA/state-issued guidance and policy relevant to remediation at NAS Pensacola; and

- Facilitate cooperation, exchange of 'information and participation of the **Navy**, BPA, and **FDER in such actions.]**

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3. INVESTIGATION OBJECTIVES

3.1 REGULATORY REQUIREMENTS

3.1.1 Applicable or Relevant and Appropriate Requirements (ARARs) and To-Be-Considered Criteria (TBCs)

CERCLA/SARA provisions require that remedial actions comply with ARARs of other environmental and public health statutes such as RCRA, the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Clean Air Act (CAA), and state environmental protection policies (e.g., Florida Administrative Code (FAC], Chapter 17,' Florida Department of Environmental Regulations Policies). As such, ARARs will be evaluated as part of the [Remedial Investigation/RCRA Facilities Investigation/Feasibility Study (RI/RFI/FS)] process and will be identified during the development of analytical and remedial concerns for site-specific work plans. This document will discuss ARARs in a general context.

Applicable requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Relevant and appropriate requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. An example of relevant and appropriate (but not applicable) requiremehts

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would be RCRA requirements for a small quantity hazardous waste generator. RCRA requirements would not be applicable in this case, since RCRA applies only to large-quantity generators.

There are several different types of requirements with which CERCLA actions may have to comply. Ambient or chemical-specific ARARs are usually health-based or risk-based numerical values and these are identified in the scoping process of the RI. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Performance, design, or other action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes and are identified and revised in the RI investigative phase.

TBCs are advisories or guidance issued by federal or state government that are not legally binding, and thus, do not have the status of potential ARARs. However, in many circumstances, TBCs will be considered along with ARARs as part of the site-specific risk assessment and may be used in determining cleanup levels.

3.1.2 Data Quality Objectives (DQOs)

DQOs are standards which specify the quality and quantity of data that will be required to suppqrt decisions regarding remedial response activities at NAS Pensacola. In a general sense, DQOs are required as part of the CERCLA requirement' to provide a quantifiable degree of certainty with regard to data that will be the basis for site-specific decisions. Thus, site-specific DQOs are addressed during the development of RI/RFI/FS work plans; being incorporated into sampling plan development and data requirements for each work plan group. DQOs will be discussed in a general sense in this document and in the generic QAPP.

DQOs will be developed and adhered to for all RI, RFI, FS, [Preliminary Assessment/Site Inspection (PA/SI)], and Remedial Design/Remedial Action (RD/RA)] data collection activities.

3.2 CONTRACT REQUIREMENTS

This section describes provisions included in the contract to help promote work products that would be legally defensible and to' avoid con-

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flicts of interest with the work of other agencies, as well as breaches of confidence or other improprieties. The requirements discussed below have been incorporated into all aspects of E & E's program.

3.2.1 Analytical Detection Limits

The quality of data to be generated from all site activities will be outlined during the initial stages of DQO development. This is usually accomplished by determining the analytical detection limits for all analytic methods and equipment to be used for site contamination assessments and feasibility studies. The determination of analytical detection limits has been discussed in a general sense in the [Generic Quality Assurance Project Plan (QAPP)]. Each phase of the RI/RFI/FS process and each site may have individual analytical detection limit requirements that will be addressed in each site-specific [QAPP].

There are five options with regard to analytical detection limits. These levels are distinguished by the sophistication of the analytical methods and equipment, and degree of documentation used, as follows:

- **LEVEL I** - 'Field screening. This level is characterized by the use of ,portable instruments which can provide real-time data to assist in the optimization of 'sampling point locations and for health and safety support. Data can be generated regarding the presence or absence of certain contaminants (especially volatiles) at sampling locations.

- **LEVEL II** - Field analysis. This level is characterized by the use of portable analytical instruments which can be used on-site, or in mobile laboratories stationed near a site. Depending upon the types of contaminants and sample matrix, qualitative and quantitative data can be obtained.

- **LEVEL III** - Laboratory analysis using methods other than the EPA Contract Laboratory Program (CLP) Routine Analytical Services (RAS). This level is used primarily in support of engineering studies using standard EPA-approved procedures.

- **LEVEL IV** - CLP RAS. This level is characterized by rigorous [quality assurance/quality control (QA/QC)] protocols and documentation as well as the qualitative and quantitative analytical data required by Level 111.

- LEVEL V - Non-standard methods. Analysis which may require method notification and/or development. CLP Special Analytical Services (SAS) are considered Level V.

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Within each level, different procedures may be used to produce data of different quality. For example, Level II encompasses both mobile laboratory procedures and less sophisticated "tailgate" operations.

3.2.2 Contractual Requirements

File Organization and Record Keeping

Because files may be examined in a public forum, they will be maintained to provide a clear and accurate record of the progress and decisions made on project work. These files will also help site managers and technical staff in developing the Record of Decision (ROD). Upon completion of the project, all original project files will be submitted to the Engineer-in-Command (EIC).

Administrative Record

E & E will provide and maintain the Administrative Record requirements for each phase of the study. This includes the documentation of objectives and achievements, and amendments to these documents for the development of the Administrative Record. The Administrative Record (and updates) will be transferred to the EIC at the completion of each phase of work. The Administrative Record documents will include but are not limited to:

- Site Management Plan (this document);
- Project Management Plan;
- Generic QAPP;
- Health and Safety Plan (MSP);
- Investigation Work Plans;
- Investigation Reports;
- Community Relations Plan (CRP); and
- ROD.

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Confidentiality

E & E will not release or publicize in any manner information or data obtained in the course of this contract or subsequent modifications, except as specified in particular statements of work through the CRP. Any outside inquiries concerning the project shall be directed to the EIC.

Community Relations Program

The purpose of the Naval IR Program's Community Relations Program will be to involve the public in activities and decisions made about the sites under investigation at the facility. The program will include, but not be limited to the development of a generic CRP that will include a site-specific mailing list for the provision of information about IRP activities. The CRP will also identify a convenient and appropriate means of public access to information about the site, and specify provision of a public meeting when the RI/RFI/FS reports are published in draft final form. The CRP will include a summary of public comments on investigation reports and proposed plans, and the Navy's response to those comments. The CRP will follow current guidance from the EPA and the Navy for community relations at Superfund sites (although Superfund monies are not used for this work at this time). E & E may be required to perform or obtain specialty services to provide input from the community or other information required for the implementation of the program. For more details on the Community Relations Program, see the CRP submitted as part of this contract.

3.3 CONTAMINATION ASSESSMENT

[3.3.1] Scope of Vork

All sites identified on the NAS Pensacola facility will undergo a contamination assessment and remedial activity to identify, characterize, and/or control contaminants found to be significant. This broad

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investigative process can include any of the following steps of the Navy IRP investigation and remediation process:

1. Site Discovery or Notification;
2. PA/SI;
3. Establishment of priorities for remedial action;
4. RI/FS; and
5. RD/RA.

The work under this contract will encompass primarily steps 2 through 5. New sites discovered during the process of investigating known sites will undergo either the PA/SI process or the RCRA Facility Assessment (RFA) process, depending on regulatory provisions applicable to the site.

All 37 sites identified at NAS Pensacola are being addressed by work plans for the RI/RFI/FS process, and all investigations will utilize the multi-phase approach shown in Figure 3-1 to define and characterize the extent of site-specific contamination, determine health risks, and develop cleanup alternatives as efficiently and cost-effectively as possible. Depending upon investigation results, some sites may be eliminated from the list of istes requiring remedial action. Validated empirical data will be used to support all such decisions.

[3.3.2] Work Plan Development

Scoping is the initial phase of the RI/RFI/FS work plan development, and many of the activities begun during this step are continued and refined as work progresses and new information is obtained during the collection of field samples. Scoping includes: development of a preliminary understanding of the site, which is then used to: 1) identify the types of actions that may be required to address site problems; 2) identify whether interim actions may be needed to address site problems: and 3) determine the optimal sequence of site actions and site activities. Once the existing site data have been evaluated, a concep-

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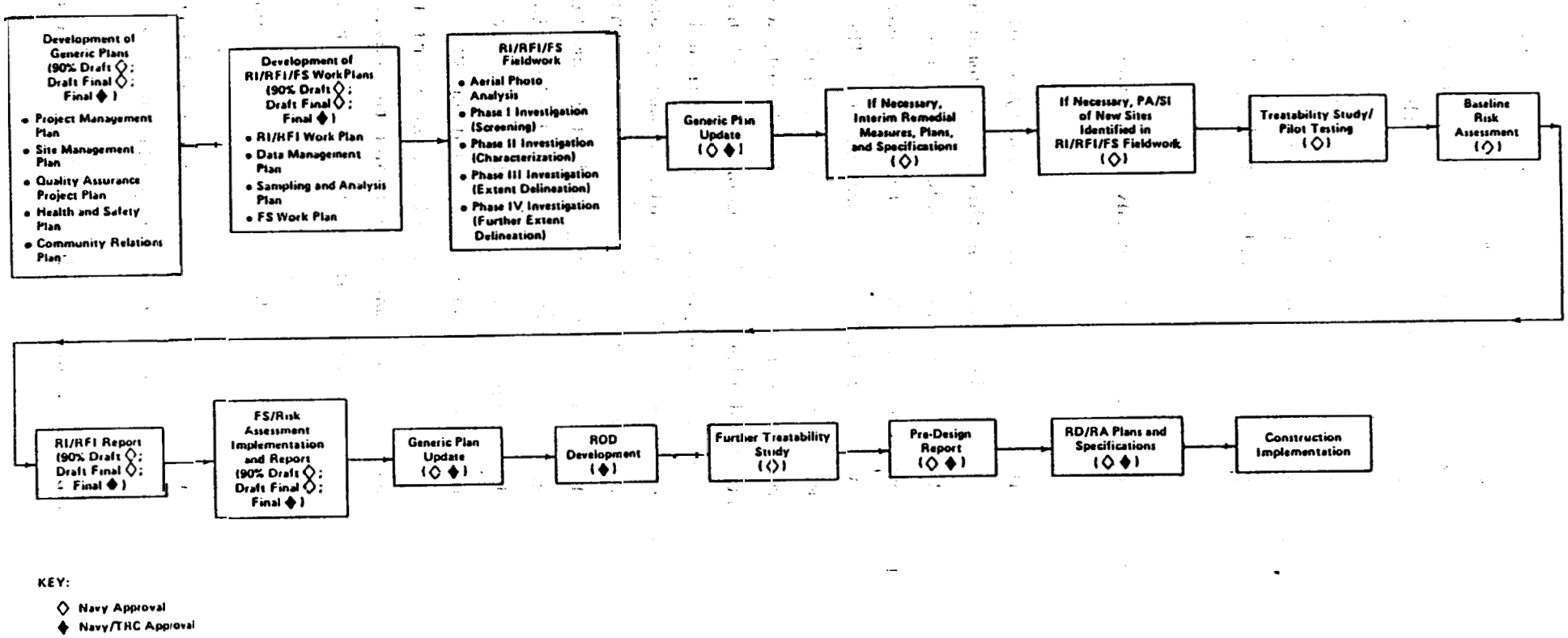

