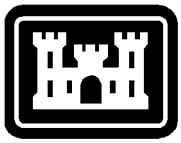

US Army Corps
of Engineers®

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30 November 2004

RECOVERED CHEMICAL WARFARE MATERIEL (RCWM) RESPONSE PROCESS

ENGINEER PAMPHLET

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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

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No. 75-1-3

30 November 2004

Explosives
RECOVERED CHEMICAL WARFARE MATERIEL RESPONSE PROCESS

1. Purpose. This pamphlet provides detailed procedures on the process to be used to manage and execute all aspects of Recovered Chemical Warfare Materiel (RCWM) response actions. This document addresses all activities, from investigation through removal, that occur on a RCWM site.

2. Applicability. This pamphlet applies to all Headquarters, U.S. Army Corps of Engineers (USACE) elements and all USACE commands having responsibility for performing RCWM response activities at Formerly Used Defense Sites. Note that, in accordance with ER 1110-1-8153, the U.S. Army Engineering and Support Center, Huntsville (USAESCH) is the only USACE command authorized to execute RCWM response actions. Consequently, if the presence of RCWM is suspected at a site, the Project Manager must coordinate with the USAESCH prior to beginning any on-site activities.

3. Distribution Statement. Approved for public release; distribution is unlimited.

4. References. Required and related references are at Appendix A.

5. Explanation of Acronyms and Terms. Abbreviations/acronyms and special terms used in this pamphlet are explained in the glossary.

FOR THE COMMANDER:

JOHN R. McMAHON
Colonel, Corps of Engineers
Chief of Staff

7 Appendices
(See Table of Contents)

This manual supersedes EP 75-1-3, dated 4 January 2002.

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CHAPTER 1

Introduction

1-1. Policy. The policy of the United States Army Corps of Engineers (USACE) is to plan and execute Recovered Chemical Warfare Materiel (RCWM) response actions in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), and all other applicable laws and regulations, and to fully meet expectations for quality, timeliness, and cost effectiveness. An acceptable level of quality does not imply perfection; however, there will be no compromise of functional, health, or safety requirements. Adherence to the Quality Management principles outlined in ER 5-1-11 and ER 1110-1-12 will contribute to achieving this goal. RCWM response procedures must be formulated to ensure harmony with the USACE Strategic Vision and will be executed in concert with activities presented in other USACE guidance.

1-2. RCWM Response Action Overview.

a. Description of the RCWM Response Process.

(1) RCWM response activities include actions taken to reduce the risk to human health and the environment from exposure to RCWM resulting from past Department of Defense (DOD) operations at a site. The discussions in this pamphlet apply to all activities at RCWM sites.

(2) A large part of the RCWM response process uses the same procedures required for munitions response to Munitions and Explosives of Concern (MEC). Therefore, RCWM response actions are conducted in accordance with (IAW) the same procedures used for munitions response actions to MEC. This Engineer Pamphlet (EP) discusses the procedures and requirements that are unique to RCWM actions. A reference will be provided to EP 1110-1-18 for procedures and requirements that are applicable to RCWM but are identical to the requirements for MEC.

b. RCWM Response Actions at Formerly Used Defense Sites (FUDS) and Active and Transferring Installations. A discussion of the requirements for conducting RCWM response actions at FUDS and Active and Transferring Installations is provided in ER 200-3-1.

c. Execution of RCWM Response Actions. IAW ER 1110-1-8153, the U.S. Army Engineering and Support Center, Huntsville (USAESCH) is the only USACE command authorized to execute RCWM response actions. If the presence of RCWM is suspected at a site, the Project Manager (PM) must coordinate with the USAESCH prior to beginning any on-site activities.

1-3. RCWM Response Regulatory Authorities.

a. A discussion of the governing laws and regulations for any specific RCWM response project is provided in ER 200-3-1 and EP 1110-1-18. The discussion in these documents provides an overview of the legal authorities for conducting a RCWM response action, including CERCLA, NCP, the Defense Environmental Restoration Program (DERP), which includes the FUDS program and the Installation Restoration Program (IRP). The discussion in these documents also addresses the Base Realignment and Closure (BRAC) program, Resource Conservation and Recovery Act (RCRA), Environmental Protection Agency (EPA) Military Munitions Rule, and Applicable or Relevant and Appropriate Requirements (ARARs). The Office of Counsel will be consulted to determine the appropriate legal requirements for the site being addressed.

b. The responsibilities detailed herein are FUDS-specific. Environmental restoration actions necessary at FUDS that are adjacent to and independent from an active DOD installation will be the responsibility of the USACE. Before the USACE begins those environmental restoration activities, the DOD component controlling the active installation retains the "right of first refusal" to accept the restoration responsibility. Once accepted, the DOD component will execute all appropriate actions, as required. If the DOD component does not exercise its right of first refusal, the USACE will proceed to execute FUDS responsibilities at the property. Only the USAESCH Chemical Weapons Design Center (CW-DC) is authorized to execute any phase of a RCWM response action.

1-4. Technical Project Planning (TPP). During RCWM response actions, members of the Project Delivery Team (PDT) implement the TPP process. In summary, the TPP process is a four phased approach involving a series of meetings during which the project goals and objectives, project data needs and data collection methods, and data quality objectives (DQOs) are discussed and agreed upon. The results of these meetings are recorded in a living document that is constantly updated based on the investigation's findings. Appropriate

implementation of the TPP process ensures that all PDT members, including stakeholders, understand and agree upon the project's objectives, and that they also all concur with what is required to achieve project completion. The TPP process is performed IAW EM 200-1-2, which describes the TPP process in detail and provides related documentation tools.

CHAPTER 2

Responsibilities

2-1. Introduction.

a. This chapter describes the responsibilities and functional roles of the USACE organizations and potential stakeholders in the RCWM response process.

b. Munitions response actions at RCWM sites will be performed IAW ER 1110-1-8153. The USACE is responsible for the overall project management and on-site supervision for RCWM response actions. Execution of all phases of a RCWM response action within the USACE is the responsibility of the CW-DC. ER 200-3-1 and ER 1110-1-8153 provides responsibility matrices delineating organizational responsibilities throughout the process.

c. Throughout this document, District review and approval responsibilities for project activities are discussed. These responsibilities have been delegated by the Major Subordinate Command (MSC) to the assigned District within their geographic area.

d. Districts requiring additional information beyond that discussed in this document should contact the USAESCH Military Munitions Mandatory Center of Expertise (MM CX),

2-2. General Responsibilities.

a. The Headquarters, United States Army Corps of Engineers (HQUSACE), MSCs, the District, and the MM CX all have the responsibility for quality and process improvement as described in ER 5-1-11. MSC Commanders are assigned overall responsibility for the overall project management of all RCWM response actions for all projects at which they are the PM, IAW ER 5-1-11.

b. The responsibilities of HQUSACE for planning and executing a RCWM response action are discussed in ER 1110-1-8153, ER-200-3-1, and EP 1110-1-18.

c. It is the responsibility of all USACE personnel involved with RCWM response actions to execute safely those actions IAW applicable laws, regulations, and policies. All USACE organizations will ensure that all personnel involved with on-site activities are familiar with and have access to copies of the approved Chemical Safety Submission (CSS) and Work Plan prepared for the site-specific activities to be conducted. In addition, each

organization will ensure that such personnel have received appropriate training, medical surveillance, and personal protective equipment (PPE) required by the safety plan, contract specifications, Occupational Safety and Health Administration (OSHA) Standards, USACE regulations, and applicable DOD and Department of the Army (DA) regulations.

d. All USACE elements will ensure that RCWM response actions include provisions for meaningful stakeholder involvement pursuant to all applicable laws, regulations, and policies.

2-3. Functional Roles. The following section provides a general description of key functional roles in the RCWM response process. The functional roles for non-USACE agencies have been extracted from their respective guidance documents.

a. USACE. The following paragraphs describe the functional roles of USACE with respect to the HQ, Safety and Occupational Health Office, the USACE District, the USAESCH CW-DC, USAESCH MM CX, the Ordnance and Explosives (OE) Safety Specialist, the Construction Division, the Office of Counsel (OC), the Directorate of Real Estate, the Public Affairs Office (PAO), and the Hazardous, Toxic, and Radioactive Waste (HTRW) CX. Other functional areas for USACE are identified in ER 200-3-1.

(1) HQ, Safety and Occupational Health Office. The Corps of Engineers Safety Office (CESO) has responsibilities that include safety and occupational health and other supporting issues related to the proper implementation and execution of the MEC program activities under USACE management (such as DERP, BRAC, range clearance, etc.). CESO is the HQUSACE Point of Contact (POC) for the MEC safety and occupational health program and will:

(a) Oversee the safety and occupational health program and policy issues within the USACE MEC Program.

(b) Coordinate the MEC safety and occupational health program and health policy issues with higher headquarters and DOD elements.

(c) CESO has delegated the authority to USAESCH for the Major Command (MACOM) approval for Explosives Safety Submissions (ESSs) and CSSs.

(d) Review, approve, and disseminate safety and occupational health technical guidance developed by the MM CX or others.

(e) CESO has delegated the authority to USAESCH to conduct the MACOM pre-operational survey required by DA Pam 385-61 as a precursor to the start-up of chemical operations at any USACE RCWM response action (see Appendix H).

(2) USACE District.

(a) As delegated by the MSC, the USACE District will assign a PM to lead the RCWM PDT, coordinate all project activities, serve as a liaison with other stakeholders, and review/approve documents as required. This PM will manage RCWM response actions IAW ER 5-1-11.

(b) The MSC may assign support functions to the USACE District during a RCWM response action. The District may perform these functions or further delegate them to USAESCH. Examples of these responsibilities include:

- Prepare the Probability Assessment for the determination of applicability of the Interim Guidance for CWM/Biological Warfare Material (BWM) (as necessary).
- Prepare Work Plans.
- Provide site construction support.
- Provide site security.
- Provide cultural resources support.
- Acquire rights-of-entry (ROEs).
- Provide medical support and training.
- Establish and maintain the Administrative Record.
- Prepare the Public Evacuation or Shelter-in-Place Plan, as necessary.
- Provide on-site support for coordination with local stakeholders.
- Prepare the Memorandum of Agreement with local support agencies, as necessary.

- Prepare Remedial Investigation/Feasibility Study (RI/FS) reports or Engineering Evaluation/Cost Analysis (EE/CA) reports, as required.

- Coordinate the Action Memorandum/Decision Document (DD)/Record of Decision (ROD), as necessary.

(3) USAESCH CW-DC.

(a) CW-DC POC. The CW-DC POC is the central figure responsible for coordination of the CW-DC functions for the RCWM response action, and acts as the liaison between the CW-DC and the PM. The CW-DC POC will ensure continuing and timely coordination with the PM regarding progression of activities at a project, as well as providing all necessary documents and information to the PM to maintain the administrative record. Further information on the responsibilities of the CW-DC POC is presented in ER 1110-1-8153.

(b) Engineering Support. The USAESCH CW-DC provides multi-discipline engineering support to the RCWM PDT. Engineering support during RCWM response actions may include, but is not limited to, the following:

- Engineering design of structures, facilities, and excavations.

- Blast effects analysis.

- Surveying.

- Geographic information systems.

- Geophysical investigations.

- Soil sampling and analysis.

- Systems safety.

- Development of Maximum Credible Event (MCE) and calculation of exclusion zones (EZs).

- Planning.

- Preparation of technical Statements of Work (SOWs).

- Cost estimating and contract negotiation support.
- Review of Work Plans and CSSs.
- Coordination of technical issues.
- Other efforts requiring engineering and technical expertise contained within the USAESCH CW-DC.

(c) Contracting. The USAESCH CW-DC will perform all contracting actions for RCWM sites. Responsibilities include:

- Assure all RCWM-related Requests for Proposal (RFPs), Commerce Business Daily (CBD) announcements, new contracts, SOWs, and delivery orders have been reviewed by the appropriate PDT members prior to issuing/awarding.
- Assure an interdisciplinary, structured proposal evaluation team, including an OE Safety Specialist for all RCWM-related contracts.
- Assure current Data Item Descriptions (DIDs) are used in all RCWM-related contracts. Current DIDs are available on the MM CX website at http://www.hnd.usace.army.mil/oew/didsindex.asp.
- Plan, direct, coordinate, and accomplish actions required to select, negotiate, award, administer, modify, and terminate contracts for RCWM projects.
- Appoint a Contracting Officer's Representative (COR) when applicable. The Contracting Officer (CO) is the only person with the authority to enter into, administer, or terminate contracts. The CO and the officially designated COR may bind the government only to the extent of the authority delegated to them. Regardless of the exigencies of the site, the CO/COR are the only individuals who can "direct" a contractor to perform work, and then only within the limits of delegated authority.

(d) Chemical Event Reporting. The CW-DC will prepare and submit Chemical Event Reports (CERs) IAW Army Regulation (AR) 50-6 and USACE Interim Guidance – Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects, 23 Apr 04 (see Appendix B).

(e) Manifesting. The CW-DC will ensure that manifest documents (when required) are properly prepared and signed by the appropriate personnel IAW ER 200-3-1.

(4) USAESCH MM CX. The USAESCH MM CX is located within the USAESCH Ordnance and Explosives Directorate. In addition to the responsibilities presented in ER 1110-1-8153, responsibilities of the MM CX include:

(a) Review Work Plans and Site Safety and Health Plans (SSHPs).

(b) Ensure that RCWM response actions are conducted IAW OSHA guidance; EM 385-1-1 and ER 385-1-95, and the approved CSS and approved Work Plans.

(c) Provide MACOM approval for CSSs per the delegation of authority from HQ, USACE – CESO (see Appendix H).

(d) Execute the MACOM Pre-operation Survey for the Commander, USAESCH, as delegated by HQUSACE (see Appendix H).

(e) Act as the MACOM representative at DA, DOD, and other agency working groups for RCWM issues and policies.

(f) Develops policies and procedures for USACE relative to RCWM.

(g) Review Federal, DOD, and DA regulations related to MEC and RCWM and propose implementation guidance to HQUSACE to ensure USACE compliance.

(h) Review and approve RCWM and RCWM-related products IAW ER 1110-1-8153.

(i) Provide technical support throughout USACE.

(j) Review and evaluate RCWM detection and removal technology.

(k) Develop RCWM-specific contract requirements and maintain current contract DIDs.

(l) Assist HQUSACE in identifying RCWM program training requirements.

(m) Evaluate security concerns at RCWM projects and assist in the preparation of physical security plans and focused vulnerability assessments.

(5) OE Safety Specialist. The OE Safety Specialist for RCWM response actions is located within the USAESCH Ordnance and Explosives Directorate. Responsibilities of the OE Safety Specialist include:

(a) Provide on-site safety and health support for RCWM activities.

(b) Review the Archives Search Report (ASR), delivery orders, SOW, Work Plan, and CSS.

(c) Verify unexploded ordnance (UXO) qualifications of contractor employees.

(d) Verify training and physical examination records.

(e) Advise the contractor on RCWM procedures.

(f) Coordinate EZ activities with on-site agencies.

(g) Facilitate military Explosive Ordnance Disposal (EOD) response, when needed.

(h) Provide technical safety support to USACE districts and contractors.

(i) Conduct government quality assurance (QA) inspections of completed work.

(j) Assist in preparation of CERs on-site, when necessary.

(6) Construction Division. The District Construction Division may oversee field activities outside of the EZ; administers construction contracts; provides administration support; and may be assigned as the COR on a case-by-case basis.

(7) OC. The District OC renders legal assistance to the RCWM PDT. The OC provides legal interpretation and advice on applicability of environmental statutes and regulatory requirements, contract acquisition and claim issues, including review for legal sufficiency of all associated settlement agreements and environmental restoration decision documents. Due to the nature of RCWM response actions, the OC will be consulted on all matters involving questions of regulatory or statutory authority or requirements. The OC supporting the MM CX is available to the RCWM PDT for consultation.

(8) Directorate of Real Estate. The District Directorate of Real Estate performs real estate functions to support a RCWM response action, such as obtaining ROEs, reviewing deed restrictions, and preparing real property transfer documents.

(9) PAO. The District PAO provides for planning, developing, and managing public involvement and media relations for RCWM response projects. PAO personnel will coordinate with the CW-DC personnel prior to discussing any specific RCWM-related matters and the District PAO shall contact the CW-DC and PAO to coordinate the RCWM technical content prior to release.

(10) HTRW CX. The HTRW CX provides safety and occupational health technical expertise for chemical contaminants that are not chemical agent, and provides environmental science and engineering technical expertise concerning the HTRW aspects of RCWM response actions. Safety and occupational health roles and responsibilities of the HTRW-CX are described in more detail in ER 385-1-92.

b. Assistant Secretary of the Army (Installation and Environment) [ASA (I&E)]. The ASA (I&E) is responsible for establishing overall Army environmental, safety, and occupational health statutory compliance. These responsibilities are carried out through the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health).

c. Director of Army Safety, Office of the Chief of Staff, U.S. Army. The Director of Army Safety, Office of the Chief of Staff administers and directs the Army Safety program as specified in AR 385-10. Responsibilities include:

(1) Establish safety policy and standards for the Army chemical safety program for investigation of chemical defense research, development, testing, and evaluation events.

(2) Coordinate and approve safety waivers and exemptions to personnel safety policies.

(3) Approve CSSs for RCWM activities.

d. U.S. Army Technical Center for Explosives Safety (USATCES). USATCES is responsible for reviewing CSSs for DA Safety and forwarding to Department of Defense Explosives Safety Board (DDESB) for approval or concurrence as appropriate. USATCES will be invited to participate as a survey team member on all USACE Pre-Operational Surveys as an agent for DA Safety.

e. DDESB. Responsible for approving or concurring with CSSs, as appropriate. For FUDS projects, DDESB concurrence is necessary for the CSS; for all other projects, DDESB approval of the CSS is necessary.

f. Army Operations Center (AOC). Responsibilities of the AOC include:

(1) Receive notification of RCWM discoveries and events.

(2) Notify Army staff elements of RCWM discoveries and events.

(3) Coordinate emergency response to RCWM discoveries and events.

g. Program Manager for the Elimination of Chemical Weapons (PMECW). The U.S. Army PMECW—instituted as DOD's executive agent for demilitarization of U.S. chemical warfare-related materiel—subsequently created the Office of the Product Manager for Non-Stockpile Chemical Materiel (PMNSCM) to carry out this effort. The Non-Stockpile Chemical Materiel Project (NSCMP) is the DOD umbrella organization that is responsible for the destruction of RCWM on military installations and FUDS.

h. PMNSCM. Within the PMECW, the PMNSCM has the following responsibilities:

(1) Provide centralized management and direction to the DOD for treatment and disposal of non-stockpile chemical materiel in a safe, environmentally sound, and cost-effective manner.

(2) Prepare for shipment, certify, transport, treat, and dispose of RCWM (including preparation of necessary documentation).

(3) In coordination with USAESCH, prepare transportation, Interim Holding Facility (IHF), and disposal plans for the RCWM project and provide coordination of all transportation plans with the U.S. Department of Health and Human Services (DHHS). PMNSCM will usually contract with Technical Escort Unit (TEU) to perform the majority of the activities required by these plans. USAESCH will be responsible for some of the requirements of these plans such as site security and site preparation for the IHF.

i. U.S. Army Research, Development, and Engineering Command (RDECOM).

(1) Surgeon. The RDECOM Surgeon acts as a consultant to the USAESCH for RCWM projects. Regulations require medical support requirements be reviewed by the MACOM

surgeon and because USACE has no medical assets, the RDECOM Surgeon is consulted. Liaison with the surgeon is through the USAESCH Safety Office.

(2) Edgewood Chemical and Biological Center (ECBC). Responsibilities of ECBC on a RCWM site may include but are not limited to:

(a) Conduct air monitoring for chemical agent as tasked by USAESCH.

(b) Conduct agent and agent degradation product analyses as tasked by USAESCH.

(c) Sample unknowns that are munitions with unknown fillers, as necessary.

(d) May support USACE to maintain any filter units for vapor containment as tasked by USAESCH.

(e) Prepare the monitoring and analysis plans to be included in the Work Plan. The USAESCH contractor is required to summarize these monitoring and analysis plans in the CSS and/or SSHP.

j. Technical Escort Unit (TEU). The TEU is a part of the U.S. Army Guardian Brigade. Responsibilities of the TEU on a RCWM site include:

(1) Conduct on-site assessment of RCWM recovered during the RCWM response action IAW AR 50-6.

(2) Perform on-site air monitoring utilizing the Miniature Chemical Agent Monitoring System (MINICAMS), if required during an emergency response or requested by the customer during response actions.

(3) Conduct other on-site activities as tasked by USAESCH (e.g., D2PC [Downwind Hazard Prediction Model] modeling, emergency response, anomaly excavation).

(4) Package and transport recovered RCWM as tasked by PMNSCM.

(5) Conduct emergency destruction of RCWM munitions on-site as necessary.

(6) Additional information is provided in 1 April 1997 Memorandum of Agreement between the 52nd Ordnance Group (EOD) and USAESCH.

k. Department of the Army Chemical Agent Safety Council (DACASC). Responsibilities include:

(1) Serve as an open forum to evaluate, discuss, and coordinate chemical agent safety and health issues at the Headquarters Department of the Army (HQDA) level.

(2) Research and develop chemical agent safety policy recommendations for the Director of Army Safety (DASAF) and chemical agent safety issues as requested by Army leadership.

(3) Assess the safety and health of the chemical agent stockpile and disposal (stockpile and non-stockpile) programs.

(4) Evaluate and recommend Army approval of alternate chemical protective equipment and clothing, chemical agent monitoring equipment, and requirements and procedures for chemical agent decontamination and disposal.

l. Materiel Assessment Review Board (MARB). The MARB was established under the authority and direction of the Deputy Chief of Staff for Chemical and Biological Matters, AMC. The board is chaired by the Commander, TEU with membership selected from the explosives ordnance community, the chemical weapons research and development community, PMNSCM, and a historian from RDECOM. USAESCH has two non-voting members on the MARB. Responsibilities of the MARB on a RCWM site include:

(1) Evaluate recovered munitions suspected of containing lethal chemical agent using all available documentation, pictures, x-rays, drawings, physical data, Portable Isotopic Neutron Spectroscopy (PINS) data and expertise of each member of the MARB.