Figure 3-1 SCOPE OF WORK OF RI/RFI/FS AND RD/RA, NAS PENSACOLA

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tual site model is developed and potential remedial action objectives for each contaminated medium are identified. DQOs and chemical- and location-specific ARARs are identified during the work plan development process as means to focus sampling efforts so that only the data necessary to adequately characterize site problems and develop remedial alternatives are generated. At the end of the work plan development process, formal work plans, site-specific Quality Assurance Project Plans (QAPPs), and site safety plans (SSPs) will be developed (see Figure 3-1).

(3.3.3 Remedial Investigation/RCRA Facilities Investigation (RI/RFI) Fieldwork]

RI/RFI fieldwork will entail the collection and analysis of field data to determine to what extent a site poses a threat to human health or the environment. The RI/RFI process will include one to four iterative field investigation phases, as shown in Figure 3-1; each phase may involve multiple contractual iterations for completion. The initial phase (screening) will be limited to a physical survey, geophysical survey, and/or analytical sample screening aimed at developing a quick, expanded understanding of site conditions. The second phase (characterization) will identify the contamination present as determined by air, soil, sediment, biota, surface water, and groundwater sampling and analysis using Contract Laboratory Program (CLP) analytical methods. Shallow monitoring wells will be installed for groundwater sampling, if necessary. The last two phases of the RI/RFI process (delineation of extent of contamination) will include sampling of all applicable media as well as installation of intermediate and deep monitoring wells.

Included in the RI process is the baseline risk assessment to characterize current and potential risk to human health and the environment posed by the site. The primary Objectives of the baseline risk assessment are to identify the contaminants of concern, assess their toxicity, and identify the exposure pathways for both the public and the environment. The baseline risk assessment is to the FS risk assessment as the PA/SI is to the RI/FS, that is, it provides a preliminary indication of risk before the FS is conducted to identify cleanup alternatives. If

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little or no threat to human health or the environment from a site is identified, no further action or only limited action will be required for cleanup, and the FS scaled-down appropriately. During the RI/RFI process, monthly progress reports will be provided to the Navy and a draft RI/RFI report will be generated at the conclusion of all field activities. This draft report will include revised chemical- and location-specific ARARs as well as the identification of action-specifit ARARs for the FS.

[3.3.4 Feasibility Study (FS) Process]

The FS process will consist of: the identification of remedial objectives and action-specific ARARs and selection of factors for evaluation 'of alternatives; the identification and screening of alternatives; risk assessment; treatability studies of alternatives; detailed evaluation of alternatives; and the selection of a preferred alternative or alternatives incorporated into an RI/RFI/FS draft report. If necessary, Interim Remedial Measures (IRMs) will be designed and implemented on those sites that are found to be an immediate threat to the health and safety of the human population or the environment.

[3.3.5 Remedial Design/Remedial Action (RD/RA) Process]

RD will consist of development and submission of formal construction plans, specifications and cost estimates for the recommended corrective actions. RA activities will include construction oversight and/or certification of RCRA closures, as required.

[3.3.6 Preliminary Assessment/Site Inspection (PA/SI) and RCRA Facilities Assessment (RFA) Process]

A PA/SI or RFA will be conducted for any new sites identified during the planned RI/RFI/FS work on existing sites. The PA will utilize existing information to the fullest extent possible and will include a site reconnaissance and interviews with persons familiar with the site. The information collected will be documented and used to determine whether release of hazardous substances is likely to occur.

The purpose of the SI is to determine whether specific toxic and hazardous materials identified in the PA are present in concentrations

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which are considered hazardous. For many of the sites found on the NAS Pensacola facility, the PA has not identified any contaminants of concern. The SI will be conducted as part of 'the installation-wide RI/RFI/FS process to provide defensible highly reliable analytical data. If no significant contamination is found as a result of the RI/RFI at a given site, no further investigation will be conducted at the site.

The purpose of the RFA, to be conducted on newly identified RCRA facilities, will be to identify all areas of potential release of hazardous substances. However, since EPA has previously conducted an RFA at NAS Pensacola, E & E does not anticipate finding new RCRA facilities on the base.

PA/SI/RFA work will include sampling of soil, sediment, and surface water, and groundvater from existing monitoring wells. Installation and sampling of additional wells or soil borings may also be necessary. The results of this phase will be a general evaluation of contamination found, development of a work plan for further site characterization through an RI/RFI/FS process, and development of [an EPA Hazard] Ranking System (HRS) score for each new site found at the facility.

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4. PROGRAM IMPLEMENTATION

4.1 REGULATORY REQUIREMENTS

Requirements of federal and state law that guide the investigation of contaminated sites at NAS Pensacola will be implemented on a site-by-site basis as discussed below.

4.1.1 Identification of ARARs and TBCs

During initial scoping of the RI/RFI, possible ARARs will be identified on a site-by-site basis, and RI/RFI data needs outlined to evaluate the ARARs. The identification of ARARs will be conducted in an iterative manner, in accord with the general RI/RFI/FS approach.

The identification process involves evaluation and comparison of various site-specific factors, including physical characteristics of the site, the hazardous substances present, and the nature of the prospective remedial action. In most cases, if the ARAR analysis results in a determination that a requirement is both relevant and appropriate, the requirement would have to be complied with as if it were applicable. In some cases, a requirement may be relevant but not appropriate, for example, based on site-specific considerations. Such a requirement would not be an ARAR for the site. Much more discretion is possible in the determination of relevance and appropriateness. For instance, for a fuel spill, FAC, Chapter 17-70, requires soil cleanup to 500 ppm as measured on an organic vapor analyzer (OVA). This is a relevant requirement. However, if an investigation reveals 550 ppm measured on an OVA in soils within a very limited area, since the volume would be small and the measurement only slightly over the cleanup criteria, the Chapter 17-70 provision would not be considered appropriate.

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The identification and documentation of *ARARs* in this program will be three-fold:

- o A listing of federal and state *ARARs* will be developed in the scoping phase of the RI/RFI; this list will include chemical-, location-, and action-specific *ARARs* (see Appendix A);
- o Reasons for selection of *ARARs* will be documented as part of the FS process; and
- o A detailed analysis of each alternative with respect to identified *ARARs* will be presented as part of the FS.

It should be noted that, while SARA mandates that remedial actions comply with federal and state ARARs, it is important to understand that complying with *ARARs* is not the only factor in selection of a remedial solution. SARA also requires that remedies must be protective of human health and the environment and be cost-effective, as well as utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. *ARARs* represent minimum requirements that a remedy must meet. Considerations such as presence of multiple contaminants or cross-contamination of sites may require the formulation of requirements that exceed *ARARs.*

Moreover, while *ARARs* will be evaluated for the NAS Pensacola program on both site-by-site and program-wide bases (to consider multiple contaminants and cross contamination of sites) provisions exist in SARA that allow *ARARs* to be waived under special circumstances that may be applicable to evaluating *ARARs* on the program level. The exceptions, which will be considered in the ARAR selection process, may be applicable in the following circumstances:

- o When an action taken is an interim measure and is only part of a total remedial action that will attain the requirement when completed;
- o When compliance with the requirement presents a greater risk than alternative options;
- o When meeting the requirement is technically impracticable from an engineering perspective;

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- When an equivalent standard of performance that is equal or better than that specified by the requirement can be achieved through use of another method or approach;

- When a state has not consistently applied a state requirement in similar circumstances at other remedial actions within the state; and,

- When fund balancing is warranted because meeting the requirement would not provide a balance between the need to be protective at the site and the availability of funds to respond to threats at other sites at the facility.

SARA also outlines two exceptions to the general definition of ah *ARAR.* When the goals or criteria are relevant and appropriate to the circumstances of a release or threatened release, on-site actions must attain Maximum Contaminant Level Goals (MCLGs) developed under SDWA, and Water Quality Criteria (WQC) developed under CWA.

TBCs are non-promulgated advisories or guidance issued by federal or state governments that are not legally binding and do not have the status of potential *ARARs.* However, in many dircumstances TBCs will be considered along with *ARARs* as part of the site risk assessment and may be used in determining the necessary level of cleanup for protection of health of humans or the environment.

4.1.2 Identification of DQOs

DQOs will be identified during the scoping and development of the site work plans and QAPPs, and have been partially identified in terms of laboratory analytical methods and detection limits in the generic QAPP. The amount and quality of data required to support the selection of remedial alternatives will vary from site to site, and, as with *ARARs,* the identification of DQOs will be conducted in an iterative manner. As additional data are obtained and evaluated, data quality needs will become more clearly defined. The DQO identification process will continue as long as additional data needs) are identified.

Other factors which may affect the development of site-specific DQOs are analytical quality control, instrumentation options, media variability, and method detection limits (see NAS Pensacola generic QAPP).

[Bold items enclosed in brackets denote changes from original text]

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4.2 CONTRACT REQUIREMENTS

Analytical methods and detection limits will be evaluated during the selection of site-specific DQOs. The parameters for which the analytical method is valid, its limitations, and any special considerations (such as sample preparation and preservation), which will affect data quality will be considered in selecting appropriate analytical methods.

Since the level of analytical concern directly affects data quality requirements, sampling and analytical methods will be selected that are accurate to the level of concern. For instance, each phase of the RI/RFI process will incorporate one or more of the analytical levels described in Section 3.2. Phase I will utilize Level I field screening methods and Level II field analysis methods used by E & E's Analytical Services Center (ASC). The higher levels of analytical requirements will be implemented for Phase II through Phase IV.

4.3 CONTAMINATION ASSESSMENT

In order to facilitate implementation of the NAS Pensacola program, E & E has clustered the 37 sites into 15 work plan groups, as shown in Table 4-1. Several criteria were employed to generate the work plan groups, including: 1) geographic proximity of sites; 2) similarity of contaminant types; 3) similarity of potential investigation methods; and 4) potential scope and complexity of the investigation, Table 4-1 also provides the Navy's investigative priority rankings for the 37 sites.

A 90% draft of each work plan will be submitted to the Navy; within 60 days after submittal, the Navy will return their comments to E & E; within 15 days of the return of the Navy's comments, a revised, draft final work plan, incorporating the Navy comments, will be submitted to the Navy for release to the [Technical Review Committee (TRC)]; within 60 days after submittal, the TRC will return their comments to the Navy; within 30 days of the return of the TRC comments, E & E will submit a final work plan to the Navy, incorporating the TRC comments, for release to the TRC.

Sites identified as [Solid Waste Management Units (SWMUs)] in the RCRA permit for NAS Pensacola will be given priority to undergo the RI/RFI process; work on Group 0 (Table 4-1) will be deferred until the

[Bold items enclosed in brackets denote changes from original text]

Table 4-1

WORK PLAN GROUPS FOR NAS PRNSACOLA

Work Plan Group	SOUTHDIV Investigative Priority Ranking	Site No.	Site Name
A	A	1*	Sanitary Landfi11
B	A	11*	North Chevalier Disposal Area
	B	12	Scrap Bins
	A	26*	Supply Department Storage Area
C	A	2*	Waterfront Sediments Area
	C	13	Magazine Point Rubble Disposal Area
	D	14	Dredge Spoil Fill Area
D	A	15*	Pesticide Rinsate Disposal Area
	D	24	DDT Mixing Area
E	C	30*	Buildings 649 and 755
F	D	9	Navy Yard Disposal Area
	D	10	Commodore's Pond
	C	23	Chevalier Field Pipe Leak Area
	A	29*	Soil South of Building 3460
	C	34*	Solvent North of Building 3557
G	C	25	Radium Spill Area
	B	27*	Radium Dial Shop Sewer
H	C	a	Rifle Range Disposal Area
	C	22	Refueler Repair Shop
I	C	17	Transformer Storage Yard
	D	18	[Polychlorinated Biphenyls (PCBs)] Spill Area
	C	28	Transformer Accident Area
J	B	3*	Crash Crew Training Area
	B	19*	Fuel Farm Pipeline Leak Area
	C	37	Sherman Field Fuel Farm Area
K	D	7	Firefighting School Area
	B	20	Pier Pipe Leak Area
	B	21*	Sludge at Fuel Tanks

[Bold'items enclosed in brackets denote changes from original text]

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Table 4-1 (Cont.)

Work Plan Group	SOUTHDIV Investigative Priority Ranking	Site No.	Site Name
L	C	4	Army Rubble Disposal Area
	D	5	Borrow Pit
	D	6	Fort Redoubt Rubble Disposal Area
	D	16	Brush Disposal Area
M	B	31*	Soil North of Building 648
N	A	36*	IWTP Sewer Area
O	C	32*	IWTP Sludge Drying Beds
	C	33*	WWTP Ponds
	C	35*	Miscellaneous IWTP SWMUs

*Listed for further investigation under RCRA/HSWA permit.

[Bold items enclosed in **brackets** denote changes from original text]

completion of ongoing RCRA RAs at the wastewater treatment plant (currently being directed by closure permits). The RI/RFIs will incorporate all HSWA permit requirements of the NAS Pensacola RCRA permit. As RI/RFI analytical data become available, Phase III and Phase IV work, if required, will be scoped and planned for Navy and TRC review.

Identification and selection of cleanup alternatives will also be performed as part of the FS. Following completion of a baseline risk assessment and final risk assessment, alternatives will be identified and revised, tested in pilot-scale treatability studies, and evaluated in a final screening of alternatives on the basis of cost-effectiveness and feasibility, and will consider future property use requirements of the Navy.

4.4 FIELDWORK IMPLEMENTATION

(The overall project schedule is contained in the Federal Facilities Agreement Site Management Plan (FFASMP) for the NAS Pensacala project. The project schedule in the FFASMP will be updated yearly to reflect factors such as progress of the investigations, changes in available funding, changes in existing site conditions, or the discovery of new sites which require investigation. The individual work plans contain group- or site-specific project schedules.]

[Bold items enclosed in brackets denote changes from original text]

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APPENDIX A

CHEMICAL-SPECIFIC, LOCATION-SPECIFIC, AND ACTION-SPECIFIC POTENTIAL ARARs

EXHIBIT 1-2

SELECTED LOCATION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Location	Requirement	Prerequisite	Citation
Within 61 meters (200 feet) of a fault displaced in Holocene time	New treatment, storage, or disposal of hazardous waste prohibited	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18(a)
Within 100-year floodplain	Facility must be designed, constructed, operated, and maintained to avoid washout	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18(b)
Within floodplain b/	Action to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values	Action that will occur in a floodplain, i.e., lowlands, and relatively flat areas adjoining inland and coastal waters and other flood prone areas	Protection of floodplains, b/ (40 CFR 6, Appendix A); Fish and Wildlife Coordination Act (16 USC 661 et seq.); 40 CFR 6.302
Within salt dome formation, underground mine, or cave	Placement of non-containerized or bulk liquid hazardous waste prohibited	RCRA hazardous waste; placement	40 CFR 264.18(c)
Within area where action may cause irreparable harm, loss, or destruction of significant artifacts	Action to recover and preserve artifacts	Alteration of terrain that threatens significant scientific, prehistorical, historical or archaeological data	National Historical Preservation Act (16 USC Section 469); 36 CFR Part 65
Historic project owned or controlled by Federal agency	Action to preserve historic properties; planning of action to minimize harm to National Historic Landmarks	Property included in or eligible for the National Register of Historic Places	National Historic Preservation Act, Section 106 (16 USC 470 et seq.); 36 CFR Part 800
Critical habitat upon which endangered species or threatened species depends	Action to conserve endangered species or threatened species, including consultation with the Department of Interior	Determination of presence of endangered or threatened species	Endangered Species Act of 1973 (16 USC 1531 et seq.); 50 CFR Part 200, 50 CFR Part 402 Fish and Wildlife Coordination Act (16 USC 661 et seq.); 33 CFR Parts 320-330.

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EXHIBIT 1-2 (Continued)

SELECTED LOCATION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Location	Requirement	Prerequisite	Citation
Wetlands b/	Action to prohibit discharge of dredged or fill material into wetlands without permit	Wetlands as defined in U.S Army Corps of Engineers regulations	Clean Water Act section 404; 40 CFR Parts 230, 33 CFR Parts 320-330.
	Action to avoid adverse effects, minimize potential harm, and preserve and enhance wetlands, to the extent possible (see discussion in section 3.4.4.1)	Action involving construction of facilities or management of property in wetlands, as defined by 40 CFR Part 6, Appendix A, section 4 (j)	40 CFR Part 6, Appendix A
Wilderness area	Area must be administered in such manner as will leave it unimpaired as wilderness and to preserve its wilderness	Federally-owned area designated as wilderness area	Wilderness Act (16 USC 1131 et seq.); 50 CFR 35.1 et seq.
Wildlife refuge	Only actions allowed under the provisions of 16 USC Section 668 dd(c) may be undertaken in areas that are part of the National Wildlife Refuge System	Area designated as part of National Wildlife Refuge System	16 USC 668dd et seq.; 50 CFR Part 27
Area affecting stream or river	Action to protect fish or wildlife	Diversion, channeling or other activity that modifies a stream or river and affects fish or wildlife	Fish and Wildlife Coordination Act (16 USC 661 et seq.); 40 CFR 6.302
Within area affecting national wild, scenic, or recreational river	Avoid taking or assisting in action that will have direct adverse effect on scenic river	Activities that affect or may affect any of the rivers specified in section 1276(a)	Wild and Scenic Rivers Act (16 USC 1271 et seq. section 7 (a)); 40 CFR 6.302(e)
Within coastal zone	Conduct activities in manner consistent with approved State management programs	Activities affecting the coastal zone including lands therein and thereunder and adjacent shorelands	Coastal Zone Management Act (16 USC Section 1451 et seq.)
Within designated coastal barrier	Prohibits any new Federal expenditure within the Coastal Barrier Resource System	Activity within the Coastal Barrier Resource System	Coastal Barrier Resources Act (16 USC 3501 et seq.)

a/ Additional location-specific requirements — I be added after analysis of additional sources *urd* will be included in a subsequent draft of this manual.

b/ *40* CFR Part *6* Subpart A sets forth EPA policy for carrying art the provisions of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands). Executive orders are binding on the leve' g., Federal, State) of government for which they are issue

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Capping (continued)	Eliminate free liquids, stabilize wastes before capping (surface impoundments).		40 CFR 264.228(a)
	Restrict post-closure use of property as necessary to prevent damage to the cover.		40 CFR 264.117(c)
	Prevent run-on and run-off from damaging cover.		40 CFR 264.228(b) 40 CFR 264.310(b)
	Protect and maintain surveyed benchmarks used to locate waste cells (landfills, waste piles).		40 CFR 264.310(b)
Closure with No Post-Closure Care (e.g. Clean Closure)	General performance standard requires elimination of need for further maintenance and control; elimination of post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products.	Applicable to land-based unit containing hazardous waste.d/ Applicable to RCRA hazardous waste (listed or characteristic) placed at site after the effective date of the requirements, or placed into another unit. Not applicable to material treated, stored, or disposed only before the effective date of the requirements, or if treated in-situ, or consolidated within area of contamination. Designed for cleanup that will not require long-term management. Designed for cleanup to health-based standards.	40 CFR 264.111
	Disposal or decontamination of equipment, structures, and soils. Removal or decontamination of all waste residues, contaminated containment system components (e.g., liners, dikes), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and management of them as hazardous waste.	May apply to surface impoundments and container or tank liners and hazardous waste residues, and to contaminated soil, including soil from dredging or soil disturbed in the course of drilling or excavation, and returned to land.	40 CFR 264.111 40 CFR 264.178 40 CFR 264.197 40 CFR 264.288(c)(1) and 40 CFR 264.258
	Meet health-based levels at unit.		40 CFR 244.111

d/ Some action-specific requirements listed may be relevant and appropriate even if RCRA definitions of storage, disposal, or hazardous waste are not met, or if the waste at the site is similar to but not identifiable as a RCRA hazardous waste. See Chapter 2 for information on relevant and appropriate RCRA requirements.