(2) Provide recommendations on the disposition of such materiel/munitions through a record of determination and decision for each materiel/munition. This record of determination and decision is forwarded to the Commander of the concerned installation or USACE District from the RDECOM Commander. If a consensus regarding disposition of a materiel/munition is not achievable, the MARB will determine the need for further information and delay action until such information is available.

m. Office of the Surgeon General (OSG). The OSG, through the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), has the following responsibilities:

(1) Provide policy on the health aspects of pollution resulting from Army activities and operations.

(2) Provide guidance, including educational materials on environmental health aspects, recommendations to mitigate or control adverse impacts and to protect individuals from hazardous exposure, and health risk assessments for environmental restoration.

(3) Develop toxicological profiles concerning military-unique chemicals and unregulated hazardous substances (i.e., those not specified in 10 USC 2704a).

(4) Establish environmental standards for chemical agents and weapons demilitarization.

(5) Develop and prepare chemical exposure and drinking water criteria for environmental contaminants (in particular, military-unique compounds) for ASA(I&E) promulgation.

(6) Conduct toxicity studies and develop health advisories and standards, criteria, and protocols for chemical exposure and drinking water.

(7) Approve health risk assessments.

(8) Establish public health criteria and standards for Army use.

(9) Recommend standards for the safe storage, use, discharge, and ultimate disposal of hazardous materials and, in the absence of environmental and public health effects criteria, develop, compile, and evaluate environmental toxicology data.

(10) Monitor the public health and environmental aspects of the Army's waste management programs.

(11) Advise USACE on the health aspects of managing hazardous and solid waste.

n. U.S. Department of Health and Human Services (DHHS). The DHHS is required by Public Law 91-441 to provide concurrence for plans related to the transport or disposal of lethal chemical warfare agent(s). Therefore, once the CSS is approved by Department of the Army, Office of the Chief of Staff (DACS-SF) it will be forwarded to DHHS by PMNSCM.

2-4. Other Stakeholders' Roles. Stakeholders will stakeholders will be given opportunity to participate actively in the RCWM response process, as required by CERCLA and the NCP. Stakeholders typically include: private landowners; Federal land managers; Indian Tribal Governments; Restoration Advisory Boards; and Federal, state, and local regulators. A description of the roles of these stakeholders is presented in EP 1110-1-18. The requirements concerning stakeholder involvement are provided in ER 200-3-1 and additional information is in EP 1110-3-8.

CHAPTER 3

Response Action Execution

3-1. Introduction.

a. This chapter discusses the requirements for USACE elements involved at RCWM response projects. Several requirements for RCWM response actions are identical to those for munitions response to MEC. These requirements include: business management practices; project prioritization; the PDT approach; project management plans; scheduling; project funding; reporting requirements; contracting; estimating; and real estate activities.

b. Project Management for RCWM projects will be implemented IAW ER 5-1-11.

3-2. Property Management. As a general policy, contractors are normally required to furnish all equipment and materials necessary to perform their contract tasks. However, when deemed to be in the best interest of the government, equipment/materials (e.g., vehicles, engineering controls, explosives, magnetometers, etc.) may be provided to the contractor by the government.

a. There is some Government Furnished Property (GFP) available for use at RCWM projects. This equipment has been used at past RCWM projects and has been contaminated with chemical agents. It has been properly decontaminated and the agent is no longer detectable at the action levels and is categorized as 3X. This category of equipment must remain under government control. This equipment can be used at future RCWM projects by government contractors with the proper procedures in place. The intent of using these pieces of equipment in lieu of buying or leasing new equipment is financial efficiency. If any of this category of GFP is necessary at the RCWM project, coordination will be accomplished between USAESCH, the contractor, and the supporting agency.

b. If GFP is not provided but the contract requires specialized equipment or materials that are not included in the contractor's overhead rate, procurement or lease may be authorized. In all cases, property management will comply with the Federal Acquisition Regulation (FAR), other applicable DOD and DA policies, and with the internal policies of the USACE District or USAESCH CW-DC, as appropriate.

c. Additional information on property management is provided in EP 1110-1-18. Topics discussed include: GFP provided to the contractor, acquisition planning, acquisitions, property management plan, and contract surveillance.

3-3. Quality Management. Quality assurance (QA) and quality control (QC) requirements are discussed in EP 1110-1-18, EM 200-1-6, and EM 1110-1-4009.

3-4. Public Participation. Public participation is an integral component of the RCWM response process. The USACE is committed to providing public participation activities during RCWM response actions. The requirements for public participation during a RCWM response action are presented in ER 200-3-1 and additional information is in EP 1110-3-8.

3-5. Coordination with Regulators. USACE is required to coordinate with the appropriate regulatory agencies throughout the RCWM response process. The requirements for regulatory coordination during a RCWM response action, including identification of the lead regulator, are presented in ER 200-3-1.

3-6. Environmental Considerations.

a. The District, in consultation with their Office of Counsel (OC) and the OC supporting the MM CX, as required, is the lead USACE agency on environmental issues related to RCWM response actions and is responsible for coordinating with regulators on these issues. Environmental issues will be addressed in project work plans prior to the commencement of fieldwork.

b. RCWM response actions must be conducted consistent with CERCLA and the NCP. There are some unique Federal requirements that may apply to RCWM actions, as well as some state considerations. The District must ensure that it has evaluated the applicable requirements and addressed those that are specific to that particular site. The impact of these regulations will not be the same at each site due to differences in site geography and differences among state/local regulations, for example. Vigilance must be constantly exercised to ensure that applicable changes in Federal, state, or local regulations are addressed. Additional information on Federal statutes and regulations, state laws and regulations, and local regulations is presented in ER 200-3-1.

c. Table 3.1 presents a selection of DOD directives, instructions, and regulations relevant to the environmental aspects of RCWM response actions. This table is not all-inclusive but may be used, in consultation with the OC, to assist with the determination of applicable environmental requirements for a specific project.

Table 3.1
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
29 CFR 1910	Labor	Describes labor specific requirements for working on potentially contaminated sites that may involve employee exposure or the reasonable possibility for employee exposure to safety or health hazards.	
29 CFR 1926	Construction	Describes Safety and Health regulations for Construction activities	
DOD 6055.9-STD	Ammunition and Explosives Safety Standards	Primary DOD regulation that requires unexploded ordnance cleanup of DOD lands prior to transfer.	
DOD Directive 1000.3	Safety and Occupational Health Policy for the Department of Defense	Establishes the basis for all DOD safety, fire protection, and occupational health programs	
DOD Directive 4165.60	Solid Waste Management-Collection, Disposal, Resource Recovery and Recycling Program	Sets DOD policy and procedures for the DOD comprehensive program of solid waste collection, disposal, material recovery, and recycling IAW USEPA guidelines, NEPA, and RCRA.	
DOD Directive 4500.9	Transportation and Traffic Management	Describes general DOD transportation and traffic management policies.	
DOD Directive 4700.4	Natural Resource Management Program	Sets DOD policy for management and protection of natural resources.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
DOD Directive 4710.1	Archeological and Historical Resources Management Program	Establishes DOD policies and procedures for protection and management of archeological and historical resources.	
AR 50-6	Chemical Surety	Prescribes policies, procedures and responsibilities for the Army Chemical Surety Program. Chapter 10, Recovered Chemical Warfare Materiel and Chapter 4, Chemical Accident or Incident Response and Assistance/Event Reporting, apply to RCWM sites. The rest of the chapters discuss chemical surety requirements which do not apply to non-stockpile RCWM sites.	
AR 190-11	Physical Security of Arms, Ammunition, and Explosives	Prescribes standards and criteria for the physical security of sensitive conventional arms, ammunition, and explosives.	
AR 190-59	Chemical Agent Security Program	Specifies criteria and standards for the storage, handling, and movement of chemical surety materiel.	
AR 200-1	Environmental Protection and Enhancement	Prescribes Army policies, responsibilities, and procedures to protect and preserve the quality of the environment.	
AR 200-2	Environmental Effects of Army Actions	Contains Army procedures for implementing National Environmental Policy Act (NEPA).	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
AR 200-3	National Resources – Land, Forest, and Wildlife Management	This regulation sets forth policy, procedures, and responsibilities for the conservation, management, and restoration of land and the associated natural resources, consistent with the military mission and in consonance with national policies.	
AR 200-4	Cultural Resources Management	This regulation prescribes Army policies, procedures, and responsibilities for meeting cultural resources compliance and management requirements.	
AR 385-10	Army Safety Program	This regulation provides DA policy, responsibilities, and procedures to protect and preserve personnel and property against accidental loss. It provides for public safety incident to Army operations and activities. This regulation assures statutory and regulatory compliance. This regulation also provides the risk assessment model for use on MEC sites.	
AR 385-61	The Army Chemical Agent Safety Program	Provides policy on the management of the chemical agent safety program. It provides procedures for requesting waivers and exemptions to these standards.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
AR 385-64	U.S. Army Explosives Safety Program	Provides protection guidance for sites involving MEC. It sets explosives safety standards to protect the public, the workforce and the environment. It is to be used with DA Pam 385-64.	
DA Pam 40-173	Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Mustard Agents H, HD, and HT	Explains medical occupational policies and provides procedures pertinent to mustard agents H, HD, and HT. The medical policies and procedures are prescribed in AR 50-6.	
DA Pam 40-8	Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Nerve Agents GA, GB, GD, and VX	Explains medical occupational policies and procedures pertinent to nerve agents GA, GB, GD, and VX. The medical policies and procedures have been aligned with AR 50-6.	
DA Pam 50-6	Chemical Accident or Incident Response and Assistance Operations	Explains the policies and procedures prescribed for Chemical Accident or Incident Response and Assistance (CAIRA) operations in AR 50-6. Chapter 6 discusses the medical support requirements on RCWM sites, Chapter 11 discusses environmental monitoring, and Chapter 17 discusses training requirements (e.g., table top exercises and pre-operational surveys).	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
DA Pam 200-1	Environmental Protection and Enhancement	This pamphlet describes, in detail, DA procedures and methodology to be followed in preserving, protecting, and restoring environmental quality IAW AR 200-1.	
DA Pam 200-4	Cultural Resources Management	This pamphlet Provides guidance for implementation of the Army's policy as prescribed in AR 200-4 Cultural Resources Management.	
DA Pam 385-61	Toxic Chemical Agent Safety Standards	Establishes the Army safety program for all aspects of military toxic chemical agents. Provides guidance on management of the toxic chemical agent safety program, as well as specific toxic chemical agent safety technical requirements.	
DA Pam 385-64	Ammunition and Explosives Safety Standards	The purpose of pamphlet explains the Army's safety criteria and standards for operations involving ammunition and explosives prescribed by AR 385-64.	
ER 1110-1-263	Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities	This regulation prescribes chemical data quality management responsibilities and procedures for HTRW remedial activities.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
ER 1110-1-8153	Ordnance and Explosives Response	Establishes roles and responsibilities for USACE elements in managing and executing munitions responses and authorizes and provides for the delegation of such roles and responsibilities.	
ER 200-3-1	Formerly Used Defense Sites (FUDS) Program Policy	Provides guidance on FUDS eligibility, restoration response, potentially responsible party, internal procedures, execution, public participation, coordination, and management.	
ER 385-1-92	Safety and Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities	Identifies the safety and occupational health documents and procedures required to be developed and implemented by USACE elements and their contractors responsible for executing HTRW activities.	
ER 385-1-95	Safety and Health Requirements for Ordnance and Explosive Operations	Identifies safety and health requirements, responsibilities, and procedures for MEC operations.	
EP 200-1-2	Environmental Quality - Process and Procedures for RCRA Manifesting	Provides a guide to the procedures and responsibilities associated with manifesting hazardous waste IAW RCRA and DOT regulations.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
EP 385-1-95a	Basic Safety Concepts and Considerations for Munitions Response to Munitions And Explosives of Concern Operations	Establishes operating procedures for dealing with MEC.	
EP 385-1-95b	Explosives Safety Submission	Provides procedural guidance for preparing ESSs for conventional munitions response actions.	
EP 415-1-266	Construction - Resident Engineer Management Guide (REMG) for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects	Provides information regarding remedial design activities, response actions involving HTRW, and response actions to MEC. It highlights the unique requirements of which resident engineers must be aware to complete environmental project successfully.	
EP 1110-1-18	Ordnance and Explosives Response	Provides procedures for the management and execution of munitions responses to MEC.	
EP 1110-3-8	Public Participation in the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS)	Provides information on public participation in the DERP for FUDS through discussion of procedures for establishing and maintaining community relations programs, Restoration Advisory Boards, and Administrative Records.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
EM 200-1-2	Technical Project Planning (TPP) Process	Provides procedures for the TPP process.	
EM 200-1-3	Requirements for the Preparation of Sampling and Analysis Plans	Provides guidance for the preparation of project-specific sampling and analysis plans for the collection of environmental data.	
EM 200-1-6	Chemical Quality Assurance for HTRW Projects	Provides specific guidance, procedures, criteria, and tools for chemical implementation of the USACE HTRW QA Program.	
EM 385-1-1	Safety and Health Requirements Manual	This manual prescribes the safety and health requirements for all Corps of Engineers activities and operations.	
EM 1110-1-1200	Conceptual Site Models for Ordnance and Explosives (OE) and Hazardous, Toxic, and Radioactive Waste (HTRW) Projects	Provides procedural guidance to develop conceptual site models at sites that may contain MEC, HTRW, or both.	
EM 1110-1-4009	Munitions Response to Munitions and Explosives of Concern	Provides procedures to be used to perform engineering and design activities for all phases of munitions response actions involving MEC.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
CESO-E Memorandum	SUBJECT: Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance	Directs the implementation of the DACS-SF Memorandum at all USACE activities.	
DA, Office of the Assistant Secretary Installations Logistics and Environment Memorandum *	SUBJECT: Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities, 5 Sep 97	The purpose of this Interim Guidance is to ensure the protection of workers, the public, and the environment during RCWM response activities and ensure that these activities are conducted IAW safety and environmental laws and requirements. It defines RCWM, risk assessments, characterization, recovery, packaging, and CSSs.	
DASA-ESOH Memorandum	Interim Guidance on Nerve and Mustard Agent Decontamination and Medical Services in Industrial Activities	Provides requirement sand procedures for safer, more effective chemical agent decontamination and medical treatment.	

Table 3.1 (continued)
Directives, Instructions and Regulations for RCWM Response Actions

Directive/Regulation	Title	Contents/Regulations	Applicable (Y/N)
DACS-SF Memorandum*	SUBJECT: Approval of Safety Submissions for Non-Stockpile Chemical Warfare Materiel Response Activities, 29 Feb 00	This document outlines procedures for the coordination, review and approval of CSSs and changes to CSSs.	
DACS-SF Memorandum	SUBJECT: Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance, 19 Mar 98	Assists local commanders, installation commanders, and district commanders in determining if the Interim Guidance is to be followed at projects where construction, or environmental response actions other than a RCWM investigation or removal action is conducted at a site with a history of RCWM.	
DACS-SF Memorandum	Notification of DDESB for Explosives and Chemical Agent Mishaps, 13 Jan 98	Describes notification requirements in the event of an explosive and/or chemical agent mishap.	
DACS-SF Memorandum	Amendments and Corrections to Safety Submissions for Non-Stockpile Chemical Warfare Materiel Response Activities, 20 Sep 00	Describes the procedures for issuing amendments and corrections to safety submissions for RCWM response actions.	

EP 1110-1-18 presents additional tables of other environmental laws that may be applicable to RCWM response actions, and additional environmental laws and regulations that may be applicable at specific sites containing RCWM hazards.

3-7. Geophysical Considerations. Detailed procedures for geophysical considerations for RCWM projects are provided in EM 1110-1-4009.

3-8. Location Surveying and Mapping. An overview of location surveying and mapping considerations for munitions response actions involving MEC is provided in EM 1110-1-4009. Detailed surveying, mapping, and Geographic Information System (GIS) requirements may be found on the MM CX website at http://www.hnd.usace.army.mil/oew.

3-9. GIS. The GIS assembles all the data required to associate the non-intrusive subsurface geophysics investigative data to the correct geographical location, the relational database, mapping, and remote sensing data. It provides a standard methodology to assist in the assembly of all past, current, and proposed MEC project information into a common reference for analysis, management, and storage in a digital format for the response action's administrative record.

3-10. Sampling and Analysis Considerations. Requirements for sampling and analysis are provided in ER 1110-1-263 and EM 200-1-3. Agent and agent breakdown product (ABP) analyses must be performed IAW the U.S Army Chemical Agent Standard Reference Material (CASARM) QA Plan and the laboratory's (ECBC's or approved contractor facility's) QA/QC plan.

3-11. Innovative Technologies in RCWM Response Actions.

a. Innovative technologies, like any other engineering tool, must be applied appropriately to a RCWM response action. The best available technology for each RCWM response action may vary due to differing, as well as highly unpredictable, site conditions.

b. The MM CX has been charged with reviewing, evaluating, and approving the implementation of the best available RCWM detection and removal technologies for RCWM response actions. The MM CX ensures that the implementation of innovative technologies is efficient and effective. The MM CX defines current technology and functional requirements, provides consulting services for response actions, identifies technology gaps, provides seed money to field improved technologies, and supports other technology programs. To assist with these functions, the MM CX maintains a MEC Innovative Technology Program.

c. Additional information on the Innovative Technology Program and the Innovative Technology Advocate is provided in EP 1110-1-18.

CHAPTER 4

RCWM Response Action Overview

4-1. Introduction. This chapter discusses the types of activities and tasks, which may be implemented during a RCWM response action and the corresponding safety and health plans and procedures that are required.

4-2. Documents and Procedures Required on Suspect RCWM Sites.

a. Overview.

(1) This section presents information on the documentation and procedures required on a suspect RCWM site. Information regarding when a district may perform work on a RCWM site is also provided.

(2) All planned response activities in an area suspected of containing RCWM will be conducted in a manner protective of both public and worker health and safety, in a manner protective of the environment. Prior to conducting any activities on a suspect RCWM site, approved safety and health plans and procedures are required to be completed IAW the 29 Feb 00 HQDA Memorandum "Approval of Safety Submissions for Non-Stockpile Chemical Warfare Materiel Response Activities." The level of effort for these plans and procedures is dependent on site activities or tasks (i.e., the potential for encountering RCWM.) Figure 4-1 details the process for determining which safety and health plans and RCWM requirements are applicable to activities on a RCWM site.

(3) The process discussed below applies to all investigative, response, or construction activities performed at a RCWM site by a district or MSC. If the site is suspected to be impacted by RCWM, the plans and requirements discussed in sections 4-2b through 4-2f must be followed. Performing RCWM investigation and/or response at suspect RCWM projects, in support of a District's RI/FS or EE/CA, is the responsibility of the USAESCH CW-DC. If the presence of RCWM is suspected at a project, the District must coordinate with USAESCH prior to beginning any on-site activities. IAW ER 1110-1-8153, USAESCH is the only USACE command authorized to execute RCWM response actions.

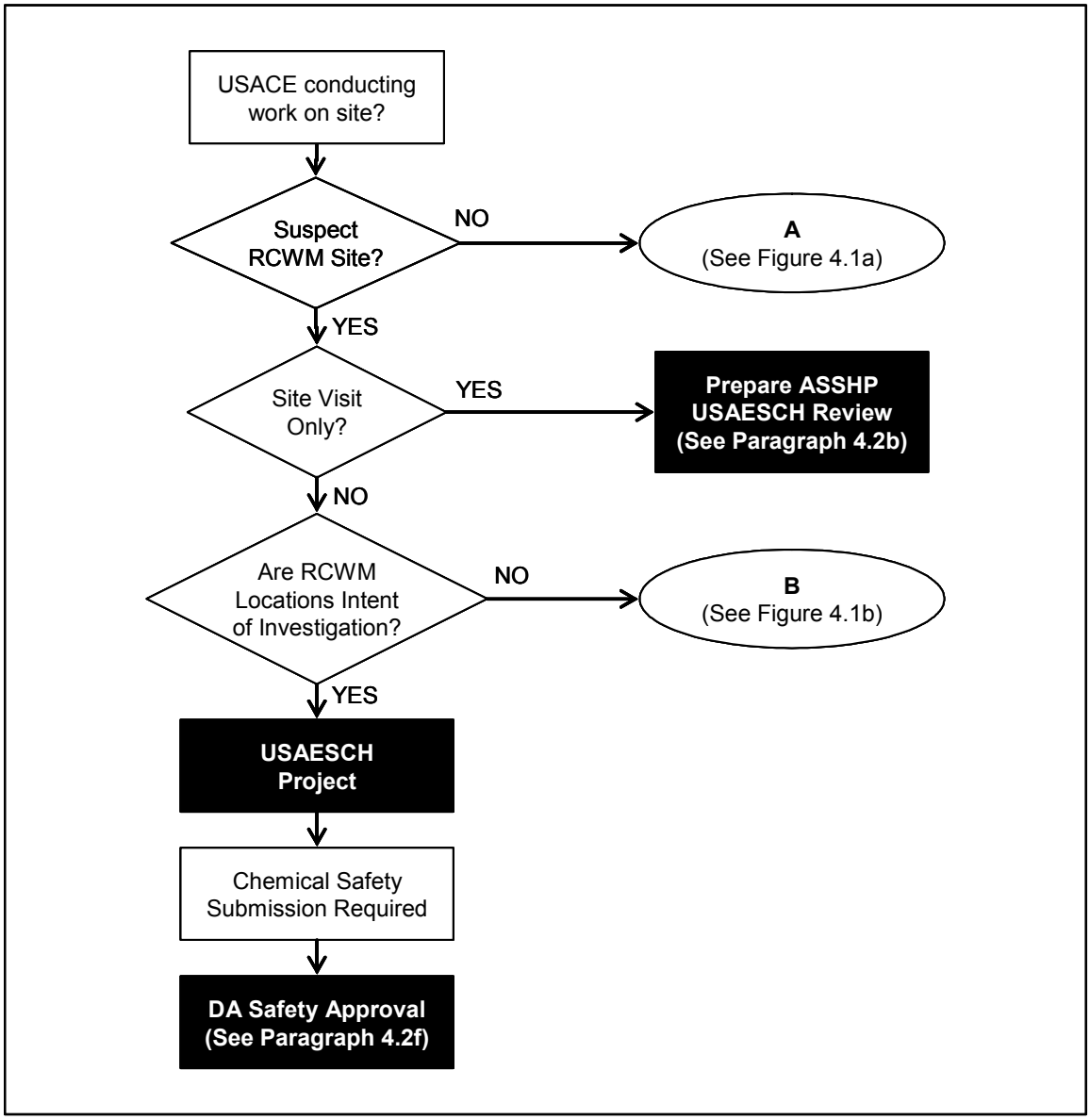

Figure 4-1. Process for Determining Which Safety and Health Plans and RCWM Requirements are Applicable to a RCWM Project.

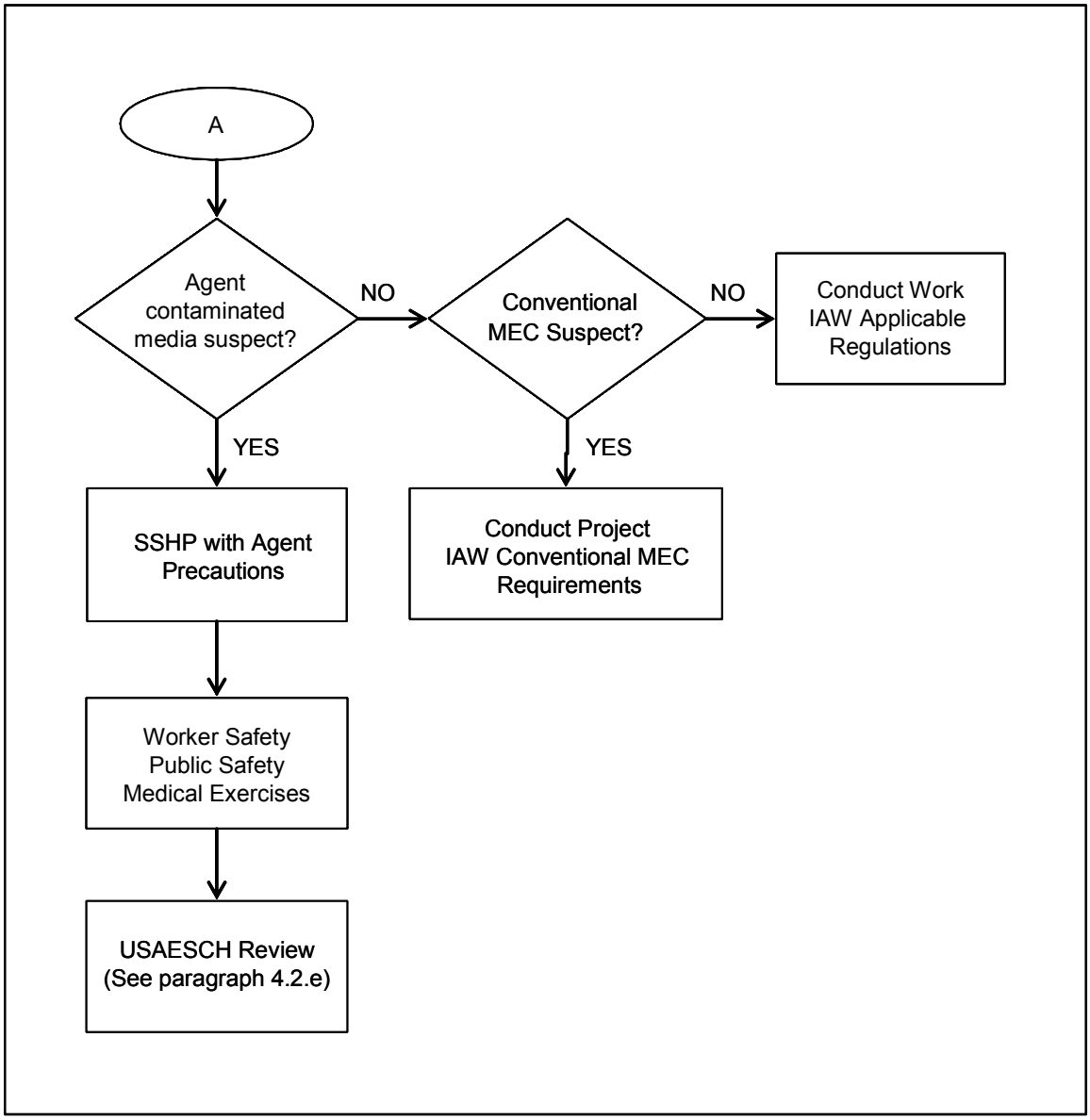

Figure 4-1a. Process for Determining Which Safety and Health Plans and RCWM Requirements are Applicable to a RCWM Project.

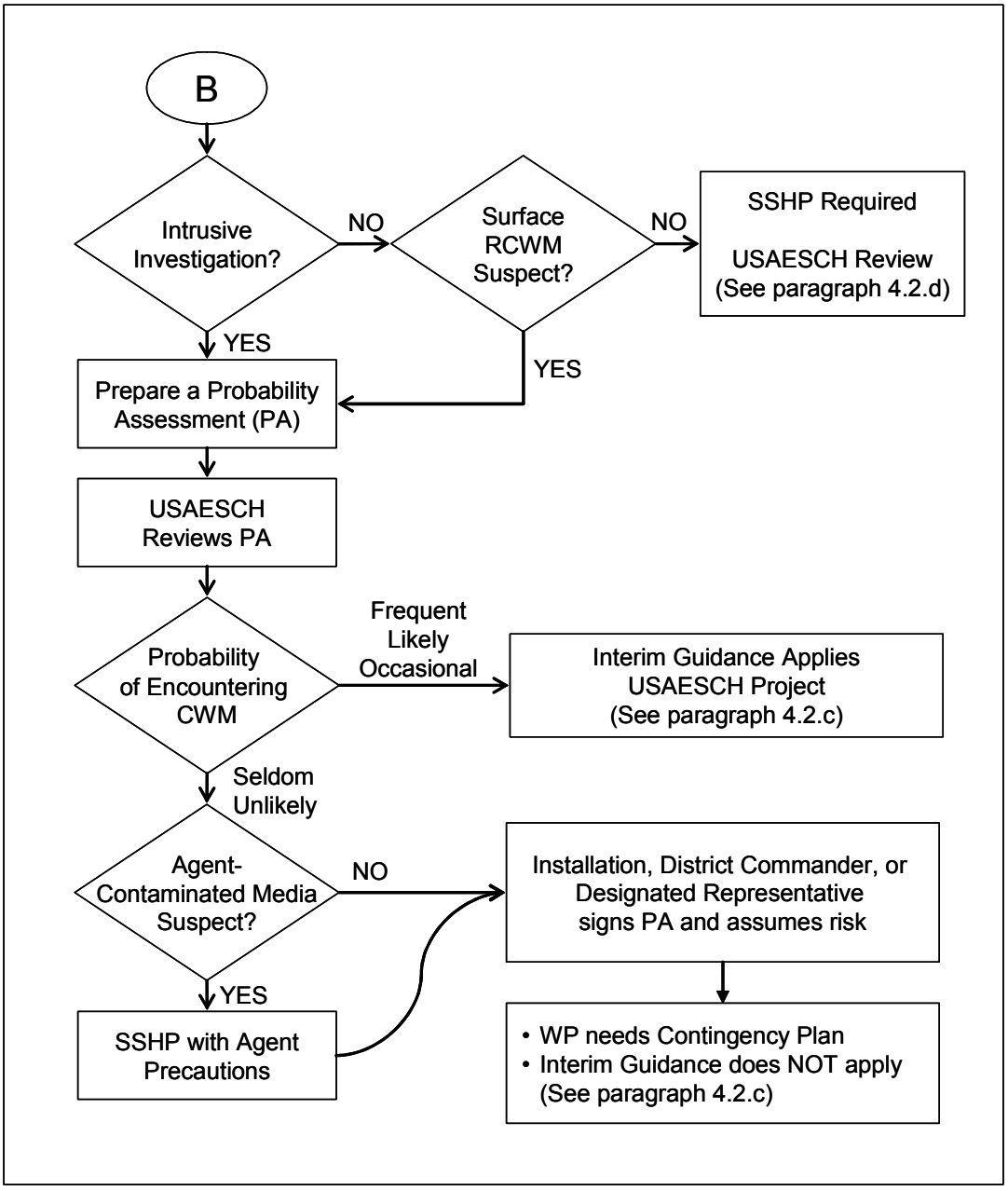

Figure 4-1b. Process for Determining Which Safety and Health Plans and RCWM Requirements are Applicable to a RCWM Project.

b. Site Visits. If site activities include only a site visit (walk through of the site) and no intrusive activities are planned, the only safety and health plan required is the Abbreviated Site Safety and Health Plan (ASSHP). This ASSHP must contain RCWM-specific information (i.e., what to do if a munition with an unknown filler is found). The format of the ASSHP can be obtained from EP 1110-1-18 and on the MM CX website at http://www.hnd.usace.army.mil/oew/erepems.asp. Prior to the site visit, the ASSHP must be approved by the MM CX or designee, IAW EP 1110-1-18.

c. HTRW, Conventional MEC, or Construction Support on a Suspect RCWM Site.

(1) If the intent of the investigation on a RCWM site is not to remove the RCWM, but rather to mitigate either HTRW or conventional ordnance or to provide construction support, RCWM safety and health plans and requirements may not be required. The Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities discusses safety and health requirements on a RCWM site. However, it does not specifically address those situations when construction or an environmental response action other than a RCWM investigation or response action is conducted at a site that is suspect of containing RCWM. To determine whether the Interim Guidance applies to non-RCWM activities, a procedure called a probability assessment was developed and is contained in a HQDA Policy Memorandum, "Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance," dated 19 Mar 98. Any district or installation planning to conduct an environmental response action (i.e., investigation, removal, or construction support) on a suspect RCWM site must complete a probability assessment. The following paragraphs provide a summary of the probability assessment procedure.

(a) Determine the scope of the proposed site activities.

(b) Conduct a historical study (e.g., installation records, the PMNSCM Survey and Analysis report), USACE Topographic Engineering Center Historical Photographic Analysis, and site investigation to determine previous site usage and the potential for encountering RCWM.

(c) Determine the probability of encountering RCWM during proposed site activities based on the scope of proposed site activities, previous site usage, and the potential for encountering RCWM. The probability must be documented; documentation will include the information used to determine the probability. IAW AR 385-10, the probability of encountering RCWM will be ranked in one of five categories:

- Frequent: Occurs very often, continuously experienced.
- Likely: Occurs several times.
- Occasional: Occurs sporadically.
- Seldom: Remotely possible; could occur at some time.
- Unlikely: Can assume will not occur, but not impossible.

(d) The completed probability assessment will be provided to USAESCH for review and comment. If the probability of encountering RCWM is determined to be "seldom" or "unlikely," either the installation, District Commander, or designated representative must sign the probability assessment and assume the risk of conducting site activities as a non-RCWM site (i.e., the Interim Guidance will not be implemented). This decision must be justified and documented in writing.

(2) If the District's signed probability assessment determines that the probability of encountering RCWM is "seldom" or "unlikely," the following requirements apply.

(a) The safety and health plan for the proposed site activities must include contingency plans providing for a safe and expeditious response in the event RCWM is encountered. RCWM contingency plans will have the concurrence of the MM CX and the installation and/or District safety and environmental offices, EOD and TEU, and from all Army agencies responsible for the work activities.

(b) Any time munitions with unknown fillers are encountered, all work will immediately cease. Project personnel will withdraw along cleared paths upwind from the discovery. A team consisting of a minimum of two personnel will secure the area to prevent unauthorized access. Personnel will position themselves as far upwind as possible while still maintaining security of the area.

– At FUDS projects, the UXO team will notify the local POC designated in the Work Plan. The local POC will facilitate EOD response and two personnel will secure the site until EOD's arrival. If the local POC designated in the Work Plan is not the local law enforcement agency, the local POC will inform the local law enforcement agency of the discovery, if necessary. The EOD unit will notify the TEU and secure the area until TEU's arrival. After notifying the local law enforcement agencies, the local POC will notify the USAESCH MM CX to inform them of the actions taken.

– On active installations, the UXO team will normally notify the Range Control Officer, Facility Engineer, Post Headquarters, or POC designated in the Work Plan. After notifying the Range Control Officer or POC, the local POC will notify the MM CX to inform them of the actions taken.

(c) If the item is confirmed to be RCWM, all investigative and/or construction work will stop. All of the elements of the Interim Guidance and other relevant RCWM Army regulations will be implemented before work will commence. The PMNSCM, the TEU Commander, the installation (or District safety and environmental offices), and USACE will coordinate on implementing the Interim Guidance.

(3) If the District's signed probability assessment determines that the probability of encountering RCWM during project activities is "frequent," "likely," or "occasional," all of the requirements in the Interim Guidance apply and USAESCH must be involved in the response action. The types of safety and health plans and procedures required are dependent on whether the site activities are classified as non-intrusive, anomaly avoidance, or intrusive, as discussed in the following sections.

d. Non-Intrusive Activities. If there is a high potential of encountering RCWM items at the surface during non-intrusive activities (e.g., geophysical mapping), a CSS is required (see paragraph f.(1) below). Otherwise, a SSHP will be developed and approved by USAESCH. The SSHP will include all of the elements of an HTRW SSHP. The SSHP will address the requirements of 29 CFR 1910.120(b)(4), 29 CFR 1926.65(b)(4), ER 385-1-92, EM 385-1-1, and ER 385-1-95. The SSHP will include information on the agents that are suspected to be on-site and hazard communication information.

e. Investigative and Assessment Activities Utilizing Anomaly Avoidance. When anomaly avoidance is used for site investigation and assessment (e.g., soil and water sampling, or the installation of monitoring wells) a SSHP, approved by the MM CX, is required. Additional precautions, as stated below, must also be met:

(1) Public Safety. A MCE must be determined. The MCE is the maximum release of chemical agent from a munition, container, or process that might realistically result from an unintended, unplanned, or accidental occurrence. Army regulations require the CSS to use the 1 Percent Lethality Distance when computing Public Safety for siting purposes. USACE will also calculate the No Significant Effects (NOSE) distance to be used in the Work Plan for the project. Intrusive activities will not be conducted when unprotected or untrained

personnel are within the NOSE distance, which is the distance at which personnel should not experience any significant effects if the MCE occurs.

(2) Additional information on anomaly avoidance activities is published in EP 75-1-2.

f. Response Activities with the Intent to Uncover, Characterize, and/or Remove Geophysical Anomalies and RCWM Burial Locations.

(1) Chemical Safety Submission.

(a) When anomaly avoidance is not used for site investigation or response activities or the suspect item cannot be detected (e.g., surface removal of RCWM or excavation when the intent is to uncover, characterize and remove geophysical anomalies), a CSS is required. The CSS serves as the specifications for conducting RCWM work activities at the project. It details the scope of the response action, the planned RCWM work activities, the potential site hazards and the methods of controlling the hazards.

(b) Risk Assessment. Activity at a RCWM project will require the determination of risk to the public and to site workers. Risks to human health and the environment resulting from RCWM can be divided into explosive safety risks and risks associated with the release of chemical agent. Both of these risks need to be evaluated in order to determine the effectiveness of risk management decisions concerning RCWM. A site-specific MCE shall be developed by USAESCH or the implementing agency to form a basis to generate hazard zones: hazard zones shall be computed using the MCE and Army-approved atmospheric dispersion modeling. Quantitative risk assessment codes shall be developed to assess response hazards (e.g., dispersion of agent-contaminated soil, explosive hazards). Public risk information and controls shall be addressed in safety planning documents.

(c) The USAESCH CW-DC is the only USACE office that is authorized to perform this work. The CSS is normally prepared by USAESCH with input from other agencies and approved by the office of the Director of Army Safety. The CSS is built on the Work Plan and supplemental plans, so those plans must be complete before the CSS can be completed. The overall length of the plan shall not exceed 50 single-sided pages.

(d) Chapter 7 presents a detailed discussion on the contents of the CSS and approval procedures for the document.

(2) Additional precautions must also be met when performing intrusive activities on a RCWM site. IAW Army guidance, intrusive activities will not be conducted unless:

(a) Calculation of the munition with the greatest fragmentation distance (MGFD) and the requisite minimum separation distance (MSD) has been calculated for the project (as necessary).

(b) A risk analysis shows that the benefits justify the costs.

(c) The Army has the capability to handle the retrieved RCWM.

(d) The NOSE distance has been calculated and the general public is protected.

(e) A tabletop exercise and pre-operational survey have been successfully completed.

(f) Medical support arrangements have been made.

(g) The CSS has been approved.

(h) The Public Access Exclusion Distance (PAED) has been calculated.

4-3. Types of Response Actions.

a. General

(1) The purpose of a RCWM response action is to reduce, in a timely, cost-effective manner, the risk to human health, safety and the environment resulting from past DOD activities. The response action includes all activities involved in the remediation or removal of RCWM and chemical agent contaminated media from the environment to include preliminary work (e.g., the Remedial Preliminary Assessment and Remedial Site Inspection) and the disposal of removed materiel. Response actions also include, though are not limited to, the use of security fencing or other measures to prevent, minimize, or mitigate damage to the public health or welfare or to the environment.

(2) The types of response actions available are:

(a) Remedial action.

(b) Time Critical Removal Action (TCRA).

(c) Non-Time Critical Removal Action (NTCRA).

(d) Emergency removal action.

b. Selection of Response Action Type.

(1) The selection of the appropriate type of RCWM response action is based on an evaluation of the following site-specific features:

(a) The nature of the RCWM hazard.

(b) The urgency/threat of release or potential release of RCWM.

(c) The timeframe required for initiating a response action.

(2) Following the evaluation of the above features, the suitable type of response action is selected. The Army has given execution authority to USACE for remedial actions, TCRAs and NTCRAs at FUDS. ER 200-3-1 discusses the circumstances under which each type of response action is implemented. USACE does not execute emergency removal actions with regard to RCWM. Such actions are performed by authorized DA response agencies such as EOD or TEU personnel.

(3) This EP discusses the requirements for conducting a RCWM response action IAW the CERCLA/NCP process. This EP will focus on the requirements for executing a response action that are unique to RCWM projects and that are not already addressed in ER 200-3-1 and EP 1110-1-18. A reference to ER 200-3-1 is provided for those instances in which the requirements are generic to FUDS and a reference to EP 1110-1-18 is provided where the requirements for RCWM and MEC are identical.

CHAPTER 5

Site Characterization Activities

5-1. Introduction.

a. This chapter presents an overview of the site characterization activities involved with a RCWM response action. A RI/FS must be completed for all remedial actions and an EE/CA must be completed for all NTCRAs, as required by the NCP. The CW-DC is responsible for executing the site characterization phase for RCWM projects IAW CERCLA and the NCP.

b. The purpose of the site characterization is to identify the most appropriate response action to address RCWM risk at a project. The determination of the recommended response alternative occurs following the completion of a site characterization, risk assessment of RCWM hazards present at the site, and evaluation of potential response alternatives. The data generated to support the selection of a RCWM response alternative is presented in either a RI report for a remedial action or an EE/CA for a NTCRA. The components of the site characterization phase, as they relate to the RCWM response process, are explained in the following paragraphs.

5-2. Site Characterization Planning and Coordination. The site characterization planning and coordination process includes the preparation of the Statement of Work (SOW), independent government estimate (IGE), and schedule; completion of a site visit; preparation and approval of all required planning documentation; and fulfillment of the project management, regulatory, real estate, and public participation requirements.

a. Preparation of the SOW. The site-specific data gathered during the Preliminary Assessment (PA) and SI is used to prepare the SOW. The RCWM PDT will manage the preparation of the SOW and ensure that all applicable technical disciplines are appropriately involved. The PDT will include the customer(s), the PM, technical experts within or outside the local USACE activity, specialists, consultants/contractors, stakeholders, representatives from other Federal and state agencies, and vertical members from division and headquarters that are necessary to effectively develop and deliver the project. Additionally, the MM CX may be consulted to provide the appropriate statements concerning the background or authority for the task order's award.

b. Preparation of the IGE. The IGE for a site characterization will be prepared IAW the guidance provided in EP 1110-1-18.

c. Site Visit.

(1) Site Visit SOW. The site visit may be authorized as either a purchase order or as the first task of an incrementally funded contract.

(2) Purpose. The purpose of the site visit is to provide the contractor with the opportunity to gather pertinent information for use in preparing the Work Plan and other planning documents. The information collected from the site visit allows the contractor to gain a better understanding of the nature and extent of the RCWM hazard and verify the locations of the proposed areas of interest. This information, which is instrumental in planning the site characterization, includes:

(a) Site features, such as terrain, soil type, access, and amount of brush clearance required.

(b) Location of / coordination with nearest hospital.

(c) Location of / coordination with nearest fire station

(d) Coordination with local Emergency Management Agency.

(e) Coordination with local airport/Federal Aviation Administration representatives.

(f) Coordination with local police, sheriff, Federal Bureau of Investigation, and/or Military Intelligence Office to assess security.

(g) Fencing requirements for explosives storage magazines.

(h) Location for support zone, investigative-derived waste storage locations, and explosive storage magazines if applicable.

(i) Location of the IHF, if applicable.

(j) Logistical coordination for lodging, equipment and vehicle rental, office space, explosives dealers, etc.

(k) Coordination with Range Control, Defense Reutilization Management Office, Ammunition Supply Point, and Post Provost Marshal, if applicable.

(l) Coordination with TEU, air monitoring personnel, PMNSCM, and the District for support activities during field investigations, as applicable.

(m) Location of Geophysical Prove-Out (GPO).

(3) Site Visit Requirements. The following paragraphs present requirements that apply to the site visit:

(a) Prior to the site visit, the contractor will be provided with copies of the ASR and any other site-specific information for review.

(b) An ASSHP will be prepared and submitted to the MM CX prior to visiting the site. The ASSHP will be prepared using the format provided in EP 1110-1-18.