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EXHIBIT 1-3

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Air Stripping	[CAA requirements to be provided.]		
Capping (See also Closure with Waste in Place for additional associated requirements)	Placement of a cap over waste (e.g., closing a landfill, or closing a surface impoundment or waste pile as a landfill, or similar action) requires a cover designed and constructed to: o Provide long-term minimization of migration of liquids through the capped area; o Function with minimum maintenance; o Promote drainage and minimize erosion or abrasion of the cover; o Accommodate settling and subsidence so that the cover's integrity is maintained; and o Have a permeability less than or equal to the permeability of any bottom liner system or natural sub-soils present.	RCRA hazardous waste placed at site after the effective date of the requirements, or placement of hazardous waste into another unit will make requirements applicable when the waste is being covered with a cap for the purpose of leaving it behind after the remedy is completed. Capping without such placement will not make requirements applicable. d/	40 CFR 264.228(a) (Surface Impoundments) 40 CFR 264.258(b) (Waste Piles) 40 CFR 264.310(a) (Landfills)

a/ Currently only RCRA, CWA, and SDWA requirements are included. Additional action-specific requirements will be added as additional statutes are analyzed.

b/ Action alternatives from ROD keyword index, FY1986 Record of Decision Annual Report, January 1987, Hazardous Site Control Division, EPA.

c/ Requirements have been proposed but not promulgated for air stripping, hybrid closure, gas collection and miscellaneous unit treatment. When these regulations are promulgated, they will be included in the matrix.

d/ Some action-specific requirements listed may be relevant and appropriate even if RCRA definitions of storage, disposal, or hazardous waste are not met, or if the waste at the site is similar to but not identifiable as a RCRA hazardous waste. See Chapter 2 for information on relevant and appropriate RCRA requirements.

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SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Consolidation between Units	With respect to the waste that is moved, see requirements in the following sections: Capping, Closure with Waste in Place, Container Storage, Construction of a New Landfill On-Site, Construction of a New Surface Impoundment On-Site, Incineration (On-Site), Land Treatment, Operation and Maintenance, Tank Storage, and Treatment.	Movement of hazardous waste and placement into another unit.	See Capping, Closure with Waste in Place, Container Storage, Construction of a New Landfill On-Site, Construction of a New Surface Impoundment On-Site, Incineration (On-Site), Land Treatment, Operation and Maintenance, Tank Storage, and Treatment in this exhibit.
Container Storage	Containers of RCRA hazardous waste must be:	Storage of RCRA hazardous waste (listed or characteristic) not meeting small quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal, or storage elsewhere (40 CFR 264.10), in a container (i.e., any portable device in which a material is stored, transported, disposed of, or handled). A generator who accumulates or stores hazardous waste on-site for 90 days or less in compliance with 40 CFR 262.34(a)(1-4) is not subject to full RCRA storage requirements. Small quantity generators are not subject to the 90 day limit (40 CFR 262.34(c),(d), and (e)).	
	o Maintained in good condition;		40 CFR 264.171
	o Compatible with hazardous waste to be stored; and		40 CFR 264.172
	o Closed during storage (except to add or remove waste).		40 CFR 264.173
	Inspect container storage areas weekly for deterioration.		40 CFR 264.174
	Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system.		40 CFR 264.175

a/ In many cases, there are no defined "units" at a CERCLA site. Instead, there are areas of contamination with differing concentration levels (including hot spots) of hazardous substances, pollutants, or contaminants. When RCRA hazardous wastes are moved into or out of an area of contamination, RCRA disposal requirements are applicable to the waste being managed and certain treatment, storage, or disposal requirements (such as for closure) are applicable to the area where the waste is received.

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1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Closure with Waste In Place	Eliminate free liquids by removal or solidification. Stabilization of remaining waste and waste residues to support cover.	Applicable to land disposal of hazardous waste.d/ Applicable to RCRA hazardous waste (listed or characteristic) placed at site after the effective date of the requirements, or placed into another unit. Not applicable to material treated, stored, or disposed only before the effective date of the requirements, or if treated in-situ or consolidated within area of contamination.	40 CFR 264.228(a)(2) 40 CFR 264.228(a)(2) 40 CFR 264.258(b)
	Installation of final cover to provide long-term minimization of infiltration (see Capping).		40 CFR 264.310
	30-year post-closure care and ground-water monitoring.g/		40 CFR 264.310
Closure of [illegible] Treatment Units	Maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone, minimize run-off of constituents, maintain run-on control system and run-off management system, control wind dispersal of hazardous waste, maintain unsaturated zone monitoring, establish vegetative cover, and establish background soil values to determine consistency with permit values.	C[illegible] of land tr etment uni b	40 CFR 264.260
Consolidation within a Unit	None applicable.d/	Consolidation within a unit.f/	

g/ Regional administrator may [illegible] length of post [illegible]ure care period (40 CFR 264.117).

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Action b/	Requirement	Prerequisites for Applicability g/,h/	Citation
Container Storage (continued)	Keep containers of ignitable or reactive waste at least 50 feet from the facility's property line.		40 CFR 264.176
	Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier.		40 CFR 264.177
	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers, liners.	*	40 CFR 264.178
	Storage of banned wastes must be in accordance with 40 CFR 268. When such storage occurs beyond one year, the owner/operator bears the burden or proving that such storage is solely for the purpose of accumulating sufficient quantities to allow for proper recovery, treatment, and disposal.		40 CFR 268.5
Construction of New Landfill On-Site (see Closure with Waste in Place).	<u>Minimum Technology Requirements</u>:	RCRA hazardous waste (listed or characteristic) currently being placed in a new, replacement, or expanded landfill.	40 CFR 264.301
	Install two liners or more, a top liner that prevents waste migration into the liner, and a bottom liner that prevents waste migration through the liner.h/		
	Install leachate collection systems above and between the liners.		40 CFR 264.301

h/ Landfill units meeting the requirements of 40 CFR 264.301(f) are not subject to RCRA minimum technology requirements.

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SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Construction of New Landfill (see Closure with Waste in Place) (continued)	Construct run-on and run-off control systems capable of handling the peak discharge of a 25-year storm.		40 CFR 264.301
	Control wind dispersal of particulates.		40 CFR 264.301
	Operation and maintenance.		40 CFR 264.303-304
	Close each cell with a final cover after the last waste has been received.		40 CFR 264.310
	Ground-water Monitoring		
	Establish a detection monitoring program (264.98). Establish a compliance monitoring program (264.99) and corrective action monitoring program (264.100) when required by 40 CFR 264.91. All monitoring programs must meet RCRA general ground-water monitoring requirements (264.97)	Creation of a new landfill unit to treat, store, or dispose of RCRA hazardous wastes as part of a response action.	40 CFR 264.91- 264.100

TABLE 2-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Discharge of Treatment System Effluent (continued)	The Best Management Practices program must: o Establish specific procedures for the control of toxic and hazardous pollutant spills. o Include a prediction of direction, rate of flow, and total quantity of toxic pollutants where experience indicates a reasonable potential for equipment failure. o Assure proper management of solid and hazardous waste in accordance with regulations promulgated under RCRA.	Discharge to waters of the U.S. j/	40 CFR 125.104
	<u>Monitoring Requirements</u>:		
	Discharge must be monitored to assure compliance. Discharge will monitor: o The mass of each pollutant o The volume of effluent o Frequency of discharge and other measurements as appropriate		40 CFR 122.41(i)
	Approved test methods for waste constituent to be monitored must be followed. Detailed requirements for analytical procedures and quality controls are provided. Sample preservation procedures, container materials, and maximum allowable holding times are prescribed.		40 CFR 136.1-136.4

j/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met. In particular, on-site discharges to surface waters are exempt from procedural NPDES permit requirements. Off-site dischargers would be required to apply for and obtain an NPDES permit.

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SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Discharge of Treatment System Effluent	**Best Available Technology:**		
	Use of best available technology (BAT) economically achievable is required to control toxic and nonconventional pollutants. Use of best conventional pollutant control technology (BCT) is required to control conventional pollutants. Technology-based limitations may be determined on a case-by-case basis.	Point source discharge to waters of the United States. i/ j/	40 CFR 122.44(a)
	Water Quality Standards:		
	Applicable Federally approved State water quality standards must be complied with. These standards may be in addition to or more stringent than other Federal standards under the CWA. k/		40 CFR 122.44 and State regulations approved under 40 CFR 131
	Discharge limitations must be established at more stringent levels than technology-based standards for toxic pollutants.		40 CFR 122.44(e)
	Best Management Practices:		
	Develop and implement a Best Management Practices program to prevent the release of toxic constituents to surface waters.		40 CFR 125.100

i/ "Waters of the U.S." is defined broadly in 40 CFR 122.2 and includes essentially any water body and wetland.

j/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met. In particular, on-site discharges to surface waters are exempt from procedural NPDES permit requirements. Off-site dischargers would be required to apply for and obtain an NPDES permit.

k/ Federal Water Quality Criteria may be relevant and appropriate depending on the designated or potential use of the water, the media affected, the purposes of the criteria, and current information. (CERCLA §121(d)(2)(B)(i)) Federal Water Quality Criteria for the protection of aquatic life will be relevant and appropriate when environmental factors (e.g., protection of aquatic organisms) are being considered. (50 FR 30784 (July 29, 1985)).