(c) Generally, no more than three contractor personnel are required to participate. One contractor participant must be the project manager. Other recommended contractor personnel include the project geophysicist or project engineer. If there is potential for MEC, a government or contractor UXO escort will also be required.

(d) Since the site visit will be non-intrusive and anomaly avoidance techniques will be implemented, site visit participants are not required to have Hazardous Waste Operations (HAZWOPER) training or medical monitoring.

(e) The District will coordinate with the property owner/operator prior to the site visit if a ROE is required.

(f) A site visit for a typical project should take no longer than five days, including travel time.

(g) United States Army Center for Explosives Safety (USATCES) personnel will normally be given the opportunity to attend a site visit early on during the response action to facilitate a better review of the CSS for DA Safety.

d. Preparation of Planning Documents. To ensure all members of the PDT agree on the approach and procedures used to investigate the potential RCWM or CWM hazard locations, a RCWM Conceptual Site Plan (CSP) will be developed prior to initiating the CSS

and Work Plan. A detailed outline is provided in Chapter 7. A CSS may be required prior to beginning intrusive work at the RCWM site (see Chapter 4). If a CSS is not required, a Work Plan and supporting plans will still be required to conduct field activities.

(1) Work Plan. A site-specific Work Plan is required for all site characterization activities. The Work Plan documents the methodology that will be used to complete the site characterization. Following the site visit, the Work Plan will be developed IAW the SOW. The contents of the Work Plan, including sub-plans, are discussed in Chapter 7.

(2) SSHP. The contractor will also prepare a SSHP IAW the guidance provided in Chapter 7 of this document. The SSHP is included as a part of the Work Plan IAW ER 385-1-95 and EM 385-1-1.

(3) Supporting Plans. If a CSS is required, the following supporting plans will be prepared IAW Chapter 7 of this document: TEU Assessment Plan, Environmental Media Sampling and Analysis Plan, Public Evacuation or Shelter-in-Place Plan, and PMNSCM Plans. If only agent-contaminated media is suspected, TEU and PMNSCM plans may not be required.

(4) Public Affairs, Real Estate and Regulatory Requirements. During the site characterization planning and coordination process, the District PM must ensure that all applicable public affairs, real estate, and regulatory requirements, as discussed in EP 1110-1-18 and EP 1110-3-8, have been satisfied. Additionally, the applicable safety and training requirements, as specified in Chapter 8 of this document must be fulfilled.

(5) Anomaly Review Board. The District PM may also consider the establishment of an Anomaly Review Board (ARB). An ARB is only used in exceptional circumstances. Information on ARB procedures is provided in EP 1110-1-18.

5-3. Site Characterization for RCWM Projects.

a. Overview.

(1) In general, RCWM sites are comprised of disposal pits and test trenches, and to a lesser extent, impact ranges. The purpose of a RCWM site characterization is to obtain surface and subsurface RCWM data to characterize the site and to generate recommendations for the proposed RCWM response action. This characterization will include any data from any RCWM that has been located and/or disposed of by EOD or local law enforcement.

Potential sources for this data include the ASR, EOD records, or local law enforcement records. The following types of data will be collected for the site:

(a) Type of CWM or CWM-related activities associated with the site.

(b) Locations of CWM or CWM-related activities, including locations of pits or trenches.

(c) Density of CWM munitions at impact areas.

(d) Penetration depth of CWM munitions at impact areas.

(2) The components of the site characterization phase include:

(a) Implementation of the sampling methodology.

(b) Geophysical Instrument Prove-Out.

(c) Area preparation.

(d) Field sampling.

b. Statistical Tools. During a site characterization, statistical tools may be used to collect site-specific data for impact areas. In many cases, this is not required due to the fact that suspect areas have already been identified as disposal/burial areas and sampling is biased to these locations. Contact the MM CX for additional detail on the following:

(1) UXO Calculator. The UXO Calculator is a statistical model for determining the potential amount of UXO in a sector. The UXO Calculator assumes homogeneous presence of MEC within an identified area. It is used to determine statistical confidence intervals for UXO density and to perform statistical tests concerning UXO densities.

(2) Other. Other statistical methods that are agreed to by stakeholders, documented and approved.

c. MEC Detection Instrument Testing.

(1) Before geophysical surveys can begin on a site, the proposed geophysical survey methods and techniques must be tested and evaluated. The results of the GPO will identify realistic capabilities and limitations of applying geophysics at a particular site and aid in

determining proper post-processing procedures for the geophysical data. Additionally, a GPO demonstration offers the client an opportunity to observe the contractor's methods and evaluate their ability to meet Data Quality Objectives and compliance with project requirements. A GPO must be constructed so that it is representative of the project and the specific buried munition items known or suspected to exist.

(2) The objectives for the GPO are concerned mainly with establishing and maintaining high levels of quality control throughout this phase of the response action. EM-1110-1-4009 provides a detailed list of general objectives for a GPO, including the GPO Plan and GPO Report. In addition, stakeholders and regulators for the project will be consulted before the objectives are finalized.

(3) The GPO is performed prior to initiation of the field investigation. Prior to the GPO, a GPO Plan and appropriate SSHP must be developed.

d. Area Preparation. Area preparation includes the identification and marking of geophysical sampling grids and the removal of sufficient vegetation and other obstacles that may restrict sampling efforts.

(1) Location Surveying and Mapping. Location surveying and mapping will be performed by the contractor to establish the boundaries of the areas under investigation. The procedures to be used in the execution of location surveying and mapping are discussed in EM 1110-1-4009.

(2) Brush Clearance.

(a) Prior to conducting any field sampling, brush clearance may be required. The purpose of brush clearance is to remove sufficient vegetative growth from the areas to be investigated in order to effectively locate, investigate, and remove subsurface anomalies.

(b) The vegetation removal techniques used must be coordinated with the District environmental staff and documented in the Work Plan. A UXO Technician II shall always escort the brush clearing crew in areas not previously cleared of MEC or munitions with unknown fillers. The safety requirements listed in EM 385-1-1 shall be followed. PPE will be provided to the brush clearance crew and used for protection as required. All brush clearance personnel must be trained in the safe operation of the necessary equipment and have obtained site-specific safety training IAW Chapter 8 of this document.

(3) Removal of Surface Debris. Surface debris removals are conducted to remove all MEC, RCWM, munitions debris, and other metallic debris from the surface of the area to be characterized that may interfere with the geophysical investigation. UXO-qualified personnel will flag, identify, and record the approximate location of all MEC, RCWM, or munitions with unknown fillers. TEU is responsible for assessing munitions with unknown fillers and then packaging and transporting those items to the IHF IAW the approved CSS. UXO-qualified personnel may assess, handle, and dispose of MEC items IAW the approved CSS. The contractor may handle and dispose of other items of surface debris, and will also assist the TEU as needed. The contractor will remove all chemical agent contaminated scrap and non-RCWM related materials that may interfere with the geophysical investigation. These items will be headspaced and decontaminated as necessary before being stored for later disposition.

e. Field Sampling. During the field sampling, surface and/or subsurface sampling is conducted to obtain the data necessary to conduct an accurate site characterization.

(1) Surface Sampling. In the event that RCWM or munitions with unknown fillers were encountered during the removal of surface debris, the contractor will perform environmental sampling IAW Chapter 9 of this document to verify that no residual chemical agent remains at those locations.

(2) Subsurface Sampling.

(a) Prior to the subsurface sampling effort, the contractor will perform a geophysical survey to locate subsurface anomalies. The procedures for conducting geophysical surveys are discussed in Chapter 6 of this document. Anomalies identified by the geophysical survey team will be intrusively investigated. Only TEU or approved UXO-qualified personnel will perform intrusive operations. RCWM response actions will proceed IAW the approved CSS.

(b) Once a munition with unknown filler has been exposed, TEU will assess, package, and transport the RCWM or munition with unknown filler to the IHF. The contractor will assist TEU as needed.

(c) If a munition with unknown filler is removed, then the excavated location will be rechecked with a magnetometer or other geophysical equipment. Upon completion of the recheck, if the location does not produce another anomaly or signs of additional burial (e.g., fill materials are no longer encountered), the excavated area will be sampled IAW Chapter 9 to determine if residual chemical agent is present. If the area is determined to be free of

agent, the area may be backfilled with clean soil. If chemical agent is present in the sample, then the on-site OE Safety Specialist will be notified.

(d) Evacuations are sometimes necessary when conducting intrusive investigations to minimize the risk of the operation. An EZ distance is calculated to ensure that all non-essential personnel are outside of that distance during the conduct of the excavation. The EZ distance may be reduced by implementing approved engineering controls.

(e) There are several other considerations, which must be accounted for during the intrusive investigation, including: engineering controls, EZ management, and quality assurance. These topics are discussed in detail in later chapters of this pamphlet.

5-4. Engineering and Operational Controls.

a. Engineering controls are used to improve personnel safety and/or to reduce the EZ during response operations. If an engineering control design is required to reduce an EZ due to fragmentation concerns, the Military Munitions Design Center (MM-DC) shall be contacted for design approval. Examples of engineering controls for vapor containment for RCWM activities include:

(1) The use of environmental structures to reduce or contain the agent should a release occur (e.g., an engineering control structure capable of vapor containment and blast mitigation). This is usually accompanied by the use of an approved air filtration system to capture the agent vapors.

(2) Filtered Shelter (other than the Vapor Containment Structure).

b. Operational Controls. Examples of operational controls for RCWM are described below.

(1) RCWM operations shall be performed during the hours of daylight.

(2) Certain temperatures can reduce the rate of release of agents. For example, mustard agent, or H, becomes a solid at temperatures below 57 degrees Fahrenheit. If the chemical agent of concern at the project was mustard agent, operations could be restricted to periods when the temperature would be below that temperature, thereby reducing the NOSE distance. However, even at temperatures below 57 degrees Fahrenheit, if the MCE is an explosively configured munition, containing H agent and the round functioned as designed, there would

be a hazard resulting from the release of agent caused by the heat generated from the explosion.

(3) Wind speed has a direct effect on downwind hazard distances. Normally the higher the wind speed, the more air turbulence exists, thereby reducing the downwind distance of the agent plume. Therefore, operations could be restricted unless the wind speed is at or above a certain level.

(4) Atmospheric stability. The time of day, the strength of sunlight (if any) in the area, the extent of cloud cover, and the wind velocity all play major roles in determining the level of turbulence in the atmosphere. Turbulence is the extent of "mixing" in the atmosphere. These factors determine downwind distances over which airborne contaminants will remain hazardous. Meteorologists typically divide atmospheric conditions into six atmospheric stability classes that generally range from "A" to "F". Class A represents unstable conditions under which there is strong sunlight, clear skies, and high turbulence in the atmosphere. These conditions promote rapid mixing and dispersal of airborne contaminants. At the other extreme, atmospheric stability Class F represents light steady winds, nighttime skies, and low level of turbulence in the atmosphere. Airborne contaminants mix and disperse much slower with air under these conditions.

(5) D2PC shall be used to calculate how temperature, wind speed, and atmospheric stability will affect the MCE-based hazard distances, such as the 1 Percent Lethality and NOSE distances. These calculations are performed during planning for the project to delineate EZs for the project, as well as during intrusive operations, where they are calculated regularly for specific weather conditions so that project personnel are prepared for an emergency in the event of a release and to determine whether planned EZs are adequate or overly conservative.

5-5. Environmental Sampling and Analysis. Soil samples will be obtained from locations, which could potentially have been contaminated with RCWM or decontamination products. Soil samples will be obtained at intervals justified in the approved Work Plan. Sampling and analysis may also be required for investigation-derived waste (IDW). Detailed information on environmental sampling and analysis is provided in Chapter 9 of this document.

5-6. Institutional Analysis.

a. Purpose. An institutional analysis is conducted to determine what opportunities exist to implement a land use control (LUC) program at a specific site. The institutional

analysis also identifies the existence of any local, state, Federal, or private agencies that may be available to assist in the implementation or maintenance of the LUC program. An institutional analysis is necessary in order to evaluate whether LUCs are viable at a particular site as a stand-alone response action or as a supplement to other response activities. LUCs are appropriate at virtually every site where RCWM is discovered. The institutional analysis will also aid in developing the most effective LUC program, if it is selected as the stand-alone response alternative, or as part of a more comprehensive remedial or removal alternative.

b. Determination of Existing LUCs. The existence of any current deed restrictions or other type of legal or administrative LUC that may have been placed on the property in the past as a result of some other activity shall be determined. If such restrictions are found to already exist at a site, it may be easier to modify the existing restriction to address the risk posed by RCWM than to implement an entirely new LUC.

c. For additional information on the application of LUCs for the munitions response process, refer to EP 1110-1-24.

5-7. Risk Characterization.

a. Purpose. A risk characterization is required as part of the response process. A risk characterization of a RCWM site is conducted to determine the level of safety risk that exists at a site as a result of the RCWM hazard. The risk characterization is a key component in determining the type of response necessary to address the safety risk and the basis on which subsequent cost-benefit analyses are conducted in the RI or EE/CA report.

b. Types of Risk Characterization Tools. Typically, a qualitative risk characterization tool is used for RCWM projects. For additional information on the selection of risk characterization tools, contact the MM CX.

5-8. Development and Evaluation of Response Action Alternatives.

a. Development of Response Action Alternatives. Once site-specific data has been gathered and analyzed, potential site-specific response action alternatives will be developed. A response action alternative may include physical removals, as well as any other alternatives that reduce risk to the public. The alternatives will be developed based on existing site conditions, historic use of the site, the existing or proposed land use, and the extent and depth of RCWM. Site-specific alternatives must ensure the most effective use of resources, while providing maximum return to the public.

b. Response Action Alternatives. The development of response action alternatives is described in detail in ER 200-3-1.

c. Evaluation of Response Action Alternatives. Once the cleanup objectives have been established for a site, the various response action alternatives developed in the RI or EE/CA report must be evaluated in terms of how well they will meet these objectives. Three general evaluation criteria are used to evaluate the proposed alternatives for both RI/FS and EE/CA. For RI/FS, the categories of evaluation criteria are threshold criteria, primary balancing criteria, and modifying criteria. For a NTCRA the categorie of evaluation criteria are effectiveness, implementability, and cost. The specific evaluation criteria and the evaluation process for both remedial and removal actions are described in detail in ER 200-3-1.

d. Comparative Analysis of Response Action Alternatives. Those alternatives that still appear feasible after the above evaluation are then compared to each other using the same criteria described above. During this comparative analysis, the alternatives are ranked and the recommended response action alternative is selected.

5-9. RI Report / EE/CA Report. The RI or EE/CA report documents the methodologies used during the site characterization and presents the findings of the alternatives evaluation. The RI or EE/CA report is a flexible document that is tailored to the scope, goals, and objectives of the response process. It should contain data to support the selection of a response alternative and future 5-year recurring reviews. Existing documentation should be relied on whenever possible.

a. The RI or EE/CA report for an RCWM response action is executed and approved by the CW-DC. The RI or EE/CA report is reviewed by the District and the MM CX.

b. ESS Requirement During the Site Characterization Process.

(1) A CSS may need to be prepared as part of the response action planning process, as discussed in Chapter 4 of this document. However, an ESS is prepared if the draft RI or EE/CA report recommends the response action alternative of either No DOD Action Indicated (NDAI) or LUCs. Examples of the content and format of an NDAI ESS and LUCs ESS are available in EP 385-1-95b.

(2) Both the NDAI ESS and LUCs ESS must receive concurrence from the USATCES and DDESB. Once the ESS has been approved, and all other comments on the draft RI or EE/CA report have been incorporated, the final RI or EE/CA report may be prepared.

5-10. RI or EE/CA Public Participation and Approval Process.

a. Once the RI or EE/CA report has been prepared and reviewed by the CW-DC, the MM CX, the District, and other stakeholders, the report becomes part of the Administrative Record for the site. The RI or EE/CA report is then made available for public review. The requirements for public participation are presented in ER 200-3-1 and additional information is in EP 1110-3-8.

b. If RCWM remains or is suspected to remain after completion of a response action, the property owner(s) will be apprised through the Administrative Record or other written agreements and all documentation will be annotated accordingly.

5-11. Action Memorandum/DD/ROD.

a. The Action Memorandum/DD/ROD are concise documents that identify the response action chosen for implementation at a site. The Action Memorandum or DD/ROD may also reserve the appropriate funding needed for the proposed response action. An Action Memorandum is required prior to implementation of TCRAs and NTCRAs. Requirements concerning the applicability of the Action Memorandum/DD/ROD, their format, and their review and approval process are laid out in ER 200-3-1 and additional information can be found in EP 1110-1-18.

CHAPTER 6

RCWM Detection, Remediation/Removal, and Completion

6-1. Introduction. This chapter provides information on the RCWM response process and project completion procedures.

6-2. Response Design.

a. The CW-DC is responsible for the removal design in coordination with the PM.

b. USACE performs necessary tasks associated with a response design process during the development of the site-specific SOW, Work Plans, and CSS for the response action. The level of detail for the response design phase is dependent on the complexity of the work to be performed and the type of contract to be utilized.

c. The purpose of the response design process is to describe the technical details of how the removal action will be performed. The response design process includes the following components, which are illustrated in Figure 6-1 and discussed below:

(1) Preparation of the removal action SOW and IGE. The USAESCH CW-DC is responsible for executing and approving the munitions response SOW and IGE. SOW and IGE quality excellence will be accomplished through the conscientious, cooperative efforts of each design team member. The District reviews the SOW and IGE and provides comments. Additional information on the SOW and IGE are provided in EP 1110-1-18.

(2) A site visit may be required to gather additional information on the nature and extent of the hazard at the site. The site visit is conducted to provide the contractor with the opportunity to gather pertinent information for use in preparing the cost estimate and planning documents. Detailed information on the site visit is provided in EP 1110-1-18.

(3) The preparation of planning documentation (e.g., CSS) and completion of all coordination tasks prior to the Notice-to-Proceed will be necessary for the response action. A CSS is required when anomaly avoidance is not used for response activities or the suspect item cannot be detected. The CSS will be prepared and approved IAW the requirements found in Chapter 7 of this pamphlet.

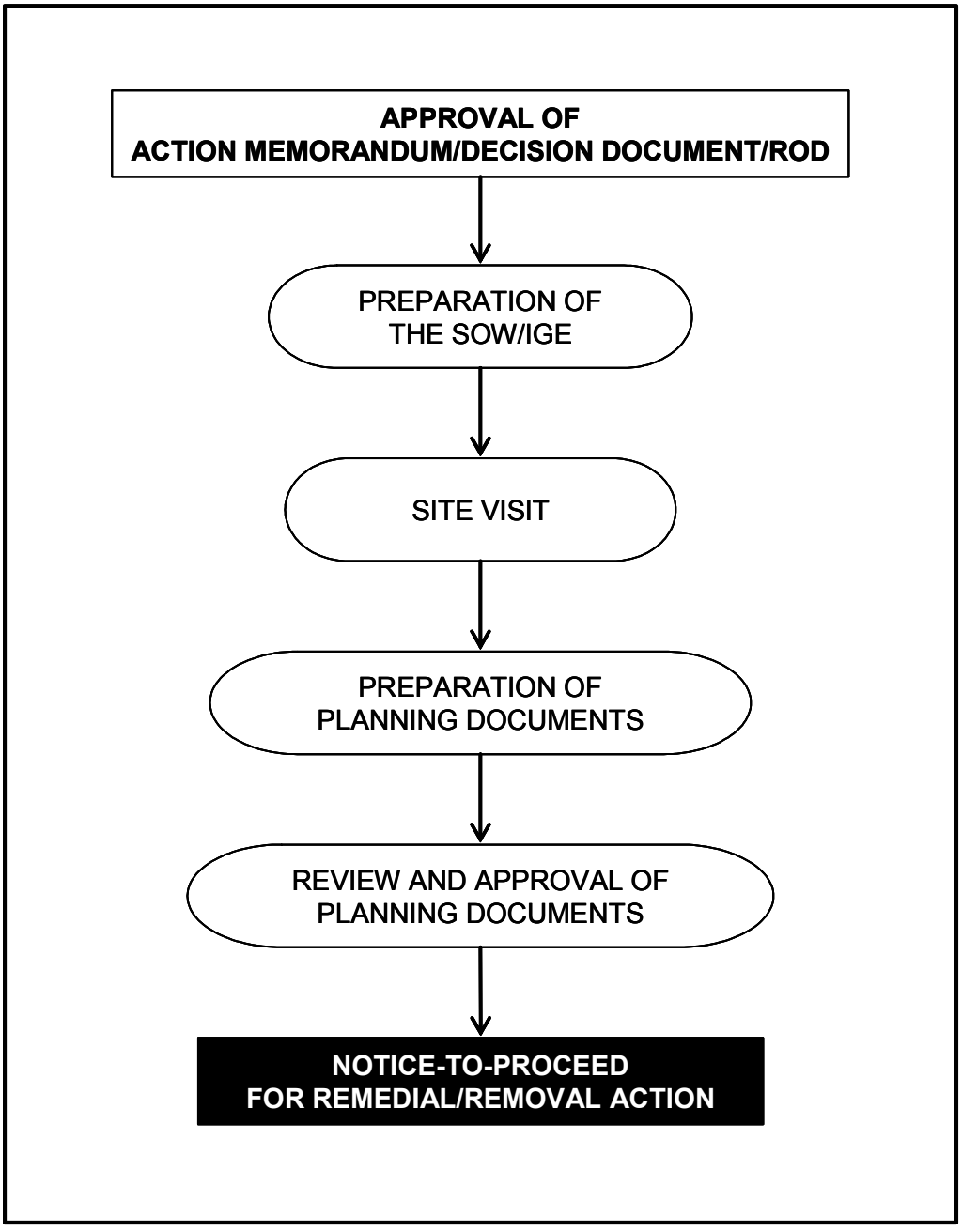

Figure 6-1. Response Design Process

6-3. RCWM Detection and Removal.

a. Introduction. The RCWM response phase begins following the receipt of the Notice-to-Proceed. The response action is intended to permanently and comprehensively address both short- and long-term health and safety hazards at RCWM impacted sites. The response action may be implemented using active duty military personnel, DOD civilian personnel, private contractors, or a combination of the three. The implementing agency will be responsible for full coordination for all activities, including procurement, funding, scheduling, and authorizations. The response action phase is composed of the following tasks, which are illustrated in Figure 6-2 and discussed in paragraphs 6-3b through 6-3i.

b. Location Surveying and Mapping. Location surveying and mapping will be performed by the contractor to establish boundaries of the areas under investigation. The procedures for the execution of location surveying and mapping are discussed in EM 1110-1-4009.

c. Area Preparation.