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Dike Stabilization	Design and operate facility to prevent overtopping due to overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.	Existing surface impoundment containing hazardous waste, or creation of a new surface impoundment.	40 CFR 264.221
	Construct dikes with sufficient strength to prevent massive failure.		40 CFR 264.221
	Inspect liners and cover systems during and after construction.		40 CFR 264.226
	Inspect weekly for proper operation and integrity of the containment devices.		40 CFR 264.226
	Remove surface impoundment from operation if the dike leaks or there is a sudden drop in liquid level.		40 CFR 264.227
	At closure, remove or decontaminate all waste residues and contaminated materials. Otherwise, free liquids must be removed, the remaining wastes stabilized, and the facility closed in the same manner as a landfill.		40 CFR 264.228
	Manage ignitable or reactive wastes so that it is protected from materials or conditions that may cause it to ignite or react.		40 CFR 264.227

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Construction of a New Surface Impoundment (see Closure with Waste in Place and Closure with no Post-Closure Care)	Minimum Technology Requirements:		
	Use two liners, a top liner that prevents waste migration into the liner and a bottom liner that prevents waste migration through the liner (throughout the post-closure period).	RCRA hazardous waste (listed or characteristic) currently being placed in a new surface impoundment, or use of replacement or lateral extension of existing landfills or surface impoundments.	40 CFR 264.220
	Design liners to prevent failure due to pressure gradients, contact with the waste, climatic conditions, and the stress of installation and daily operations.		40 CFR 264.221
	Provide a leachate collection system between the two liners.		40 CFR 264.221
	Use a leak detection system that will detect leaks at the earliest possible time.		40 CFR 264.221
	Ground-water Monitoring		
	Establish a detection monitoring program (264.98). Establish a compliance monitoring program (264.99) and corrective action monitoring program (264.100) when required by 40 CFR 264.91. All monitoring programs must meet RCRA general ground-water monitoring requirements (264.97)	Creation of a new landfill unit to Croat. store, or dispose of RCRA hazardous wastes as part of a remedial action.	40 CFR 264.91-264.100

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Discharge of Treatment System Effluent (continued)	Comply with additional substantive conditions such as: o Duty to mitigate any adverse effects of any discharge; and o Proper operation and maintenance of treatment systems.		40 CFR 122.41(i)
Direct Discharge to Ocean	Discharges causing "unreasonable degradation of the marine environment" are not permitted.	Applies to marine environment. 1/	40 CFR 125.122(b)
	A determination of whether a discharge will cause reasonable degradation of the marine environment must be made, based on consideration of: o Quantity, composition, or persistence of pollutants to be discharged; o Potential transport of pollutants by biological, chemical, or physical processes; o Composition and vulnerability of exposed communities; o Importance of the receiving water to spawning, migratory paths, and surrounding biological community; o Existence of special aquatic sites; o Impact on human health and commercial fishing;		40 CFR 125.122

1/ CWA §403 requires that an NPDES permit be issued for discharges into marine waters including territorial seas, the contiguous zone, and the oceans. (40 CFR 122.2.) A permit is not required if point of discharge is on-site.

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Direct Discharge to Ocean (continued)	o Applicable requirements of the Coastal Zone Management Plan (see Vol. 3 of this manual); and o Marine Water Quality Criteria developed under CWA §304(a)(1).		
	Comply with the limiting permissible concentrations (LPCs) at the mixing zone boundary that are established in the permit.		40 CFR 125.123(d (1)
Discharge to Publicly Owned Treatment Works (POTW) (off-site activity, see footnote g/)	Discharge of pollutants that pass-through the POTW without treatment, interfere with POTW operation, contaminate POTW sludge, or endanger health/safety of POTW workers, is prohibited. Specific prohibitions preclude the discharge of pollutants to POTWs that: o Create a fire or explosion hazard in the POTW; o Will cause corrosive structural change to POTW; o Obstruct flow resulting in interference; o Are discharged at a flow rate and/or concentration that will result in interference; and o Increase the temperature of waste-water entering the treatment plant that would result in interference, but in no case raise the POTW influent temperature above 104°F (40°C).	Indirect discharge to a POTW.	40 CFR 403.5

g/ Discharge to POTWs is considered an off-site activity (see p. 3-21 for discussion of requirements); therefore, requirements related to discharge to a POTW are not ARARs, but are included in this exhibit for reference. Off-site actions must comply with all legally applicable requirements, both substantive and administrative. The concept of "relevant and appropriate" is not available for off-site actions.

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1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Discharge to Publicly Owned Treatment Works (POTW) (continued)	o Discharge must comply with local POTW pretreatment program, including POTW-specific pollutants, spill prevention program requirements, and reporting and monitoring requirements.		40 CFR 403.5 and local POTW regulations
	o RCRA permit-by-rule requirements (including corrective action where the NPDES permit was issued after November 8, 1984) must be complied with for discharges of RCRA hazardous wastes to POTWs.	Transport of RCRA hazardous wastes to POTWs by truck, rail, or dedicated pipe (i.e., pipe solely dedicated for hazardous waste [as defined in 40 CFR 264] which discharges from within the boundaries of the CERCLA site to within the boundaries of the POTW).	40 CFR 270.60
Discharge of Dredge and Fill Material to Waters of the U.S. or Ocean Waters	The four conditions that must be satisfied before dredge and fill is an allowable alternative are: o There must be no practical alternative. o Discharge of dredged or fill material must not cause a violation of State water quality standards, violate any applicable toxic effluent standards, jeopardize an endangered species, or injure a marine sanctuary. o No discharge shall be permitted that will cause or contribute to significant degradation of the water. o Appropriate steps to minimize adverse effects must be taken. Determine long- and short-term effects on physical, chemical, and biological components of the aquatic ecosystem.	Capping, dike stabilization, construction of beams and levees, and disposal of contaminated soil, waste material or dredged material are examples of activities that may involve a discharge of dredged or fill material.	40 CFR 230 33 CFR 320-330

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Dredging	Removal of all contaminated soil.	RCRA hazardous waste placed at site after the effective date of the requirements, or placed into another unit.	See Closure in this Exhibit.
	Dredging must comply with Section 10 of the Rivers and Harbors Act and U.S. Army Corps of Engineers regulations.	Dredging in navigable waters of the United States.	33 U.S.C. 403 33 CFR 320-330
Excavation	Movement of excavated materials to new location and placement in or on land will trigger land disposal restrictions for the excavated waste or closure requirements for the unit in which the waste is being placed.	Materials containing RCRA hazardous wastes subject to land disposal restrictions are placed in another unit.	40 CFR 268 (Subpar: D)
	Area from which materials are excavated may require cleanup to levels established by closure requirements.	RCRA hazardous waste placed at site after the effective date of the requirements.	See Closure lo thlr Exhibit.
Gas Collection	[CAA requirements to be provided.]		
Ground-Water Diversion	Excavation of soil for construction of slurry well may trigger closure or land disposal restrictions.	Materials containing RCRA hazardous waste subject to land disposal restrictions are placed into another unit.	See Consolidation in this Exhibit.
Incineration	Analyze the waste feed.	RCRA hazardous wer.	40 CFR 264.341
	Dispose of all hazardous waste and residues, including ash, scrubber water, and scrubber sludge.		40 CFR 264.351
	No further requirements apply to incinerators that only burn wastes that are listed as hazardous solely by virtue of combination with other wastes, and if the waste analysis demonstrates that no Appendix VII constituent is present that might reasonably be expected to be present.		40 CFR 2b4.340

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Incineration (continued)	Performance standards for incinerators:	RCRA hazardous waste.	40 CFR 264.343
	o Achieve a destruction and removal efficiency of 99.99 percent for each principal organic hazardous constituent in the waste feed and 99.9999 percent for dioxins:		
	o Reduce hydrogen chloride emissions to 1.8 kg/hr or 1 percent of the HCl in the stack gases before entering any pollution control devices; and		40 CFR 264.342
	o Not release particulate in excess of 180 mg/dscm corrected for amount of oxygen in stack gas.		40 CFR 264.343
	Monitoring of various parameters during operation of the incinerator is required. These parameters include:		40 CFR 264.343
	o Combustion temperature; o Waste feed rata; o An indicator of combustion gas velocity; and o Carbon monoxide.		
	Control fugitive emissions either by:		40 CFR 264.345
	o Keeping combustion zone sealed or o Maintaining combustion-zone pressure lower than atmospheric pressure		
	Utilize automatic cutoff system to stop waste feed when operating conditions deviate.		