(1) Prior to the initiation of a RCWM response action, brush clearance may be required. The purpose of brush clearance is to reduce or remove the vegetative growth from the work areas in order to effectively locate, investigate, and remove surface and subsurface RCWM.

(2) The areas cleared and techniques used must be coordinated with the District environmental staff and documented in the Work Plan. A UXO Technician II must always escort the brush clearing crew in areas not previously cleared of MEC or RCWM. The safety requirements in EM 385-1-1 must be followed. PPE will be provided to the brush clearance crew and used as required for protection. All brush clearance personnel must be trained in the safe operation of the equipment and must have obtained site-specific safety training IAW Chapter 8 of this document.

(3) The duration of the response action will determine if the establishment of a staging area is required prior to intrusive work. The staging area may be used to store IDW and house office facilities and mobile laboratories. The IHF will also be located in the staging area. Location considerations should include:

(a) Electrical requirements.

(b) Telephone requirements.

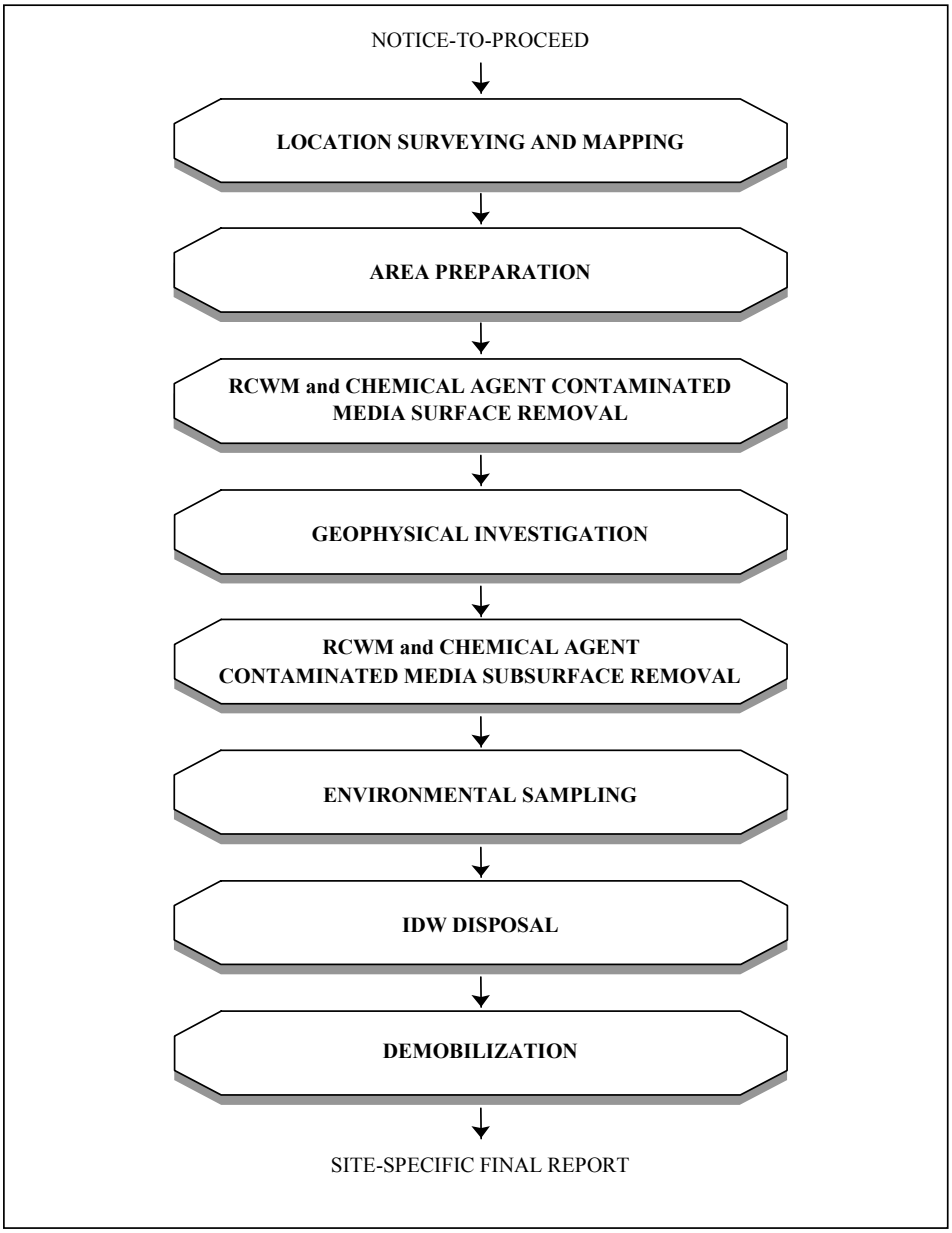

Figure 6-2. Removal Action Process.

(c) Water and sanitation support.

d. Surface Debris Removal. Surface debris removals are conducted to remove all MEC, RCWM, munitions debris, and other metallic debris from the surface of the work area. UXO-qualified personnel will flag, identify, and record the approximate location of all MEC or munitions with unknown fillers. TEU is responsible for assessing munitions with unknown fillers and then packaging and transporting those items to the IHF IAW the approved CSS. UXO-qualified personnel may assess, handle, and dispose of MEC items IAW the approved CSS. The contractor may handle and dispose of other items of surface debris, and will also assist the TEU as needed. In addition, the contractor will perform environmental sampling IAW Chapter 9 of this document to verify that no residual chemical agent remains after the surface removal of munitions with unknown fillers. The contractor will remove all chemical agent contaminated scrap and non-RCWM related materials that may interfere with the geophysical investigation. These items will be headspaced and decontaminated as necessary before being stored for later disposition.

e. Geophysical Investigation. The purpose of the geophysical investigation is to acquire geophysical data and identify all anomalies that resemble RCWM or locations where CWM was disposed. A GPO may be used by the PDT to select the most appropriate survey instrument and optimum navigational equipment. Geophysical investigations may be completed using detection equipment with real time or post-processing discrimination techniques. The latter requires the collection and recording of geophysical data that is subsequently processed by commercial software to identify electromagnetic signals representative of anomalies. All anomalies selected for excavation will be mapped, documented on dig-sheets, physically re-established by survey methods, geophysically reacquired, and marked for investigation. Information on the elements, which must be considered when planning and executing a geophysical investigation, is provided in EM 1110-1-4009.

f. RCWM and Chemical Agent Contaminated Media Subsurface Removal.

(1) Intrusive activities are conducted to investigate and identify the source of each subsurface anomaly. Anomalies determined to be less than 12 inches below the surface will be dug by hand. Anomalies deeper than 12 inches may be excavated to within 12 inches using mechanical or manual methods. Only approved UXO personnel will perform excavations involving RCWM. All excavations will be performed IAW the provisions of 29 CFR 1926, subpart P.

(2) After the probable source of the subsurface anomaly is removed, the excavation will be rechecked with a magnetometer or other geophysical instrument prior to backfilling. If the location does not produce another anomaly upon the recheck, then the excavated area will be backfilled and restored IAW contract requirements. If a munition with unknown filler is uncovered, the TEU will assess the item, then package and transport the item IAW the approved CSS. The contractor will assist the TEU as needed. In addition, after a munition with unknown filler has been removed from a location, the contractor will perform environmental sampling IAW Chapter 9 of this document to verify that no residual chemical agent remains at that location. Also, when possible, the contractor will remove all chemical agent-contaminated media from that location, then headspace and decontaminate as necessary before storing those media for later disposition.

(3) EZ.

(a) The EZ distance is the greater of the NOSE distance or the conventional fragmentation distance, taking into consideration reduction of either of these distances due to the use of engineering controls. Evacuations are sometimes necessary when conducting intrusive investigations in order to minimize the risk of the operation. The NOSE distance is based on the MCE and is calculated to ensure that the public and workers without adequate PPE are protected during the conduct of the excavation. Implementing engineering or operational controls can reduce the NOSE distance. The use of engineering controls is discussed in Chapter 5 of this document.

(b) Conventional fragmentation distance. The PDT shall use the following guidelines when determining which fragment range to use. If the identification of the MEC expected at the site is unknown, the default distances listed in DOD 6055.9-STD will be used. If it is not practical to use these default distances and the identification of the MEC expected at the site is known, then the maximum fragment throw range will be calculated IAW DDESB Technical Paper 16, Methodologies for Calculating Primary Fragment Characteristics (1 Dec 02). The item with the maximum fragment distance will become the MGFD for the site. For unintentional detonations, the PDT may request approval from the MM CX to use the range to no more than one hazardous fragment per 600 square feet (1/600 distance). The maximum fragment distances and the 1/600 distance will be calculated by the MM CX and provided to the PM.

(4) Other considerations. There are several other considerations, which must be accounted for during the intrusive investigation, including: air monitoring, personnel

decontamination station site, EZ management, and quality assurance. These topics are discussed in detail in later chapters of this document.

g. Unknown Fillers. Complete identification of recovered munitions is required before destruction or disposal. If positive identification of the filler cannot be determined, the following procedures will be followed on RCWM sites:

(1) TEU will normally be present at RCWM projects and will perform the assessment of the filler as part of their normal procedures.

(a) If the assessment has ruled out RCWM as the filler, the item will be disposed as specified in the approved Work Plan.

(b) If the assessment indicates RCWM as the filler, the item will be packaged and secured per the approved CSS.

h. IDW Disposal. IDW will be characterized and disposed of IAW the procedures described in Chapter 10.

i. Demobilization.

(1) Demobilization may occur for a variety of reasons, including:

(a) The response action may be completed with all work accomplished.

(b) The response action may be incomplete, but the contractor has expended most of the contract funds.

(c) Adverse weather conditions.

(d) Determination that continuing in the present course of action is not in the best interest of the government.

(2) The demobilization plan will be documented in the Mobilization/Demobilization Plan as part of the supporting plans included in the approved Work Plan. The demobilization plan will be developed by the contractor in close coordination with the PMNSCM, TEU, PM, CW-DC, OE Safety Specialists, and the customer. Authorization to demobilize from a site must be issued in writing to the contractor from the CO. The following areas will be addressed in the demobilization plan:

(a) Arrangements for periodic maintenance and monitoring for the IHF.

(b) Arrangements for closing out the IHF and shipping back to PMNSCM, if not in use at the end of the response action.

(c) Disposal of RCWM scrap (if necessary).

(d) Disposal of conventional scrap (if necessary).

(e) Storage and transport of 3X contaminated equipment (if necessary).

(f) Disposal or transfer of remaining explosives (if necessary).

(g) Disposal of media (e.g., soil, water, etc.).

(h) Disposition of commercial explosive storage containers (if necessary).

(i) Close down of Command Post facilities.

(j) Disposition of GFP (if necessary).

(k) Disposition of portable sanitary facilities (if necessary).

(l) Shutting down of public utilities at the project (i.e., water, electrical).

(m)Restoration of site to previous condition.

j. Site Specific Final Report. At the completion or termination of a RCWM response action, the contractor will prepare and submit a Site Specific Final Report. The Site Specific Final Report documents all activities and operations that occurred and lists the RCWM found during the response action. This report is used as the basis for USACE's recommendations for future land use and for any proposed restrictions on the cleared area. EP 1110-1-18 discusses the required content and submittal procedures for the Site Specific Final Report.

6-4. Project Completion. The project completion requirements for a RCWM response action are discussed in ER 200-3-1 and additional information is found in EP 1110-1-18. Since the CW-DC executes the RCWM response action, the requirements for completion of a munitions response executed at a FUDS by the CW-DC, as described in ER 200-3-1 and EP 1110-1-18, are applicable to RCWM projects.

6-5. Operations and Maintenance (O&M). The purpose of O&M activities is to ensure that appropriate site safety and security measures remain in place and to maintain the integrity of any site controls, such as fences and signs. The determination of appropriate safety and security measures site controls must be made on a case-by-case basis. The District is responsible for ensuring that appropriate O&M activities are in place. Additional information on O&M related issues, such as recurring reviews, recordkeeping and access restrictions are discussed in EP 1110-1-18 and EP 1110-1-24.

CHAPTER 7

RCWM Response Action Plans

7-1. Introduction.

a. The project plans (CSP, CSS, Work Plan, and supporting plans) are the basis for the RCWM response action. If a determination of applicability of the Interim Guidance indicates that the probability of encountering RCWM is seldom or unlikely and the District is willing to assume the risk, then a CSS is not necessary.

b. The RCWM CSP will be used to describe the project's background and proposed general approach and procedures to address the scope of the RCWM project. This plan will be developed and approved before the remaining project plans are initiated if the PDT determines the CSP is required for the project.

c. The RCWM CSS will be used to provide RCWM response action safety criteria for approval by Army Safety and DDESB.

d. The Work Plan (including the SSHP and supporting plans) provides the specifications for conducting work activities at a RCWM project. It details the scope of the project, the planned work activities, the potential site hazards, and the methods of controlling the hazards. A CSS is required when response activities will be performed (e.g., surface removal of RCWM, excavations when the intent is to uncover, characterize, and remove geophysical anomalies and burial locations that have the potential to be RCWM items).

e. The CW-DC is the only USACE office authorized to prepare these plans. The CSS is normally prepared by the CW-DC with input from other agencies.

7-2. Contents.

a. CSP.

(1) The PDT will determine whether a RCWM CSP is required for the initiation of a new RCWM response action. If required, the CSP will be prepared following the site visit. The following information will be included:

(a) Project Authorization.

(b) Purpose and Scope.

(c) Work Plan Organization.

(d) Project Location.

(e) Site Description to include site location, topography, climate, vegetation, and site geology.

(f) Site History.

(g) Current and Projected Land Use.

(h) Previous Investigations.

(i) Initial Summary of RCWM Risk (summarize RCWM potentially on-site, and characteristic hazard presented by those items).

(j) Project Objectives.

(k) Organizational Roles.

(l) Site Characterization Goals.

(m) Site Characterization Procedural Overview.

(n) RCWM Sampling Locations.

(o) RCWM Sampling Procedures.

(p) Surveying, Non-intrusive Investigations and Site Control.

(q) Intrusive Investigation Operations. The Contractor shall describe proposed operations necessary for completion of this response action.

(2) The CSP will be prepared IAW contract requirements. Generally, the CSP will discuss the topic areas provided above. If the topic area is not required for a particular project, the chapter will be included in the CSP with a declaration that the information is not required for the project.

b. Work Plan. Additional information regarding Work Plans may be found on the MM CX website at http://www.hnd.usace.army.mil/oew.

(1) A Work Plan is required for all RCWM projects. Following the approval of the CSP, if one is required by the PDT, the Work Plan will be prepared to describe the methodology for accomplishing the RCWM response action.

(2) The Work Plan will be prepared IAW contract requirements. These work plans are prepared in the same manner as conventional MEC plans as described in EM 1110-1-4009. However, they will include the additional chapters listed below. If a topic area is not required for a particular project, the chapter will be included in the Work Plan with a declaration that the information was not required for the project.

(a) MCE.

(b) EZ.

(c) Contingency Plan.

(d) Intact Containers Monitoring and Disposal.

(e) IHF Siting Plan.

(f) Physical Security Plan.

c. SSHP.

(1) Prior to performing on-site work, a SSHP will be prepared IAW the requirements of 29 CFR 1910.120(b)(4), 29 CFR 1926.65(b)(4), ER 385-1-92, and ER 385-1-95.

(2) The SSHP will be prepared IAW contract requirements. The SSHP will discuss the topic areas provided below.

(a) Introduction. A reference to the Work Plan is sufficient to direct readers to detailed information on the site description; project scope and objectives; and staff organization, qualifications and responsibilities.

(b) Staff Organization, Qualifications, and Responsibilities.

(c) Activity Hazard Analysis and Risk Assessment per task.

(d) Training.

(e) Personal Protective Equipment.

(f) Medical Support.

(g) UXO Safety.

(h) Radiation Dosimetry.

(i) Environmental and Personnel Monitoring.

(j) Site Control.

(k) Personnel and Equipment Decontamination.

(l) Emergency Response and Contingency Procedures (on-site and off-site).

(m)Confined Space Entry.

(n) Spill Containment.

(o) Site Description and Contamination Characteristics.

(p) Heat/Cold Stress Monitoring.

(q) Standard Operating Procedures (include as a separate document).

(r) Accident Prevention.

(s) Logs, Reports, and Record Keeping.

(3) This outline presents the subcomponents required for each of the topic areas listed above. Chapter 8 of this pamphlet provides more detailed information on the safety considerations for RCWM response actions.

d. Supporting Plans. This section discusses the supporting plans required in the Work Plan. These plans, which are prepared by government agencies, include: TEU Assessment Plan; Air Monitoring and Analysis Plan; Environmental Media Sampling and Analysis Plan; Public Evacuation or Shelter-in-Place Plan; and PMNSCM Plans. At the time a SOW is

provided to the contractors, a SOW is issued to TEU, ECBC (or equivalent support organization), and PMNSCM to initiate the preparation of the supporting plans. Supporting plans can be provided in a separate volume from the Work Plan.

(1) TEU Operations.

(a) This plan is prepared by the TEU and includes their standard operating procedures (SOPs), Operational Orders, and specific equipment operations manuals that will be used to support the cleanup efforts.

(b) TEU's responsibilities generally include the following tasks:

- Coordinate and provide input to the Work Plan.
- Calculate the downwind hazard areas using D2PC.
- Aid contractor in the excavation activities within the EZ when non-MEC items are being excavated.
- Assess munitions with unknown fillers.
- Package munitions with unknown fillers.
- Transport munitions with unknown fillers.

(c) SOPs for Specific Items. The following SOPS, as applicable, must be located on-site:

- EOD Response to Ordnance Items.
- Use of the Portable Isotopic Neutron Spectroscopy (PINS).
- Use of the Raman spectrometer.
- Packaging.
- X-Ray Procedures.
- Assessment/reassessment.

(2) Air Monitoring and Analysis Plan. The Air Monitoring and Analysis Plan will describe air monitoring and analysis methodologies for chemical agent and, if required, industrial chemicals, and will discuss the following topics:

(a) Purpose, scope, and objectives of sampling and analysis.

(b) Responsibilities of the air monitoring and analysis personnel.

(c) Monitoring and analysis terms.

(d) Terms.

(e) Types of monitoring to be used.

(f) Monitoring/analysis procedures, including:

- Process controls.
- Near real time monitoring.
- Confirmation/historical monitoring.
- Soil headspace analysis procedure.
- Headspace analysis procedures for scrap, PPE, and bulk items
- Background (general area) monitoring.

(g) Monitoring record maintenance.

(h) Quality control.

(3) Environmental Media Sampling and Analysis Plan. The Environmental Media Sampling and Analysis Plan will describe sampling methodologies for sampling and analysis of environmental media for chemical agents and degradation products, and will discuss the following topics:

(a) Purpose, scope, and objectives of environmental media sampling and analysis.

(b) Responsibilities of the air monitoring and analysis personnel.

(c) Sampling/analysis procedures, including:

- Analytes of concern.
- Analytical methods and procedures.
- Quality control.
- Data reporting.
- Sampling/analysis record maintenance.

(4) Public Evacuation or Shelter-in-Place Plan. The USACE District, in close coordination with the CW-DC, will be responsible for these plans, as necessary. These plans will discuss the logistics of evacuation and alarm procedures, as required.

(5) PMNSCM Plans. The PMNSCM Plans are composed of the following sub-plans:

(a) IHF Plan. The IHF Plan will address all matters concerning the temporary storage of recovered RCWM. This includes the physical location, design, physical security, equipment requirements, personnel training requirements, monitoring requirements, descriptions of all necessary activities required during operation, and surveillance requirements.

(b) Transportation Plan. The Transportation Plan will address all transportation matters concerning the movement of the RCWM item(s) from the EZ to the IHF and from the IHF to the final destination point.

(c) Disposal Plan. The Disposal Plan will be provided by PMNSCM for the CSS.

e. Chemical Safety Submission. A detailed outline for the CSS is provided in Appendix C.

(1) The CSS is intended for this document to be a "stand-alone" document from the Work Plan and other supplemental plans for the project.

(2) This plan is based on the Work Plan and supplemental plans, so those plans must be complete before the CSS can be completed. The overall length of the plan shall not exceed 50 single-sided pages.

(3) The CSS is intended to provide those reviewing and approving agencies the necessary technical information, as required in the DA Interim Guidance of 1997. This outline has been agreed to by USAESCH and USATCES. No substantive changes will be made without the approval of the MM CX.

(4) Document control is positively essential during the drafting, editing, and publishing of this CSS. Each page must have a footer that identifies the document, either original date or date of the latest change. Additionally, a sheet shall be inserted into the front of the document that specifies the latest dates and changes. All changes to the original document will leave the bars in the outside margins to identify change locations throughout the document.

(5) It is intended for this document to include the necessary information required for an ESS as well, should it be necessary for the conduct of site operations for the RCWM activities.

(6) The CSS will contain an Executive Summary and the following chapters:

(a) Introduction.

(b) Sampling Plan Summary.

(c) Air Monitoring Plan Summary.

(d) PPE and Decontamination Summary.

(e) Medical Support Summary

(f) Public Protection Plan Summary.

(g) IHF Siting Plan Summary.

(h) MEC Transportation Plan Summary.

(i) RCWM Transportation Plan Summary.

(j) Engineering Controls Summary.

(k) Post-Recovery Assessment Activities Summary.

7-3. Review and Approval. Coordination, review and approval of CSSs and corrections or amendments to CSSs will be submitted IAW DACS-SF Memorandum, Approval of Safety Submissions for Non-Stockpile Chemical Warfare Materiel (RCWM) Response Activities, 29 Feb 00. A flow chart summarizing the review/approval process and timeline for CSSs is shown in Figure 7-1.