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation:
Incineration (continued)	Special performance standard for incineration of PCBs: • Achieve a destruction and removal efficiency of 99.9999 percent; • Either 2 second dwell time at 1200 degrees C° (±100) and 3 percent excess oxygen in stack gas; or 1.5 second dwell time at 1600 degrees C. and 2 percent excess oxygen in stack gas; and • For non-liquid PCBs, mass air emissions from the incinerator shall be no greater than 0.001 g. HB per kg of the PCBs entering the incinerator.	Liquid and non-liquid PCBs at concentrations of 50 ppm or greater.	40 CFR 761.70
Land Treatment	Prior to land treatment, the waste must be treated to BDAT levels or meet a no migration standard.	RCRA hazardous waste being treated or placed into another unit.	
	Ensure that hazardous constituents are degraded, transformed, or immobilized within the treatment zone.		40 CFR 264.271
	Maximum depth of treatment zone must be no more than 1.5 meters (5 feet) from the initial soil surface and more than 1 meter (3 feet) above the seasonal high water table.		40 CFR 264.271
	Demonstrate that hazardous constituents for each waste can be completely degraded, transformed, or immobilized in the treatment zone.		40 CFR 214.211
	Minimize run-off of hazardous constituents.		40 CFR 264.273
	Maintain run-on/run-off control and management system.		40 CFR 264.21)

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SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Land Treatment (continued)	Special application conditions if food-chain crops are grown in or on treatment zone.		40 CFR 264.276
	Unsaturated zone monitoring.		40 CFR 264.278
	Special requirements for ignitable or reactive waste.		40 CFR 264.281
	Special requirements for incompatible wastes.		40 CFR 264.282
	Special testing and location requirements for certain hazardous wastes.	RCRA waste #s F020, F021, F022, F023, F026, F027 (dioxin-containing wastes).	40 CFR 264.283
Operation and Maintenance (O&M)	30-year post-closure care to ensure that site is maintained and monitored.	Land disposal closure.	40 CFR 264.310
Placement of Liquid Waste in Landfill	Liquids in Landfills Prohibition:		
	No bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids may be disposed of in landfills.	Placement of a bulk or non-containerized RCRA hazardous waste in a landfill.	40 CFR 264.314
	Containers holding free liquids may not be placed in a landfill unless the liquid is mixed with an absorbent or solidified.		40 CFR 264.314
Placement of Waste in Land Disposal Unit	Land Disposal Restrictions:		
	Attain land disposal "treatment standards" before putting waste into landfill in order to comply with land ban restrictions. A treatment standard can be either: (1) a concentration level to be achieved (performance-based) or (2) a specified technology that must be used (technology-based). If the standard is performance-based, any technology can be used to achieve the standard. (See Treatment when Waste will be Land Disposed.)	Placement of RCRA hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave.	40 CFR 268 (Subpart D)

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Slurry Wall	Excavation of soil for construction of slurry wall may trigger land disposal restrictions.	Materials containing RCRA hazardous waste subject to land disposal restrictions are placed in another unit. (See Treatment section for LDR schedule. Also see Consolidation, Excavation sections in this Exhibit.)	
Surface Water Control	Prevent run-on and control and collect run-off from a 24-hour 25-year storm (waste piles, land treatment facilities, landfills).	RCRA hazardous waste treated, stored, or disposed after the effective date of the requirements.	40 CFR 264.251(c),(d) 40 C R 264.273(c),(d) 40 CFR 264.301(c),(d)
	Prevent over-topping of surface impoundment.		40 CFR 264.221(c)
Tank Storage (On-Site)	Tanks must have sufficient structural strength to ensure that they do not collapse, rupture, or fail.	Storage of RCRA hazardous waste (listed or characteristic) not meeting small quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal, or storage elsewhere (40 CFR 264.10), in a tank (i.e., any portable device in which a material is stored, transported, disposed of, or handled). A generator who accumulates or stores hazardous waste on-site for 90 days or less in compliance with 40 CFR 262.34(a)(1-4) is not subject to full RCRA storage requirements. Small quantity generators are not subject to the 90 day limit (40 CFR 262.34(c),(d), and (e)).	40 C R 264.190
	Waste must not be incompatible with the tank material unless the tank is protected by a liner or by other means.		40 CFR 264.191
	Tanks must be provided with secondary containment and controls to prevent overfilling, and sufficient freeboard maintained in open tanks to prevent overtopping by wave action or precipitation.		40 CFR 264.193-194
	Inspect the following: overfilling control, control equipment, monitoring data, waste level (for uncovered tanks), tank condition, above-ground portions of tanks (to assess their structural integrity), and the area surrounding the tank (to identify signs of leakage).		40 CFR 264.195
	Repair any corrosion, crack, or look.		40 CFR 264.196

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Tank Storage (On-Site) (continued)	At closure, remove all hazardous waste and hazardous waste residues from tanks, discharge control equipment, and discharge confinement structures.		40 CFR 264.191
	Store ignitable and reactive waste so as to prevent the waste from igniting or reacting. Ignitable or reactive wastes in covered tanks must comply with buffer zone requirements in "Flammable and Combustible Liquids Code," Tables 2-1 through 2-6 (National Fire Protection Association, 1976 or 1981).		40 CFR 264.198
	<u>Storage Prohibitions</u>:		
	Storage of banned wastes must be in accordance with 40 CFR 268. When such storage occurs beyond one year, the owner/operator bears the burden of proving that such storage is solely for the purpose of accumulating sufficient quantities to allow for proper recovery, treatment and disposal.		40 CFR 268.50
Treatment (in a unit)	Design and operating standards for unit in which hazardous waste is treated. (See citations at right for design and operating requirements for specific unit.)	Treatment of hazardous waste in a unit.	40 CFR 264.190- 264.192 (Tanks) 40 CFR 264.221 (Surface Impoundments) 40 CFR 264.251 (Waste Piles) 40 CFR 264.273 (Land Treatment Unit) 40 CFR 264.343-.345 (Incinerators) 40 CFR 264.601 (Miscellaneous Treatment Units) 40 CFR 265.373 (Thermal Treatment Units)

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability g/,d/	Citation
Treatment (when Waste will be Land Disposed)	Treatment of waste subject to ban on land disposal must attain levels achievable by best demonstrated available treatment technologies (BDAT) for each hazardous constituent in each listed waste, if residual is to be land disposed. If residual is to be further treated, initial treatment and any subsequent treatment that produces residual to be treated need not be BDAT, if it does not exceed value in CCWE (Constituent Concentration in Waste Extract) Table for each applicable water. (See 51 FR 40642, November 6, 1986.)	Disposal of contaminated soil and debris resulting from CERCLA response actions or RCRA corrective actions is not subject to land disposal prohibitions and/or treatment standards for solvents, dioxins, or California list wastes until November 8, 1990 (and for certain first third wastes until August 8, 1990).	40 CFR 268.10 40 CFR 268.11 40 CFR 268.12 40 CFR 268.41 40 CFR 268 (Subpart D)
		All wastes listed as hazardous in 40 CFR Part 261 as of November 8, 1984, except for spent solvent wastes and dioxin-containing wastes, have been ranked with respect to volume and intrinsic hazards, and are scheduled for land disposal prohibition and/or treatment standard determinations as follows:	51 FR 40641 52 FR 25760
		Solvents and dioxins — Nov. 8, 1986 California list wastes — July 8, 1987 One-third of all ranked and hazardous wastes — Aug. 8, 1988 Underground injection of solvents and dioxins and California list wastes — Aug. 8, 1988 CERCLA response action and RCRA corrective action soil and debris — Nov. 8, 1988 Two-thirds of all ranked and listed hazardous wastes — July 8, 1989 All remaining ranked and listed hazardous wastes identified by characteristic under RCRA section 3001 — May 8, 1990 Any hazardous waste listed or identified under RCRA section 3001 after November 8, 1984 — Within 6 mos. of the date of identification or listing.	

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Treatment (when Waste will be Land Disposed) (continued)	BDAT standards for spent solvent wastes and dioxin-containing wastes are based on one of four technologies or combinations: for waste waters, (1) steam stripping, (2) biological treatment, or (3) carbon absorption [alone or in combination with (1) or (2)]; and for all other wastes, (4) incineration. Any technology may be used, however, if it will achieve the concentration levels specified.		40 CFR 268.30 RCRA Sections 3004(d)(3), (e)(3) 42 U.S.C. 6924(d)(3), (e)(3)
Underground Injection of Wastes and Treated Ground Water	UIC program prohibits: o Injection activities that allow movement of contaminants into underground sources of drinking water which may result in violations of MCLs or adversely affects health.	Approved UIC program is required in States listed under SDWA section 1422. (All States have been listed.) Class I wells and Class IV wells are the relevant classifications for CERCLA sites. Class I wells are used to inject hazardous waste, beneath the lowermost formation containing, within one quarter mile, an underground source of drinking water (USDW). n/	40 CFR 144.12
	o Construction of new Class IV wells, and operation and maintenance of existing wells.	Class IV wells are used to inject hazardous or radioactive waste into or above a formation which contains, within one quarter mile of the well, an underground source of drinking water.	40 CFR 144.13
	Class IV wells are banned except for reinjection of treated ground water into the same formation from which it was withdrawn, as part of a CERCLA cleanup or RCRA corrective action.		40 CFR 144.13(c)

n/ An underground source of drinking water (USDW) Io a non-exempted aquifer or its portion which: (1) supplies any public water system, *or* (2) which contains a sufficient quantity of ground rotor to supply a public rotor system and currently supplies drinking water *for* human consumption *or* contains fewer than 10,000 mg/l total dissolved solids. (40 CFR 144.3.)

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SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Underground Injection of Wastes and Treated Ground Water (continued)	The Director of the UIC program in a state may lessen the stringency of 40 CFR 144.52 construction, operation, and manifesting requirements for a well if injection does not occur into, through, or above a USDW or if the radius of endangering influence (see 40 CFR 146.06(a)) is less than or equal to the radius of the well.		40 CFR 144.16
	o Report non-[illegible]ance orally wi[illegible] 24 hours.	Class I [illegible]ls.	40 CFR 144.28(b) 40 CFR 144.51(b)
	o Prepare, maintain, and comply with plugging and abandonment plan.		
	Monitor Class I wells by:	Class I wells are used to inject hazardous waste, beneath the lowermost formation containing, within one quarter mile, an underground source of drinking water (USDW).	40 CFR 144.28(g)(1)
	o frequent analysis of injection fluid;		
	o continuous monitoring of injection pressure, flow rate, and volume; and		
	o installation and monitoring of ground-water monitoring wells.		
	Applicants for Class I permits must:		40 CFR 144.55
	o Identify all injection wells within the area of review.		
	o Take action as necessary to ensure that such well are properly sealed, completed, or abandoned to prevent contamination of USDW.		
	Criteria for determining whether an aquifer may be determined to be an exempted aquifer include current and future use, yield, and water quality characteristics.		40 CFR 146.4

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Underground Injection of Wastes and Treated Ground Water (continued)	Case and cement all Class I wells to prevent movement of fluids into USDW, taking into consideration well depth, injection pressure, hole size, composition of injected waste, and other factors.	(See above)	40 CFR 144.28(e)(1)
	Conduct appropriate geologic drilling logs and other tests during construction.		40 CFR 146.12(d)
	Injection pressure may not exceed a maximum level designed to ensure that injection does not initiate new fractures or propagate existing ones and cause the movement of fluids into a USDW.		40 CFR 146.13
	Continuous monitoring of injection pressure, flow rate, and volume, and annual pressure, if required.		
	Demonstration of mechanical integrity is required every 5 years.		
	Ground-water monitoring may also be required.		
	Comply with State underground injection requirements.		40 CFR 147
	Hazardous waste to be injected is subject to land ban regulations. (See section 4.2.2.1 of this manual.) Treated ground water that meets the definition of hazardous waste and is to be injected also is subject to land ban regulations.		40 CFR 268.2

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EXHIBIT 1-3 (

SELECTED [redacted] POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

Actions b/	Requirements	Prerequisites for Applicability c/,d/	Citation
Waste Pile	Use a single liner and leachate collection system.	RCRA hazardous waste, non-containerized accumulation of solid, nonflammable hazardous waste that is used for treatment or storage.	40 CFR 264.251
	Waste put into waste pile subject to land ban regulations (see Appendix of this manual).		40 CFR 268.2

should be provided in an Appendix to the RI/FS Report for the analysis of other Federal and State criteria, advisories, guidance, and proposed standards to be considered (TBCs).

- If no potential ARARs are identified covering a particular situation, or if potential ARARs are determined not to be protective, any pertinent criteria, advisories, guidance, or proposed standards should be used, and the reasons for their use should be fully documented.

- Documentation need not be provided for negative determinations related to TBCs. That is, reasons for determining that to-be-considered standards are not pertinent do not need to be documented.

In addition to the circumstances specified above, documentation should be provided for both ARARs and to-be-consibred standards in every case in which, in the decision-maker's judgment, the documentation would strengthen the RI/FS Report and *tho* ROD.

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EXHIBIT 1-9

UNIVERSE OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS a/

1. **Office of Solid Waste**

- Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901) b/

  a. 40 CFR Part 264, applicable for permitted facilities c/, and 40 CFR Part 265, for interim status facilities.

     -- Ground-water Protection (40 CFR 264.90-264.101)
     -- Ground-water Monitoring, Subpart F (40 CFR 264.98-264.100) d/
     -- Closure and Post-Closure (40 CFR 264.110-264.120, 265.110-265.120)
     -- Containers (40 CFR 264.170-264.178, 265.190-265.177)
     -- Tanks (40 CFR 264.190-264.200, 265.190-265.199)
     -- Surface Impoundments (40 CFR 264.220-264.249, 265.220-265.230)
     -- Waste Piles (40 CFR 264.250-264.269, 265.250-265.258)
     -- Land Treatment (40 CFR 264.270-264.299, 265.270-265.282)
     -- Incinerators (40 CFR 264.340-264.999, 265.340-265.369)
     -- Land Disposal Restrictions (40 CFR 268.1-268.50)
     -- Dioxin-containing Wastes (50 FR 1978). Includes the final rule for the listing of dioxin-containing waste.

  b. Statutory requirements, including:

     -- Liquids in Landfills (RCRA §3004(c))
     -- Minimum Technology Requirements (RCRA §3004(o), 3005(j))
     -- Dust Suppression (RCRA §3004(e))
     -- Hazardous Waste Used as Fuel (RCRA §3004(q))

  c. Open Dump Criteria - pursuant to RCRA Subtitle D criteria for classification of solid waste disposal facilities (40 CFR Part 257). Note: for nonhazardous nut...

2. **Office of Water**

- The Safe Drinking Water Act (42 U.S.C. 300(f))

  a. Maximum Contaminant Levels (chemicals, turbidity, and microbiological contamination) (for drinking water or human consumption) (40 CFR 141.11-141.16).

  b. Maximum Contaminant Level Goals (40 CFR 141.50-141.51, 50 FR 46936)

  c. Underground Injection Control Regulations (40 CFR Parts 144, 145, 146, 147).

- Clean Water Act (33 USC 1251)

  Requirements established pursuant to sections 301 (effluent limitations), 302 (effluent limitations), 303 (water quality standards, including State water quality standards), 304 (Federal water quality criteria), 306 (national performance standards), 307 (toxic and pretreatment standards, including Federal pretreatment standards for discharge into publicly owned treatment works, and numeric standards for toxics), 402 (national pollutant discharge elimination system), 403 (ocean discharge criteria), and 404 (dredged or fi[illegible] material) of the Clean Water Act, (33 CFR Parts 320-330, 40 CFR Par[illegible] 22, 123, 125, 131, 230, 231, 233, 400-469). Available ambient Wa[illegible] Quality

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EXHIBIT 1-9
(Continued)

UNIVERSE OF UP
APPROPRIATE REQUIREMENTS

Criteria Documents are listed at 45 FR 79318, November 28, 1980; 49 FR 5831, February 15, 1984; 50 FR 30784, July 29, 1985; 51 FR 22978, June 28, 1986; 51 FR 43665, December 3, 1986; 51 FR 8012, March 7, 1986; 52 FR 6213, March 2, 1987.

- o Marine Protection, Research, and Sanctuaries Act (33 U.C.C. 1401)
- o Ocean Duping Requirements (40 CFR Parts 220-233, Subchapter H)
- o Discharge of dredged materials into ocean, (33 CFR Parts 320-329, 40 CFR Parts 122, 123, 125, 131, 230, 231, 233, 400-469). Incineration at sea requirements (40 CFR Parts 220-225, 227, 228). See also 40 CFR 125.120-125.124.
- o Section 10 of tho Rivers and Harbors Act prohibits unauthorized obstruction or alteration of navigable waters (33 CFR Parts 320-329, 40 CFR Parts 122, 123, 125, 131, 230, 231, 233, 400-469).
- o EPA's Stat —— t of Procedures on Floodplains Management and Wetlands Protection. (40 CFR Part 6 Appendix A) f/

3. **Office of Pesticides and Toxic Substances**

- o Toxic Substances Control Act (15 USC. 2601)
  - a PCB Requirements Generally: 40 CFR Part 761; Manufacturing Processing, Distribution in Commerce, and Use of PCBs and PCB Items (40 CFR 761.20-761.30); Marking of PCBs and PCB Items (40 CFR 761.40-761.45); Storage and Disposal (40 CFR 761.60-761.79); Records and Reports (40 CFR 761.180-761.185). See also 40 CFR 129.105, 750.
  - b Disposal of Waste Material Containing TCDD (40 CFR 775.180-775.197).

4. **Office of Air and Radiation**

- o Tho Uranium Mill Tailings Radiation Control Act of 1978 (42 U.C.C. 2022)

  Uranium mill tailing rules - Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, (40 CFR Part 192).
- o Clean Air Act (42 U.S.C. 7401)
  - a. National Ambient Air Quality Standards (40 CFR Part 50)
  - b Standards for Protection Against Radiation - high and la, level radioactive waste rule, (10 CFR Part 20).
  - c. National Emissions Standards for Hazardous Air Pollutants for Asbestos and Wet Dust particulates, (40 CFR 61.140-61.156), for Beryllium (40 CFR 61.30-61.34), for Vinyl Chloride (40 CFR 61.60-61.71), for Benzene (40 CFR 61.110-61.112), and for othrr hazardous substances (40 CFR Part 61 generally). See also effluent limitations and pretreatment standards for Wet Dust Collection (40 CFR 427.110-427.116) and 40 CFR Part 763.
  - d. National Emissions Radionuclides (40 CFR Pmrt 61, 10 CFR 20.101-20.108)
  - e. State implementation plans for national primary and secondary ambient air quality control standards (42 USC. 7410)

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EXHIBIT 1-9
(Continued)

UNIVERSE OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

f. Standards of performance for new stationary sources, including new incinerators (42 USC 7411), (40 CFR Part 60).

5. Other Federal Requirements

- o OSHA requirements for workers engaged in response or other hazardous waste operations (29 CFR 1910.120).
- o Occupational Safety and Health Act of 1970 (29 USC 651).
  - a. Occupational kfrty and Health Standards (General Industry Standards) (29 CFR Put 1910).
  - b. The kfrty *urd* Health Standards for Federal Service Contracts (29 CFR Part 1926).
  - c. The Shipyard and Longshore Standards (29 CFR parts 1915, 1918).
  - d Tho Health and Safety Standards for Employees engaged in Hazardous Waste Operations. (50 FR 45654)
- o National Historic Preservation Act, 16 USC 470. Protection of Archaeological Resources: Uniform Regulations -- Department of Defense (32 CFR Part 229, 229.4), Department of the Interior (43 CFR Part 7, 7.4).
- o Federal Lud Policy and Management Act, 13 USC 1700. (Establishes requirements concerning utilization of public lands, particularly rights of way regulation (13 USC 17611, land use planning and land acquisition and disposition (13 USC 17111, and appropriation of waters on public lands.
- o Department of Transportation Rules for the Transportation of Hazardous Materials, 49 CFR Parts 107, 171.1-172.558.
- o Endangered Species Act of 1973, 16 USC 1531. (Generally, 50 CFR Putr 81, 225, 402).
- o Wild and Scenic Rivers Act, 16 USC 1271.
- o Fish *urd* Yllldllfr Coordination Act, 16 ULC 661 note.
- o Fish *urd* Yllldllfr Improvement Act of 1978, and Fish *urd* Yllldllfr Act of 1956, 16 USC 742a note. a/
- o Fish urd Yllldllfr Conservation Act of 1980, 16 U.S.C. 2901. (Generally, 50 CFR Part 83). a/
- o Coastal Zone Management Act of 1972, 16 USC 1451. (Generally, 15 CFR Prrt 930 and 15 CFR 923,45 for Air and Water Pollution Control Requirements).
- o Farmland Protection Policy Act, 7 U.S.C. 4201. (Generally, 7 CFR Part 658). a/
- o Rivers urd Harbors Act (33 U.S.C 403)

a/ This is tho list of potentially applicable *or* relevant urd appropriate requirements found in tho October 2, 1985, Compliance Policy with additions. As additional requirements are promulgated, they must also be considered potentially applicable or relevant and appropriate and added to this list.

b/ In authorized States, Federal regulations promulgated under RCRA are not applicable as a State requirement until the State e ts those regulations through its own legislative process, but pr ly would be relevant and appropriate as a Federal requirement. F ral

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EXHIBIT 1-9
(Continued)

UNIVERSE OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

regulations promulgated pursuant to the Hazardous and Solid Waste Amendments of 1984, homer, are effective immediately in all 50 states, and are potentially applicable as Federal requirements.

c/ 40 CFR Part 264 regulations apply to permitted facilities and my be relevant and appropriate to other facilities.

d/ Only the Subpart f ground-water monitoring requirements under 40 CFR 264 are ARAR. The Subpart F ground-water monitoring requirements under 40 CFR 265 are not ARAR.

e/ May not be applicable or relevant for many sites.

f/ 40 CFR Part 6 Subpart A sets forth EPA policy for carrying art tho provisions of Executive Orders 11988 (Floodplains Management) and 11990 (Protection of Wetlands).