7-4. Amendments. Amendments to CSSs shall be signed by the same signatories (offices or agencies) as the original CSS.

7-5. Corrections. Corrections to CSSs are those changes that do not adversely affect worker or public safety. Corrections are typically administrative changes and will be initiated by the MACOM with overall responsibility for the CWM activity. Corrections require coordination with all support agencies and are approved by the MACOM with overall responsibility for the CWM activity. Copies of the corrections will be provided for information to all support agencies, USATCES, DA Safety, and DDESB.

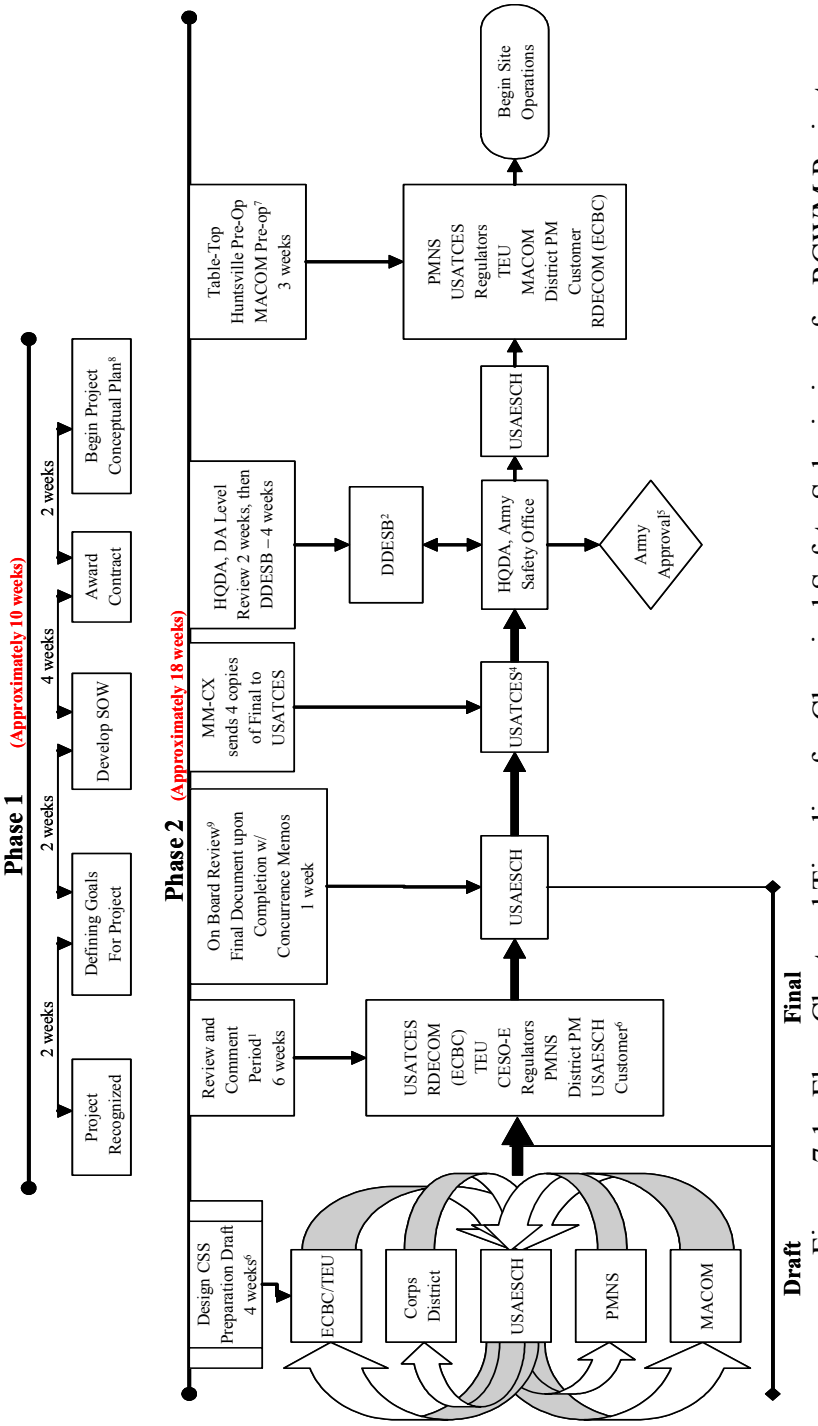

Figure 7-1. Flow Chart and Timeline for Chemical Safety Submissions for RCWM Projects

Notes:

1. Review and comment.
2. DDESB Reviews and approves on Active Installations, and provides concurrence on FUDS.
3. Final Document to USATCES (4 copies) 60 days prior to start of work (include written concurrences from TEU, ECBC, PMNS, and District)
4. USATCES will send copies to DDESB and DA Safety for final review and approval
5. Once final approval has been granted, PMNS may take the CSS to DHHS for concurrence.
6. Work for BRAC, IR, and Others will have the Installation, MACOM Safety Office, and appropriate service Staff involved in the process as well.
7. The USAESCH Table Top and Huntsville Pre-Op may be conducted during the last two weeks the CSS is at DDESB awaiting approval, MACOM Pre-Op will be conducted the week following DA approval.
8. Ensure USATCES involvement in the project at the Conceptual Site Plan Phase I.
9. USAESCH will host an On Board Review (OBR), this review will replace the Draft Final stage of the CSS. Attendees at the OBR need to be individuals that can make decisions for the agency involved. The intent is to come out of the OBR with a Final Document and signed copies of the concurrence memos and to send the CSS directly to USATCES/DA.

CHAPTER 8

Safety and Health Considerations

8-1. Introduction.

a. This chapter discusses the safety and health considerations for planning and executing a RCWM response action.

b. Safety is the primary consideration in all RCWM response actions. Detailed safety and health practices and procedures must be developed and implemented at each site to provide proper control of and protection against the unique safety hazards associated with specific on-site activities. All RCWM response activities will be planned and conducted IAW the requirements of this section, will be thoroughly coordinated with the MM CX, and will include participation of explosives safety technical personnel.

8-2. Policy.

a. All USACE and contractor elements will conduct RCWM response actions in compliance with regulations and guidance publications referenced below. Additionally, safety and occupational health documentation will comply with other applicable Federal, state, and local safety and occupational health requirements.

b. The contractor shall develop a SSHP IAW the requirements of EM 385-1-1, AR 385-61, and other applicable Federal, state, and local safety and health requirements. The SSHP will be included in the Work Plan IAW ER 385-1-95. The level of detail provided shall be tailored to the type of work, complexity of operations to be accomplished, and the hazards anticipated. The SSHP shall address those elements, which are specific to the site, and have the potential for negative effects on the safety and health of workers according to the requirements detailed in Section 28.A.02 of EM 385-1-1. Where a specific element is not applicable, list the element in the plan and state that the element is not applicable with a brief justification for its omission. The SSHP shall be an implementing document with emphasis on “who” will have each of the specific responsibilities and “how” and “when” each of the applicable requirements will be performed. The prime contractor shall integrate all subcontractor work activities into the SSHP, make the SSHP available to all contractor and subcontractor employees, and ensure that all subcontractors integrate provisions of the SSHP in their work activities. Daily safety and health inspections shall be conducted to determine if site operations are conducted IAW the accepted plans and contract requirements. The SSHP

may serve as the Accident Prevention Plan provided it addresses all content requirements of EM 385-1-1.

8-3. Staff Organization, Qualifications, and Responsibilities.

a. The contractor shall summarize the operational and health and safety responsibilities and the qualifications for each key person identified in the SSHP. The organizational structure, with lines of authority and overall responsibilities for the safety and health of the contractor employees and all subcontractors, shall also be discussed and an organizational chart showing the lines of authority for safety shall be provided. Each person assigned specific safety and health responsibilities shall be identified and his/her qualifications and experience documented using a résumé in the SSHP.

b. The contractor is responsible for having as many of the professionals – Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP), or Certified Health Physicist (CHP), involved in the design, review and approval (in their respective fields of expertise) of the SSHP. The approving individual(s) will sign and date the SSHP attesting to their approvals. Not all of these professionals may be required to review and approve the SSHP. It is a corporate responsibility and liability to ensure the appropriate review is done and signatures obtained.

c. A UXO individual, meeting the personnel requirements of EP 1110-1-18 for a UXO Safety Officer (UXOSO) or Senior UXO Supervisor (SUXOS), shall also sign the SSHP. The SUXOS shall have experience with RCWM-related activities commensurate with the specific project.

d. A UXOSO, meeting the personnel requirements set forth in EP 1110-1-18, shall be used at all RCWM projects. In addition, the UXOSO shall have experience with RCWM-related activities commensurate with the specific project. The contractor shall provide the UXOSO's résumé as requested by the CO.

e. At least two persons currently certified in First Aid and Cardiopulmonary Resuscitation (CPR) by the American Red Cross or equivalent agency, IAW EM 385-1-1, shall be present on-site at all times during site operations. During operations when two medical support personnel such as paramedics or emergency medical technicians and an ambulance are dedicated to the project and are on-site, the contractor does not have to have the two first aid attendants/CPR qualified persons on-site. During the operations when the

medical support is not required to be on-site, the contractor must have two first aid/CPR trained persons on-site.

8-4. Site Description and Contamination Characterization. Provide a description of the site based on results of previous studies, site history, and prior uses and activities. Compile a summary of hazardous substances and safety and health hazards likely to be encountered on-site. Include ordnance and chemical/biological, concentration ranges, media in which found, locations on-site, and estimated quantities/volumes to be impacted by this work. The site descriptions shall be based on results of previous studies and the history of prior uses and activities conducted under the Site Visit task of the SOW.

8-5. Hazard Analyses and Risk Assessment.

a. Identify each task and/or operation to be performed. Identify the ordnance, safety, chemical, physical, radiological and/or biological hazards of concern presented by each task and/or operation as indicated below. EM 385-1-1 provides details concerning activity hazard analysis preparation. The tasks and hazard/risk analyses shall be modified as needed to address changing work conditions.

(1) Ordnance. Identify potential ordnance/UXO items that may be encountered and necessary steps to mitigate the hazards. If there is the potential for UXO and UXO disposal is part of the assigned tasks, identify the hazards associated with the explosive disposal of the UXO.

(2) Safety. Evaluate the potential for injury from all site conditions and activities (e.g., excavations, slips, trips and falls, electricity, equipment and machinery, etc.). Reference EM 385-1-1.

(3) Chemical. List the chemical hazards that may be encountered during site activities and evaluate the chemical, physical, and toxicological properties of the chemicals. Describe the sources and pathways of employee exposure and anticipated on-site and off-site exposure levels. Address Federal, state, and local regulations or recommended exposure standards. Address employee exposure to hazardous substances bought on-site for the execution of site activities.

(4) Physical. Evaluate the potential for injury from physical hazards such as noise, heat and cold stress, vibration, etc., that may be present.

(5) Radiological. Evaluate the risk to human health caused by radioactive materials or ionizing radiation fields in the area where work is to be performed. Consider the presence of radioactive isotopes and the type of ionizing radiation they emit. Describe the sources and pathways of employee internal exposure and anticipated on-site and off-site internal and external levels. Address Federal, state, and local regulations or recommended exposure standards.

(6) Biological. Evaluate the potential for illness or injury due to biological hazards (e.g., poisonous plants, animals, insects, microorganisms).

b. Establish action levels and methods to mitigate the hazards noted above for the situations listed below. Action levels and required actions shall be presented in text and tabular forms.

(1) Implementation of engineering controls and work practices.

(2) Upgrades/downgrades in levels of PPE.

(3) Work stoppage and/or emergency evacuation of on-site personnel.

(4) Prevention and/or minimization of public exposures to hazards created by site activities.

c. At some projects, a site may be determined to be "non-RCWM" by a risk assessment IAW the applicability Memorandum of the Interim Guidance for Biological Warfare Material (BWM) and Non-Stockpile RCWM Response Activities. Sites that are determined not to be suspect RCWM sites by the applicability memorandum may still have chemical agent hazard present. On these sites, the contractor must determine the probability of worker exposure to chemical agent and make a recommendation as to whether agent monitoring and on-site medical support is necessary. If the contractor is tasked to perform the chemical agent monitoring, they must recommend the type of monitoring to be performed, the instrument(s) to be used, the frequency of monitoring, the action levels, actions to be taken, and other requirements described in Section 8-12 of this chapter.

8-6. Training. All personnel performing on-site work activities, wherein they may be exposed to hazards resulting from hazardous waste site operations, shall have completed applicable training in compliance with 29 CFR 1926, 29 CFR 1910.1200, AR Pam 385-61, DA Pam 385-61, DA Pam 40-8, DA Pam173, and EM 385-1-1. Prior to performing on-site

activities in contaminated areas (Contamination Reduction Zone and EZ), personnel shall successfully complete the following:

a. A minimum of 40 hours of HTRW health and safety instruction of the site.

b. Three days of actual field experience under the direct supervision of a trained, experienced supervisor, and eight hours of refresher training annually.

c. All on-site supervisors shall complete the above requirements and an additional eight-hour supervisor's course.

d. Site-Specific Training.

(1) Generally, on non-stockpile sites, the following information is covered during the site-specific training prior to the start of work on-site. A qualified instructor (qualified IAW 29 CFR 1910-120(e)(5)) from either the contractor or RDECOM will provide the training. This training is conducted annually for long-term activities. Employees will be trained in the following items at the beginning of each response action:

(a) Names of persons and alternates responsible for site safety.

(b) Safety, health, and other hazards known to be on the site.

(c) Use of PPE.

(d) Work practices to minimize hazards.

(e) Safe use of equipment and other controls on-site.

(f) Medical surveillance requirement.

(g) Decontamination procedures (if necessary).

(h) An emergency response plan.

(i) Confined space entry procedures (if applicable).

(j) A spill containment program (if applicable).

(2) Additional site-specific training covering site hazards, procedures, and all contents of the approved SSHP will be conducted by the UXOSO. This training will be provided for all on-site employees, including those assigned only to the Support Zone, prior to the commencement of work; for visitors prior to entering the site; and on a continual basis.

e. The UXOSO shall be responsible for maintaining a list of training records and expiration dates of applicable training for all on-site personnel (including government workers).

f. The UXOSO shall notify each organization's on-site supervisor if a site worker's training has expired.

g. Each agency shall be responsible for maintaining a copy of the training certification(s) on-site. The CO or a representative of the CO may request to review the training certification at any time.

8-7. Team Training and Pre-Start Exercises.

a. It is critical that each organization and member of the PDT understand their roles and responsibilities within the project framework. The proper chain of command and lines of communication must be followed to ensure safe and successful project execution. PDT knowledge and procedure will be tested during a tabletop exercise and pre-operational survey (pre-op) preceded by a USAESCH-conducted training exercise. USAESCH personnel will conduct training one week prior to the scheduled start date of the tabletop and pre-op. The USAESCH training is typically five days in duration. All equipment must be on-site, and all other site-specific training must be completed prior to initiation of the USAESCH training. It is the responsibility of each organization to ensure that when their workers are rotated out during a project that the information gained during the exercises is communicated to new site personnel.

b. Table Top Exercise.

(1) A table top exercise is required by Army regulation to be completed prior to the start of a chemical agent project. According to the Interim Guidance for BWM and Non-Stockpile RCWM Response Activities, the table top exercise will be conducted by the Major Command (MACOM) with overall responsibility for the activity. USAESCH will conduct the table top exercise as requested by the USACE District. Participants will include all on-site support agencies and any local responders that are supporting the project.

(2) The table top exercise is generally conducted in a "conference room" and usually lasts between two and six hours, depending on the project size and interest. This open discussion will take place in a non-threatening environment. It is an exercise utilizing simulations to conduct drills of emergency response to different CWM accident and incident scenarios. The purpose of the table top exercise is to ensure the effectiveness of the responses and to identify deficiencies or omissions in the emergency response process. It is also used to establish continuity and coordination among response agencies.

c. Pre-Operational Survey (Pre-Op).

(1) A Pre-Op is required by DA Pam 385-61 prior to the startup of any chemical operation. The Pre-Op will be conducted IAW the plan included in Appendix D.

(2) The Pre-Op is conducted on-site and usually lasts between three and four days. Close coordination between the MM CX and the CW-DC is essential in successfully executing the Pre-Op. The purpose of the Pre-Op is to evaluate the PDT's readiness to perform the chemical/explosives operations associated with the RCWM project. This is achieved by having a Pre-Op survey team comprised of subject matter experts from groups such as USACHPPM and from each agency responsible for executing on-site RCWM activities (e.g., TEU, ECBC, PMECW, PMNSCM, CESO, USATCES, and the USAESCH MM CX). The MM CX subject matter expert will act as the Survey Team Leader for the Pre-Op). Not all disciplines may be able to participate but a minimum of three persons will comprise the Survey Team: one from the USAESCH MM CX (the Survey Team Leader), one from USATCES, and at least one other member from the agencies involved in the chemical operation.

(3) It is critical to note the Pre-Op is not a training exercise for the PDT. All required training must be accomplished prior to the Pre-Op. The Pre-Op is an evaluation and, as such, is subject to failure. If the PDT fails the Pre-Op, they will not be permitted to begin chemical operations until they are able to satisfactorily complete another Pre-Op survey.

8-8. Personal Protective Equipment.

a. The PPE program shall be included in the SSHP. The contractor shall describe in detail and provide appropriate PPE to ensure workers, official visitors, and government employees are not exposed to levels greater than the action level for identified hazards for each operation and work zone. The program shall address:

(1) All the elements of 29 CFR 1910.120(g)(5), 29 CFR 1910.134, and 29 CFR 1910.132.

(2) Minimum levels of protection necessary for each task/operation to be performed at each site based on probable site conditions, potential occupational exposure, and the hazard analysis/risk assessment required above. Levels of protection must be relevant to site-specific conditions including heat stress and associated PPE safety hazards. Include specific types and materials for protective clothing and respiratory protection.

(3) Establish and justify upgrade/downgrade criteria based upon the action levels established as required by Section 8-5 of this chapter (as a minimum) and as appropriate.

(4) Provide site-specific procedures to determine PPE program effectiveness and for on-site fit-testing of respirators, proper cleaning, maintenance, inspection, and storage of all PPE.

b. DA Safety has issued a blanket approval that has several types of respirators and protective suits that are approved for use against agent under certain conditions. A copy of this blanket approval is found in Appendix E. If the contractor's PPE or task is not listed in this blanket approval, the contractor shall prepare and submit for approval a PPE matrix. In this matrix, the contractor shall discuss Level A & B suits and respirators to use on-site and the scenarios. The format for this matrix can be obtained from the CEHNC Safety Office. The PPE matrix will be a separate submittal and is not part of the CSS. Several level A & B suits, and respirators, have already been approved by the Army for use at RCWM projects.

c. Chemical Protective Undergarments (CPUs) are charcoal impregnated garments worn under an outer chemical resistant suit. DA Memorandum, Chemical Protective Undergarment (CPU) Service-Live, (17 Sep 02) states that all CPUs used by RDECOM chemical workers have a 15-day service life. CPUs must be disposed 15 days after they have been removed from the original package, regardless of the number of time they have been worn, remaining shelf life on them, or if they have been laundered less than six times. CPUs may still be laundered up to six times during the 15-day service life period. CPU shelf live is 12 years for garments in unopened, original packages.

(1) CPU managers shall mark each CPU label with the day, month, and year that the original package was opened. The garment must be disposed no later than 15 days after the marked date. CPU garments removed from their original package but not marked with the package removal date will be disposed immediately.

(2) CPUs must be stored in sealable plastic bags when not in use during the 15-day service life. This will reduce exposure of the garments to airborne contaminants that could degrade the chemical protective properties of the CPU fabric.

8-9. Medical Support.

a. This section discusses medical support arrangements made for the treatment of chemical casualties. The signed Memorandum of Agreement (MOA)/Contract for hospital and on-site medical support shall be maintained on-site by the UXOSO. The UXOSO shall also maintain a roster of the medical support personnel who have been trained in chemical agent casualty care.

b. All personnel performing on-site activities shall participate in an ongoing medical surveillance program meeting with the requirements of 29 CFR 1910.120. If chemical agent is a suspect site contaminant, the requirements in DA PAM 40-8 and/or 40-173 shall apply. The medical examination protocols and results shall be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine or who by necessary training and experience is board eligible. Minimum specific examination content and frequency, based on probable site conditions, potential occupational exposures, and required protective equipment shall be specified.

c. Each agency shall be responsible for maintaining a copy of the physician's medical opinion assessing the fitness to perform work on-site. The written medical opinion from the examining physician as to fitness to perform the required work shall be made available to the CO upon request for any site employee.

d. The UXOSO shall be responsible for maintaining a list of medically qualified personnel and the examination dates for all on-site personnel.

e. On-Site Support. In general, as a minimum, a State or National Registry of Emergency Medical Technician-certified paramedic, with special training in chemical warfare agent casualty care, will be available at each site during site characterization, excavation, transportation and/or disposal operations, along with a vehicle designated for use in patient transport. A MOA or a contract which contains all of the wording contained in the MOA will be developed and signed by both the medical provider and the contractor prior to the state of intrusive work on site.

f. Medical Treatment Facility. A MOA will be developed with a medical treatment facility that is capable of handling site injuries.

8-10. UXO Safety. If explosively configured RCWM or conventional MEC is expected, the provisions of EP 385-1-95a, EP 1110-1-18, and EM 1110-1-4009 will be adhered to concerning personnel qualifications, demolition activities, safety, use, and storage of explosives, and disposal of same (if tasked in the SOW).

8-11. Radiation Dosimetry.

a. All employees working within a radiological restricted area shall receive appropriate dosimetry monitoring for radiation exposure.

b. Radiation dosimetry shall be evaluated by an individual holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP). Electronic dosimetry may be used to assign external dose if approved by the Qualified Health Physics personnel.

c. All employers shall document employee exposure to external radiation. In order to do this, employers shall review each employee's radiation exposure history per 10 CFR 20.2104 for compliance with exposure standards prior to allowing the employee access to a restricted area. If the employee has no exposure history, the employee shall provide a signed written statement to that effect.

d. When possibility of internal radioactive contamination exists, employers shall estimate exposure with a bioassay program. The bioassay program will provide sampling of employees' nasal passages, urine and/or feces, or whole body counting, as appropriate to evaluate the suspected radionuclides. Air monitoring will be used to estimate inhalation exposure to suspected radionuclides.

e. Reports of Exposure to Ionizing Radiation will be furnished:

(1) To each employee:

(a) At least annually;

(b) Upon termination, and;

(c) Within 30 days of any personal request.

(d) Whenever an unusual event occurs or a significant dose is received by either an extremity or the whole body.

(2) To the Radiation Safety Officer (RSO) as soon as available.

8-12. Environmental and Personal Monitoring.

a. This section in the SSHP will include all information on air monitoring (agent and industrial) to be conducted on-site. Chemical agent monitoring shall use protocols approved in the Work Plan and the action levels will be IAW AR 385-61 and DA Pam 385-61. If ECBC is responsible for conducting the agent monitoring, the contractor shall coordinate with them.

b. An air monitoring summary shall be included in this section. This table shall include, but is not limited to, the following: contaminant of concern (agent and industrial), instrument to monitor, location of instrument, frequency, agency conducting monitoring, action level, and actions to be taken.

c. Where it has been determined that there may be employee exposures to on and/or off site migration potentials of hazardous airborne concentrations of hazardous substances, appropriate direct reading (real-time) air monitoring and integrated (time weighted average) air sampling shall be conducted IAW applicable Federal, state, and local requirements. Both air monitoring and air sampling must accurately represent concentration of air contaminants encountered on and leaving the site. The types and frequency of monitoring/sampling to be performed shall be specified for on-site and perimeter, where applicable. Where perimeter monitoring is not deemed necessary, provide suitable justification for its exclusion. When applicable, National Institute for Occupational Safety and Health (NIOSH) and/or EPA sampling and analytical methods shall be used. Laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's (AIHA) Proficiency Analytical Test (PAT) or laboratory Accreditation Program, where necessary, shall analyze personal samples. Include, as appropriate, real-time (direct-read) monitoring and integrated Time Weighted Average (TWA) sampling for specific contaminants of concern, meteorological, noise, and radiation monitoring shall be conducted, as needed depending upon the site hazard assessment. All monitoring and sampling protocol shall be specified to include instrumentation to be used and calibration of instruments. All monitoring and sampling protocol shall be specified to include instrumentation to be used and calibration of instruments. All monitoring results shall be compared to action levels to determine the need for corrective actions.

8-13. Site Control. The contractor shall describe site control measures, which include site maps, the work zone delineation and access points, the on and off site communication system, general site access controls, and physical security procedures.

a. The EZ at RCWM projects is the area within the boundaries of the NOSE and/or the fragmentation distances for the MGFD, whichever is greater.

b. Personnel Within The 1 Percent Lethality Zone.

(1) Only personnel who are essential to accomplish the work are allowed to work inside the 1% lethality zone.

(2) Only UXO-qualified personnel will be used to perform procedures related to MEC that include, but are not limited to, gaining access to (manual excavation) and identifying subsurface anomalies, assessing surface MEC, and recovering MEC. UXO-qualified technicians will make final disposition of all MEC items IAW applicable guidance.

c. The OE Safety Specialist is responsible for ensuring safety and for reviewing changes or adjustments to any of the EZs established for a site. The OE Safety Specialist may adjust operational procedures that do not constitute a change to the CSS. Under emergency conditions, the OE Safety Specialist may invoke changes to ensure increased worker safety and public protection. The OE Safety Specialist will document and notify the PM, the CW-DC, and the RCWM PDT of changes or adjustments as soon as possible.

8-14. Personnel and Equipment Decontamination.

a. The contractor shall develop and specify decontamination procedures with 29 CFR 1910.120 for personnel, PPE, monitoring instruments, sampling equipment, and other equipment used on-site. Decontamination procedures shall address specific measures to ensure that contamination is confined to the work site. Necessary facilities and their locations, detailed SOPs, frequencies, supplies, and materials to accomplish decontamination of site personnel and to determine adequacy of equipment decontamination shall be discussed.

b. Location of the Personnel Decontamination Station (PDS).

(1) The PDS will be located outside the NOSE distance. Exceptions to this rule might be required and should be reviewed on a case-by-case basis.

(2) An Emergency PDS will be established as close to the work site as possible so that any gross contamination can be removed.

(3) The location of the PDS will be based on the more restrictive of:

(a) The MCE of the site based on the worst possible weather conditions; or

(b) Actual meteorological conditions.

(4) If actual meteorological conditions are used, they must be monitored hourly, and the NOSE distance must be calculated hourly using D2PC. If actual conditions cause the PDS to be within the NOSE distance, work must stop until the conditions improve or the PDS must be moved outside the NOSE distance.

(5) The PDS will never be established within the fragmentation zone as described in AR 385-64, unless approved engineering controls are used.

c. Chemical Casualty Personnel Decontamination Monitoring. Provisions will be made for air monitoring at the PDS. In the event that a chemical casualty is suspected, the casualty will be monitored before crossing the hotline. The monitoring will be performed after the casualty has been processed through the PDS and is performed after three washes to verify adequate decontamination (i.e., less than 1 TWA – the workplace airborne exposure limit). Monitoring will be performed using a low-level air monitoring device, such as a MINICAMS, to detect any evidence of agent vapor off-gassing. Once monitoring has confirmed adequate decontamination, transfer of the suspected casualty to the support zone is permitted in order that they can be treated by medical personnel.

d. PPE Within The 1 Percent Lethality Zone.

(1) All personnel working within the 1 Percent Lethality Zone must wear the same level of PPE. Personnel outside of the 1 Percent Lethality Zone, but within the NOSE distance, may be in modified Level D PPE with slung masks. All personnel working in the 1 Percent Lethality Zone must also be protected from fragmentation, if at all possible.

(2) Support personnel, such as the cascade operator, may be in collective protection (such as a tent). PPE and collective protection will be furnished by the supporting organization; e.g., TEU or ECBC.

8-15. Emergency Response and Contingency Procedures (On-site and Off-site). An Emergency Response Plan, as required by 29 CFR 1910.120 shall be developed and implemented. At a minimum, it shall address the following elements:

a. Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposure, personal injuries, fire/explosions, environmental spills and releases, and discovery of radioactive materials.

b. Personnel roles, lines of authority, and communications.

c. Posted instructions and list of emergency contacts: physician, notified nearby medical facility, fire and police departments, ambulance service, state/local/Federal agencies, CIH, CSP, CHP, and CO.

d. Emergency recognition and prevention.

e. Site topography, layout, and prevailing weather conditions.

f. Criteria and procedures for site evacuation, emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distance, place of refuge, evacuation routes, and site security and control.

g. Specific procedures for decontamination and medical treatment of injured personnel.

h. Route maps to nearest pre-notified medical facility.

i. Public Safety. This section shall include a discussion on the MCE, NOSE distance (also known as the Public Withdrawal Distance), and the procedures to be used to keep the public outside the NOSE distance. The contractor, based on historical records, shall recommend an MCE to USAESCH. If a site has several operable units, an MCE shall be determined for each site. Documentation (downwind hazard calculations) from the D2PC modeling program shall be provided by USAESCH for inclusion into the plan. Criteria for initiating a community alert program, contacts, and follow-up shall also be discussed. The contractor shall discuss site methodology used to protect the public against site contaminants. This shall include, but is not limited to, air monitoring and evacuation procedures. Information regarding meteorological monitoring and daily D2PC calculations shall also be included in this section.

j. Material Safety Data Sheets (MSDS) for each hazardous substance anticipated to be encountered on-site shall be made accessible to site personnel at all times and shall be maintained on-site. Each agency shall be responsible for having and maintaining the required MSDS for the hazardous substances they bring on-site. The UXOSO shall ensure that all required MSDS are on-site and available to all on-site workers.

8-16. Confined Space Entry. The contractor shall develop procedures for confined space entry IAW 29 CFR 1910.146. If no confined spaces exist on-site and there are no planned excavations that could result in a confined space, this section may be omitted.

8-17. Spill Containment. Where major spills may occur, a spill containment program shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred or stored. The program will be designed IAW 29 CFR 1910.120(j) and will be required for hazardous substances on the site as well as hazardous materials brought on to the site for use during the work process.

8-18. Heat/Cold Stress Monitoring. Heat and cold stress monitoring protocols, as appropriate, shall be described in detail. Work/rest schedules shall be determined based upon ambient temperature, humidity, wind speed (wind chill), solar radiation intensity, duration and intensity of work, and protective equipment ensembles. Minimum required physiological monitoring protocols, which will affect work schedules, shall be developed. In cases where impervious clothing is worn, the NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, protocol for prevention of heat stress shall be followed and heat stress monitoring shall commence at temperatures of 70°F and above. Where impervious clothing is not worn, the American Conference of Governmental Industrial Hygienists (ACGIH) heat stress standard (TLV) shall be used. For cold stress monitoring to help prevent frostbite and hypothermia, the ACGIH cold stress standard shall be referenced and followed, as a minimum.

8-19. Standard Operating Procedures, Engineering Controls and Work Practices. The contractor shall develop SOPs to protect field personnel, prevent accidents, minimize hazards, and to take action to correct hazards where necessary. Site rules and prohibitions for safe work practices shall be discussed and shall include such topics as use of the buddy system, smoking restrictions, material handling procedures, confined space entry, excavation safety, physiological and meteorological monitoring for heat/cold stress, illumination, sanitation, daily safety inspections, etc. This list of topics is not intended to be all-inclusive.

8-20. Accident Prevention.

a. The minimum basic outline for an Accident Prevention Plan is identified in EM 385-1-1. The plan shall be site specific and address any unusual or unique aspects of the project.

b. Daily safety and health inspections shall be conducted to ensure the effectiveness of the SSHP and determine if operations are being performed IAW the SSHP, USACE, and OSHA regulations, and contract requirements.

c. In the event of an accident/incident, the CO shall be notified IAW EM 385-1-1.

d. The contractor shall complete and submit required accident reports within 2 working days of any reportable accident.

e. If there is an accident involving radiation, the Radiation Protection Officer (RPO) for the USACE District or the Radiation Protection Staff Officer shall be notified.

8-21. Emergency Equipment and First Aid Requirements. The following items, as appropriate, shall be immediately available for on-site use:

a. First aid equipment and supplies IAW the recommendation of a licensed physician.

b. Emergency eyewashes/shower (per ANSI Z – 358.1).

c. Emergency-use respirators (escape and rescue).

d. Spill control materials and equipment (see Section 8-17 of this chapter).

e. Fire extinguishers (specify type, size, and locations).

8-22. Logs, Reports, and Record Keeping.

a. Record keeping procedures for training logs, daily safety inspection logs, employee/visitor registers, medical surveillance records and certifications, air monitoring results, and personal exposure records shall be specified.

b. All personal exposure and medical monitoring records shall be maintained IAW applicable OSHA standards and CFRs 1904, 1910, and 1926.

c. The contractor shall develop, retain, and submit, as part of the final report, all visitor registration logs, training logs, and daily safety inspection logs (as part of the daily Quality Control (QC) Reports).

d. The contractor shall maintain copies of the required training and medical certificates on-site and shall make them available for government inspection upon request.

e. Accidents/incidents will be reported IAW EM 385-1-1. The following categories of accidents/incidents shall be reported to the CO by telephone or written report.

(1) Accidents/Incidents which result in a fatality, injury of employees, lost workdays, and/or property damage assessed at a cost of $2,000 or more shall be reported by telephone to the CO as soon as possible after learning of the incident. The report shall contain as much information as is known concerning the incident. An ENG Form 3394 shall be completed IAW the instructions attached to the form and forwarded to the CO within 5 working days after the incident. The ENG Form 3394 shall be legible and signed by the supervisor of the person injured (or supervisor of the activity where property damage occurred) and by the next level of management.

(2) The contractor shall immediately report to the CO any incident that could bring adverse attention or publicity to the USACE.

(3) The contractor shall maintain a list of alternate POCs in the event the CO is not available. USAESCH will provide the alternate POCs.

f. The Safety Exposure Report, a tabulation of field labor hours, lost workday accidents, and number of lost workdays shall be submitted monthly. (Note: This report does not negate the requirement to submit an ENG FORM 3394 to report an accident). The report shall include the following information:

(1) Title of Report.

(2) Month and year for which the report is made.

(3) Contract Number/Task Order/Delivery Order/Project Name/Site Name and Location. Report each Task Order/Delivery Order on a separate line on the form.

(4) Hours worked in direct support of the contract (by all personnel) during the reported month, and cumulative. (Do not report hours expended on corporate personnel issues, payroll, etc. or hours expended by subcontract personnel in direct support of the contract.)

(5) Total number of lost workday accidents during the reported month and cumulatively since task initiation.

(6) Total number of lost workdays due to on-the-job accidents during the reported month and cumulatively since task initiation.

(7) Number of property damage accidents (includes vehicles) with property loss value of $2,000 or more, during the reported month and cumulative since task initiation.

(8) Signature, Title, and Date: A corporate manager shall sign and date the exposure data report along with the progress report. Both reports shall be submitted under a single letter of transmittal to the CO, with two copies furnished to USAESCH, ATTN: CEHNC-OE-S.

CHAPTER 9

Environmental Sampling and Analysis

9-1. Introduction.

a. This chapter discusses the purpose, applicability, and procedures for environmental sampling and analysis.

b. Purpose. When a CWM release occurs, whether by detonation, spillage, leakage, or disposal, any media (e.g., air, soil, water), which has potentially been contaminated with chemical agent, may pose a threat to human health or the environment. The purpose of analyzing and/or monitoring representative samples of this media is to discern the presence/absence of chemical agent. These data are used to evaluate whether pre- or post-site actions are protective of human health and the environment.

c. Applicability. Environmental sampling and analysis should be performed as part of the site characterization. Environmental sampling and analysis must be performed during removal actions to confirm that chemical agent contaminated media has been removed.

9-2. Contaminants of Potential Concern (COPCs).

a. During the initial phases of site characterization, COPCs are determined from historical information and are documented in the CSP. If a CSP is not required by the PDT, COPCs will be identified in the CSS and/or Work Plan. The actual COPCs may change during the site characterization process based on additional findings. Changes in the site-specific COPCs as identified in the CSS and/or Work Plan may require modifications to these documents if changes to the site operation procedures are required. Table 9.1 lists the COPCs associated with CWM that are most commonly found at FUDS.

9-3. Agent/ABP Sampling and Analysis Support.

a. ECBC is the government agency responsible for the development of analytical procedures and SOPs pertaining to chemical operations. At USAESCH RCWM projects, ECBC or an equivalent organization with current Bailment agreement to handle surety materiel is responsible for:

Table 9.1
Contaminants of Potential Concern Found at FUDS Associated With CWM.

Common Contaminants of Potential Concern	Air Monitoring	Soil/ Aqueous Samples	Source	Description/Physical Properties (at room temperature)
Cyanogen Chloride (CK)	Yes	N/A[2]	Production, munitions	Blood agent. Industrial chemical. Colorless gas with a pungent, biting odor.
Phosgene (CG)	Yes	N/A[2]	CAIS, munitions	Choking agent. Industrial chemical. Colorless, nonflammable gas that smells like new mown hay, grass, or green corn. Condenses to a colorless liquid below 46°F.
Levenstein Mustard (H, HS); Distilled Mustard (HD)	Yes	Yes	CAIS, munitions	Blister agent. Colorless when pure, but usually yellow to brown oily liquid with a slight garlic or mustard odor.
Nitrogen Mustard (HN-1, HN-3)	Yes	Yes	Drums, containers	Blister agent. Colorless to pale yellow, oily liquid with a faint fishy or musty odor.
Lewisite (L)	Yes	Yes	CAIS, production	Blister agent. Colorless, oily liquid with a geranium odor. Very little odor when pure.
Chloroform	Yes	N/A[2]	CAIS	Industrial chemical. Clear colorless liquid with a pleasant, sweet odor
Chloropicrin (PS)	Yes	N/A[2]	CAIS	Industrial chemical. Colorless to faint yellow liquid with a stinging, pungent odor.
Tri-Phosgene	N/A[1]	N/A[2]	CAIS	White to off-white crystals, may react to form phosgene gas.
1,4-dithiane	N/A[1]	Yes	Mustard breakdown product	Agent breakdown product. Odor similar to mustard.
1,4-thioxane	N/A[1]	Yes	Mustard breakdown product	Agent breakdown product. Colorless liquid. Odor similar to mustard.
Thiodiglycol (TDG)	N/A[1]	Yes	Mustard breakdown product	Agent breakdown product. Colorless to pale yellow liquid. Odor similar to mustard.
Triethanolamine (TEA)	N/A[1]	Yes	HN-1 breakdown product	Agent breakdown product. Colorless to light yellow, viscous liquid with a slight ammonia odor.
Diethanolamine (DEA)	N/A[1]	Yes	HN-1 breakdown product	Agent breakdown product. Colorless crystals or a syrupy, white liquid with a mild, ammonia-like odor.
2-chlorovinyl arsenous acid (CVAA)	N/A[1]	Yes	Lewisite breakdown product	Agent breakdown product. Dilute acid.
2-chlorovinyl arsenous oxide (CVAO)	N/A[1]	Yes	Lewisite breakdown product	Agent breakdown product. White powder, no discernable odor.

N/A[1] – Constituents are not monitored for in air due to physical properties or because they are breakdown products.
N/A[2] – Constituents are not subject to laboratory analysis due to fate and transport properties.

(1) Development of the Air Monitoring and Analysis Plan IAW the CASARM QA Plan and DA Pam 385-61.

(2) Conducting all monitoring for chemical agent.

(3) Maintaining control over all CWM monitoring data generated during the response action.

(4) Training and certifying personnel on the operation of the MINICAMS, Depot Area Air Monitoring System (DAAMS), and Open-path Fourier Transform Infrared Spectrometer (OP-FTIR).

(5) Providing and calibrating equipment for personnel monitoring.

(6) Calibrating, challenging, and operating MINICAMS for real time analysis support.

(7) Setting up monitoring stations and collecting historical monitoring samples in support of real time monitoring.

(8) Conducting onsite analysis for headspace samples collected from media suspected of being contaminated with chemical agent.

(9) Maintaining all sampling records IAW AR 40-5 and 29 CFR 1910.120.

b. Other responsibilities that ECBC or an equivalent organization may be required to perform during site operations are on-site analysis of environmental samples using a field laboratory or headspace monitoring of environmental samples before they are shipped off-site by a commercial carrier for analysis at the ECBC offsite laboratory or a contractor facility with current Bailment agreement to handle surety materiel.

9-4. Air Monitoring.

a. General. Air monitoring for chemical agent is required whenever there is a risk for worker or public exposure to chemical agent during or due to site operations. An air monitoring plan must be developed and included as a supporting plan to establish the policies, objectives, procedures, and responsibilities for the execution of a site-specific monitoring program.

b. Purpose of Air Monitoring. The intent of air monitoring is to indicate to workers when a hazardous atmosphere is present and to maintain a record of employee exposure to airborne chemical agent, thus ensuring the safety of the operators, the environment, and the public. The choice of monitoring equipment is based on the type of monitoring to be performed and the types of agent involved. The location of monitors or sample ports is based on the operation, the airflow in the area, and the location of the source of agents.

c. Air Monitoring Plan. DA Pam 385-61 requires that a monitoring plan be developed in writing and implemented. Generally, the air monitoring section within the SSHP and the Air Monitoring and Analysis Plan satisfy this requirement. The policy requires that the plan contain the following information:

(1) A diagram of the operation.

(2) Agent(s) involved.

(3) Monitors to be used.

(4) Placement of sampling points based on characteristics of agent, airflow, and monitoring equipment being used.

(5) The kind of sampling lines used, to include the length, material made from and if the sampling lines are heat traced.

(6) Provisions for low-level personnel monitoring during operations.

(7) Identification of workstations where agent leakage is considered possible.

d. Monitoring Equipment. The following low level, near real time monitoring equipment is used on an agent-contaminated media site for air monitoring for agent.

(1) Miniature Chemical Agent Monitoring System. MINICAMS is an automatic air monitoring system that collects compounds on a solid sorbent trap, thermally desorbs them into a capillary gas-chromatography column for separation, and detects the compounds with either a halogen specific detector (XSD) or a flame photometric detector (FPD). It is a lightweight, portable, near real time, low-level monitor with alarm capability, designed to respond to Sarin (Isopropyl methylphosphonofluoridate), also known as GB; O-ethyl ester, also known as VX; mustard; nitrogen mustard; and Lewisite. The MINICAMS can also be used to detect certain industrial compounds, such as phosgene, chloropicrin, and chloroform.

(2) Fenceline Open-path Fourier Transform Infrared Spectrometry Air Monitoring. Open-path air monitoring of gaseous compounds is a direct extension of laboratory spectroscopy systems that identify and quantify gases based on their spectral absorption characteristics. Typically, open-path systems send a beam of light through the open air, to a reflector and then back to a receiver. If gases that absorb light are present in the beam, they can be identified and quantified. This technology will not sample down to the airborne exposure limit (AEL) for most CWM agents.

(3) Depot Area Air Monitoring System.

(a) DAAMS is a portable air sampling unit that is used for agent confirmation sampling. It is designed to draw a controlled volume of air through a glass tube filled with a collection material (Tenax GC). As the air is passed though the solid sorbent tube, agent is collected on a sorbent bed. After sampling for the predetermined period of time and flow rate, the tube is removed from the vacuum line. The tube is transferred to the field laboratory, or to the ECBC offsite laboratory or contractor facility with current Bailment agreement to handle surety materiel, for gas chromatography (GC) analysis.

(b) GC analysis is first performed by desorbing the tube on to the instrument transfer tube. Chemical agents are then desorbed from the transfer tube into the GC where they are separated from each other in the GC column. The chemical agents are then detected as they elute from the GC column. The GC is configured to detect each chemical agent. The purpose of the GC analysis is to determine the presence, type, and quantity of agent collected in the sampling tubes. This technique will sample down to the AEL for agent.