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EXHIBIT 1-10

OTHER FEDERAL AND STATE CRITERIA, ADVISORIES, AND GUIDANCE TO BE CONSIDERED a/

1. **Federal Criteria, Advisories, and Procedures**

- Health Effects Assessments (HEAs) and Proposed HEAs, ("Health Effects Assessment for (Specific Chemicals), "ECAO, USEPA, 1985).
- References Doses (RFDs), ("Verified Reference Doses of USEPA," ECAO-CIN-475, January 1986). See also Drinking Water Equivalent Levels (DWELs), a rot of medium-specific drinking water levels derived from RFDs. (See M P A Health Advisories, Office of Drinking Water, March 31, 1987)
- Carcinogen Potency Factors (CPFs) (e.g., Q1 Stars, Carcinogen Assessment Group [CAG] Values), (Table 11, "Health Assessment Document for Tetrachloroethylene (Perchloroethylene)," USEPA, OWEA/600B-82/005F, July 1985).
- Pesticide registrations and registration data.
- Pesticide and Food additive tolerances and action levels. Note: Some tolerances and action levels may pertain and should therefore be considered in certain situations.
- Waste load allocation procedures, EPA Office of Water (40 CFR Part 125, 130).
- Federal Solo Source Aquifer requirements (See 52 FR 6873, March 5, 1987).
- Public health criteria on which tho decision to llrt pollutants as hazardous under Section 112 of the Clean Air Act was based.
- Guidelines for Ground-Water Classification Under tho EPA Ground-Water Protection Strategy.
- TSCA chemical advisories (4 issued to date: Nitrosamines (September, 1984), P/Tert/Buti/benzoic acid (March, 1985), Burning used oil & space heaters (November, 1985), 4-4 Methylinebis [2/Chloroanaline] (December, 1986), 2 Nitropropane (December 1986).
- Advisories issued by FWS and NWFS under tho Fish and Wildlife Coordination Act.
- TSCA Compliance Program Policy, ("TSCA Enforcement Guidance Manual - Policy Compendium," USEPA, OECM, OPTS, March, 1985).
- OSHA health and safety standards that may be used to protect public health (non-workplace).

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a/ This llrt updates the llrt of other Federal criteria, advisories, and guidance to be considered in tho October 5, 1985, Compliance Policy. As additional or revised criteria, advisories, or guidance are issued, they should be added to this llrt and also considered.

b/ Proposed amendments to tho Federal Insecticide, Fungicide and Rodenticide Act Introduced tho concept of Ground Water Residue Guidance Levels (GRGLs). These amendments have not been passed by Congress and a list of GRGLs has not yot been promulgated.

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EXHIBIT 1-10
(Continued)

OTHER FEDERAL AND STATE CRITERIA, ADVISORIES, AND GUIDANCE TO BE CONSIDERED

- Health Advisories, EPA Office of Water.
- EPA Water Quality Advisories, EPA Office of Water, Criteria and Standards Division.

2. USEPA RCRA Guidance Documents

- Interim Final Alternate Concentration Limit Guidance Part I: ACL Policy and Information Requirements (July, 1987)

a. EPA's RCRA Design Guidelines

(1) Surface Impoundments, Liners Systems, Final Cover and Freeboard Control.

(2) Waste Pile Design - Liner Systems.

(3) Land Treatment Units.

(4) Landfill Design - Liner Systems and Final Cover.

b. Permitting Guidance Manuals c/

(1) Permit Writer's Guidance Manual for Hazardous Waste Land Treatment, Storage and Disposal Facilities, Phase I; (February 15, 1985) EPA/530-SW-85-024.

(2) Permit Writer's Guidance Manual for Subpart F. (October, 1983)

(3) Permit Applicant's Guidance Manual for the General Facility Standards. (October 15, 1983) EPA # OSW 00-00-968

(4) Waste Analysis Plan Guidance Manual. (October 15, 1984) EPA/530-SW-84-012

(5) Permit Writer's Guidance Manual for Hazardous Waste Tanks. (July 1983)

(6) Model Permit Application for Existing Incinerators. (1985)

(7) Guidance Manual for Evaluating Permit Applications for the Operation of Hazardous Waste Incinerator Units. (July 1983)

(8) A Guide for Preparing RCRA Permit Applications for Existing Storage Facilities. (January 15, 1982)

(9) Guidance Manual on closure and post-closure Interim Status Standards.

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c/ RCRA permit manuals are listed to indicated the kind of information used, manner of interpreting information, and determinations in setting standards; they are not used to indicate procedures.

EXHIBIT 1-10
(Continued)

OTHER FEDERAL AND STATE CRITERIA, ADVISORIES, AND GUIDANCE TO BE CONSIDERED

c. Technical Resource Documents (TRDs)

(1) Evaluating Cover Systems for Solid and Hazardous Waste. (September 1982) EPA OSW-00-00-867

(2) Hydrologic Simulation of Solid Waste Disposal Sites. (November 1982) EPA OSW-00-00-868

(3) Landfill and Surface Impoundment Performance Evaluation. (April 1983) EPA OSW-00-00-869

(4) Draft Minimal Technology Guidelines on Double Liner System for Landfills and Surface Impoundments. (May 1985) PB 87151072-AS

(5) Draft Minimal Technology Guidelines on Single Liner System for Landfills and Surface Impoundments. (May 1985) PB 871173159

(6) Management of Hazardous Waste Leachate. (September 1982) OSW-00-00-871

(7) Guide to the Disposal of Chemically Stabilized and Solidified Waste. (1982) EPA/530-SW-872

(8) Closure of Hazardous Waste Surface Impoundments. (September 1982) OSW-00-00-873

(9) Hazardous Waste Land Treatment. (April 1983) OSW-00-00-874

(10) Soil Properties, Classification, and Hydraulic Conductivity Testing. (March 1984) OSW-00-00-925, OSWER directive 9480.00-7D

d Test Methods for Evaluating Solid Waste

(1) Solid Waste Leaching Procedure Manual. (1984) OSW-00-00-924

(2) Methods for the Prediction of Leachate Plume Migration and Mixing

(3) Hydrologic Evaluation of Landfill Performance (HELP) Mode, Volumes I and II (1984), EPA/530-SW-84-009 & EPA/530-SW-84-010

(4) Hydrologic Simulation an Solid Waste Disposal Sites. (November 1982) EPA OSW-00-00-868

(5) Procedures for Modeling Flow through Clay Liners to Determine Required Liner Thickness. (1984) EPA/530-SW-84-001 & OSWER directive 9480.00-9D

(6) Test Methods for Evaluating Solid Wastes, third edition. (November 1986) SW-846

(7) A Method for Determining tho Compatibility of Hazardous Wastes. EPA/600-02-80-076

(8) Guidance Manual on Hazardous Waste Compatibility

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EXHIBIT 1-10
(Continued)

OTHER FEDERAL AND STATE CRITERIA, ADVISORIES, AND GUIDANCE TO BE CONSIDERED

3. USEPA Office of Water Guidance Documents

a. Pretreatment Guidance Documents:

(1) 304(g) Guidance Document Revised Pretreatment Guidelines (3 Volumes)

(2) Guidance for POTW Pretreatment Program Manual (October, 1983)

(3) Developing Requirements for Direct and Indirect Discharges of CERCLA Wastewater, Draft. (1987)

(4) Domestic Sewage Exemption Study

(5) Guidance for Implementing RCRA Permit by Rule Requirements at POTWs

(6) Application of Correction Action Requirements at Publicly Owned Treatment Works

(7) Draft Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (1987)

b. Water Quality Guidance Documents

(1) Ecological Evaluation of Proposed Discharge of Dredged Material into Ocean Waters (1977)

(2) Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses (1983)

(3) Water-Related Environmental Fate of 129 Priority Pollutants (1979)

(4) Water Quality Standards Handbook (December, 1983)

(5) Technical Support Document for Water Quality-based Toxics Control. (1983)

c. NPDES Guidance Documents

(1) NPDES Best Management Practices Guidances Manual (June 1981).

(2) Case studies on toxicity reduction evaluation (May 1983).

d. Ground Water/UIC Guidance Documents

(1) Designation of a USDW (No. 7.1, October 1979)

(2) Elements of aquifer identification (No. 7.2, October 1979)

(3) Interim Guidance Concerning Corrective Action for Primary and Continuous Release of Class I and IV Hazardous Waste wells (No. 45, April 1986) requirements

(4) Requirements applicable to wells inject[illegible] to, through, or above an aquifer that has been exempted pursuant to Section 146.104(b)(4). (Yo. [illegible] July 1981)

EXHIBIT 1-10
(Continued)

OTHER FEDERAL AND STATE CRITERIA, ADVISORIES, AND GUIDANCE TO BE CONSIDERED

(5) Guidance for UIC implementation on Indian lands. (No. 33, October 1983)

o. Ground-Water Protection Strategy (August 1984).

f. Clean Water Act Guidance Documents (See Exhibit 3-1).

4. **USEPA Manuals from the Office of Research and Development**

- o SW 846 methods - laboratory analytic methods (November 1986)
- o Lab protocols developed pursuant to Clean Water Act Section 304(h).

5. **Nonpromulgated State Advisories**

- o State approval of water supply system additions or developments.
- o State ground water withdrawal approvals.

Note: Many other State advisories could be pertinent. Forthcoming guidance will include a more comprehensive list.

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