(4) Field Laboratory. A field laboratory is a self-contained unit that can be moved to a project and that contains all of the equipment necessary to analyze and confirm samples taken with DAAMS tubes and extracts of soil and surface water samples. The field laboratory shall be a fully functional laboratory that can cover the critical on-site chemical analysis and monitoring needs. An example of a suitable field laboratory is the Mobile Analytical Platform (MAP) used by ECBC.

(5) Chemical Agent Monitor (CAM). The CAM is a lightweight, hand-held gross level vapor detector designed to respond to nerve and mustard agent vapors. It detects vapors of chemical agents by sensing molecular ions of specific mobilities and uses timing and microprocessor techniques to reject interferences. When the CAM detects the presence of a chemical agent vapor, a visual display will indicate the class of agent and the relative

concentration of agent. The CAM does not have an audible alarm. It has a real-time response capability for the detection of GB, VX, and mustard.

(6) Commercially Available Monitoring Equipment. For the industrial chemicals such as those found in CAIS (e.g., phosgene and chloropicrin) there are commercially available instruments that may also be used on-site for air monitoring, as required. However, depending on the level of detection required, MINICAMS can be used to determine the presence of certain industrial chemicals. In each case a method of confirmation must be employed, such as colorimetric tubes.

e. Types of Monitoring. This section discusses the types of air monitoring. Table 9.2 presents a summary of these types of air monitoring.

(1) Background Monitoring. This monitoring shall be conducted prior to initiation of site operations in order to provide a baseline of reference for subsequent analyses and to determine any interference in the area. DAAMS tubes and/or MINICAMS are generally used for this monitoring of the chemical agents of concern.

(2) Area Monitoring. General area monitoring provides an early warning to personnel that there is a problem and that action must be taken. The monitoring device or sampling port is placed in strategic locations in the work area where there is a potential for encountering agent vapors. The sample locations are determined based on such factors as the agent involved, the airflow patterns in the area, the operations(s) being performed, and the location of the source of the potential release. A MINICAMS and/or commercially available monitors are used for this type of monitoring.

(3) Perimeter Monitoring. This monitoring will not be used to immediately warn of hazardous conditions, but will be used to document conditions over time and to confirm a hazardous condition that was indicated by the MINICAMS. DAAMS tube sampling stations and/or the OP-FTIR are located at the perimeter of the work area to record any chemical agent release beyond the EZ.

(4) Mobile Area Monitoring. Mobile area monitoring is a method of sampling airborne levels of contaminants in the work place. It is taken over the entire workday. A sampling train is used consisting of DAAMS tubes that are connected to a dual-port sampler. The dual port sampler is attached by Tygon tubing to a personal air pump. The train is calibrated to a specified air flow rate (liters per minute [LPM]).

Table 9.2
Types of Air Monitoring

Air Monitoring	Type	Method	Purpose
Background Monitoring	Baseline	DAAMS Tubes MINICAM OP-FTIR	To provide a baseline of reference for subsequent analyses
Area Monitoring	Near-Real Time	MINICAM Commercially Available Monitor	To provide early, rapid warning to personnel of airborne exposure
Perimeter Monitoring	Confirmation/ Historical	DAAMS Tubes	To confirm real time alarms and to provide a historical record of public exposure due to an airborne release
Mobile Area Monitoring	Confirmation/ Historical	DAAMS Tubes	To confirm the results of the real time monitors and to document conditions over time
Decontamination Monitoring	Near-Real Time Real time	MINICAMS CAM	To continuously monitor at the hot line to provide early, rapid warning of airborne exposure
Surface Monitoring	NA	DAAMS Tubes	To determine if surface decontamination is required for media such as scrap metal, glass, etc. that is or has a high potential to be contaminated with chemical agent
Headspace Monitoring	NA	DAAMS Tubes MINICAMS	To screen environmental samples, bulk items, PPE and scrap which may potentially be contaminated with chemical agent

(5) Decontamination Monitoring. Personal decontamination station monitoring is used to verify that complete decontamination of a worker or piece of equipment has been conducted. Decontamination monitoring will be conducted using a MINICAMS.

(6) Surface Monitoring. Surface monitoring will be done on equipment and waste of any kind that is suspected to be contaminated with chemical agent IAW AR and DA Pam 385-61.

(7) Headspace Monitoring. Headspace monitoring will be conducted on environmental samples suspected of being contaminated with chemical agent prior to off-site shipment for analysis. This is to prevent samples contaminated above the AEL from being shipped by commercial carrier. Procedures for headspace monitoring of environmental samples is provided in Appendix F.

9-5. Environmental Sampling.

a. Environmental sampling will be used to determine if residual chemical agent contamination from a release, spill or disposal operation is present in the surrounding environment. Environmental sampling will also be undertaken to determine if other hazardous chemicals are mixed with the chemical agent(s) of concern. The sampling of other COPCs is necessary for the determination of the appropriateness of worker protection and to determine if residual concentrations of non-agent COPCs are present.

b. Some types of chemical agents are not persistent in certain types of environments or after certain periods of time. The persistence of a chemical agent and its environment should be taken into consideration when determining COPCs for a specific site. For example, industrial chemicals such as phosgene, tri-phosgene, chloropicrin, chloroform, and cyanogen chloride are typically non-persistent in the environment and would be unsuitable selections as COPCs. Available references on fate and transport of chemical agents include "Environmental Chemistry and Fate of Chemical Warfare Agents" (Southwest Research Institute, 1994) and "The Sources, Fate, and Toxicity of Chemical Warfare Agent Degradation Products" (Munro, et al., 1999).

c. Environmental samples may consist of soils and other solids, water, sludge, and vegetation. Each environmental sample collected will be homogenized and then divided into a minimum of three split samples prior to monitoring or analysis. Homogenization of the sample is required to ensure that each split sample is adequately representative. Prior to off-site shipment, unless the sampled media is aqueous, one of the split samples will be screened

for agent using airborne methods to ensure that concentrations are below the AEL. Once agent concentrations are determined to be below the AEL, the sample will be analyzed using soil and water extraction methods to ensure concentrations are below detectable levels IAW DA Pam 385-61. Extraction analysis may be performed at the site, or the sample may be shipped to an appropriate off site facility. This screening process is illustrated in Figure 9-1.

d. Sampling Locations. Environmental samples will be collected immediately beneath and/or adjacent to any RCWM. Samples of surrounding media should also be collected whenever there are visual or airborne indicators of potential chemical agent contamination. Historical information may also be used to determine sampling locations.

e. HTRW or Other Analyses. If split samples of environmental samples are to be analyzed for HTRW or other contaminants, the following procedures will be followed:

(1) Split samples will be created and screened/analyzed for agent as described in Paragraph 9-5c. and Figure 9-1.

(2) Split samples created for HTRW analyses will be retained on-site until they have been analyzed by extraction and determined to have no detectable concentrations of chemical agent.

(3) The receiving laboratory to conduct the analyses is notified in writing prior to beginning work at the project that samples could possibly contain chemical agent contamination. Any non-surety laboratory to which samples are sent must be notified in writing that samples may contain chemical agent hazards. This notification shall explain the measures taken to ensure, to the extent possible, that the non-surety laboratory will not receive samples that are contaminated by chemical agent. Example text for this letter follows:

> "This letter is to inform you of the nature of the operations that will be taking place at the above project. The objective for sampling at this site includes an assessment for chemical warfare agent and agent breakdown products, as well as the hazardous and toxic wastes (HTW) for which your laboratory will be performing analyses.
>
> Prior being sent to your laboratory, the disposal characterization samples will be cleared for agent by [state name of ECBC laboratory or contractor facility with current Bailment agreement to handle surety materiel for analysis]. A copy of the clearance report for these samples will be sent to your laboratory along with the HTW samples."

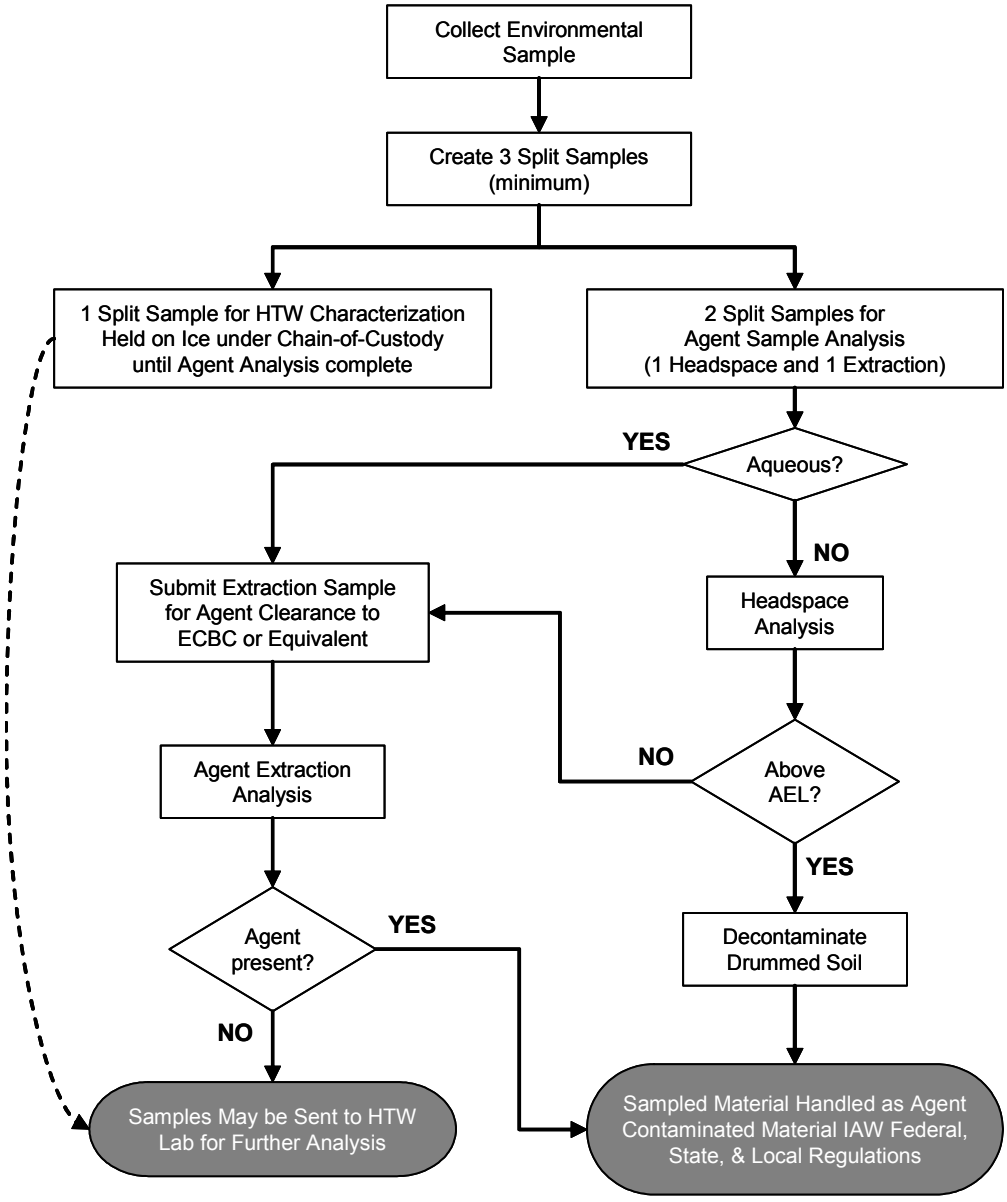

Figure 9-1. Environmental Sample Characterization.

f. Shipment of Environmental Samples.

(1) Environmental samples shall not be shipped off-site to commercial or QA laboratories until those samples have been confirmed as non-detect for chemical agent by ECBC or equivalent.

(2) Prior to shipping samples by commercial carrier to ECBC or a contractor facility with current Bailment agreement to handle surety materiel, all samples shall have a split sample headspace monitored to ensure chemical agent concentrations are below the AEL, or the samples will be analyzed on-site by extraction to ensure agent concentrations are below detectable levels.

(3) Equipment blanks do not require headspace analysis prior to sample shipment.

(4) Shipping will be IAW DA Pam 385-61 and EM 200-1-3, Appendix F. Applicable Department of Transportation requirements will be followed for all shipped samples. In addition, for samples transported by air, the International Air Transport Association requirements for the carrier must be followed. All samples suspected of containing agent should be sent as Class 6 or Class 9 DOT regulated materials. Packaging must be consistent with the DOT and IATA regulations."

CHAPTER 10

Investigation Derived Waste

10-1. Introduction.

a. This chapter discusses the types of IDW encountered at RCWM projects, characterization procedures, and management procedures. Figures 10-1a and 10-1b illustrate the IDW management process.

b. IDW may consist of anything generated during a site investigation or removal action that cannot be reused or recycled. Some media must be managed as IDW until it has been fully characterized. The characterization may determine that the media is suitable for reuse.

10-2. Soil.

a. Soil. Soil may be generated during a response action in the form of environmental samples, drill cuttings, or excavated soil. Characterization of soil generated during a response action is required whenever there is historical, visual, or other detectable evidence that contamination may be present. If monitoring indicates an airborne hazard, soil will be containerized to prevent exposure to the contamination. If monitoring does not indicate an airborne hazard, soil may be stockpiled in a way to minimize spread of contamination until characterization has been completed.

b. Characterization.

(1) Large volumes of soil are generally characterized by analyzing composite samples. The number of composite samples required to characterize a given volume of soil is generally site-specific due to local laws and regulations. When multiple types of contamination are suspected, characterization will be prioritized based on hazard level, beginning with the greatest hazard level.

(2) Disposal decisions shall be based on agent/ABP and HTRW disposal characterization sampling results. If HTRW characterization is performed, it shall be IAW EM 200-1-3 requirements for chemical analysis. Use of disposal facilities or onsite disposal is contingent upon compliance with the facility-specific requirements for waste acceptance, and state and local regulations. These requirements include, at minimum, complete analytical characterization data and disposal documentation paperwork.

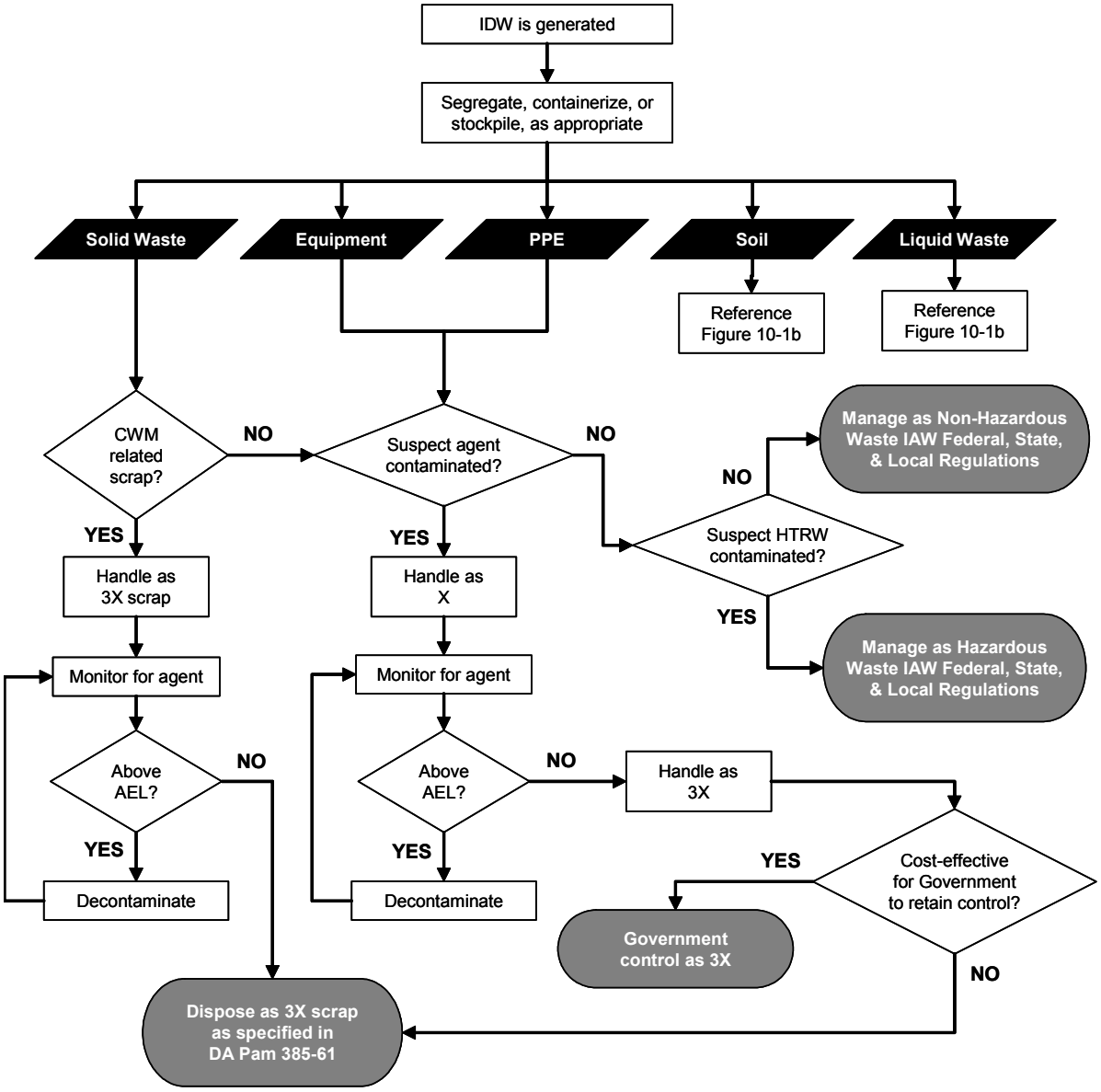

Figure 10-1a. IDW Management Process: Solid Waste, Equipment, and PPE.

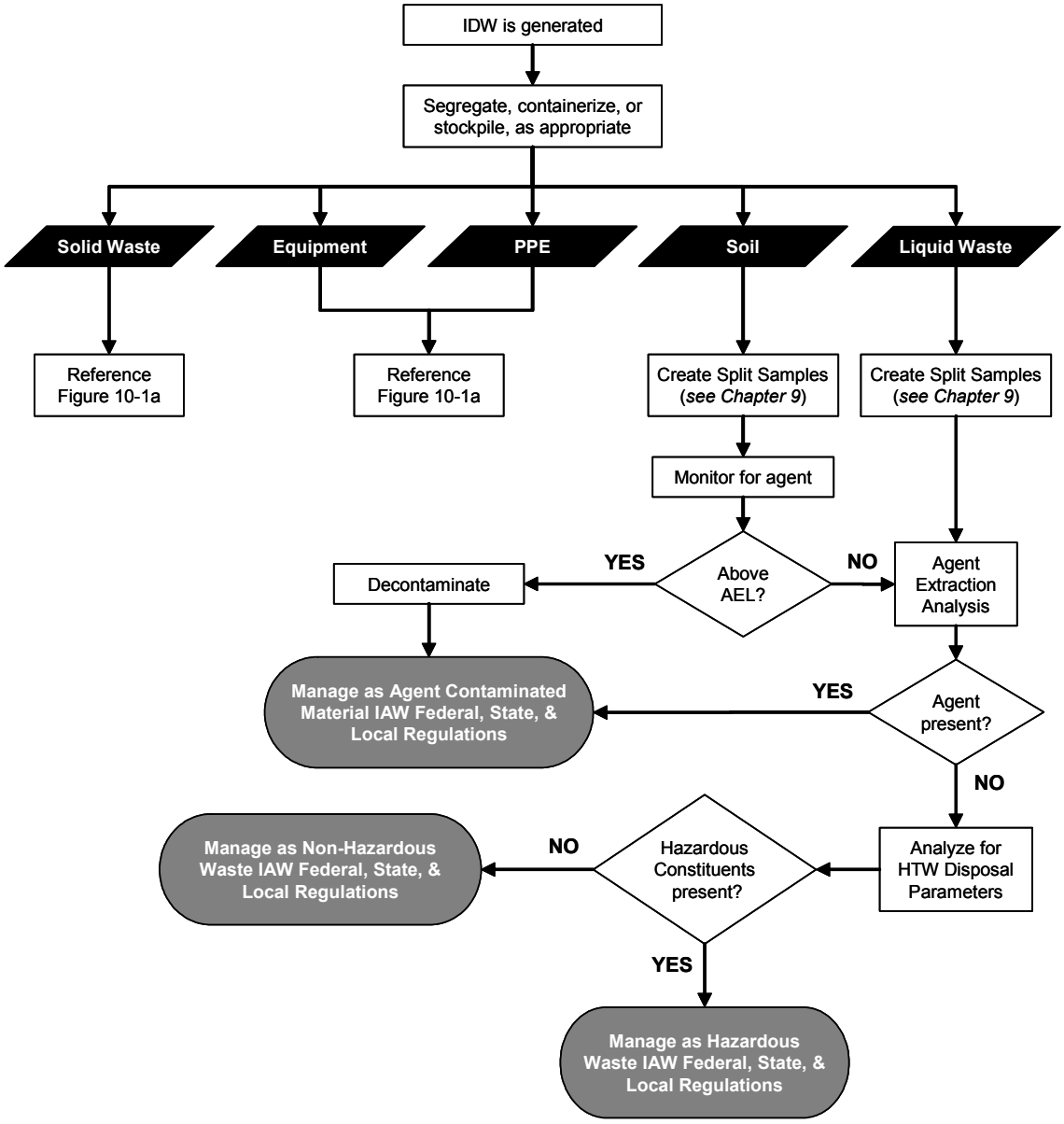

Figure 10-1b. IDW Management Process: Soil and Liquid Waste.

(3) The presence of contamination in soil is based on positive detections of agent/ABP as determined by ECBC or equivalent, and characterized for disposal by an HTW laboratory. Typical HTW disposal analyses for soils include: Toxicity Characteristic Leaching Procedure (TCLP) metals, TCLP Volatile Organic Compounds (VOCs), TCLP Semi-volatile Organic Compounds (SVOCs), ignitability, corrosivity, and reactivity. Depending upon the site history and disposal facility requirements, TCLP pesticides, TCLP herbicides, and poly-chlorinated biphenyls (PCBs) may also be analyzed.

c. Decontamination and Disposal. Soil contaminated with chemical agent will be decontaminated and disposed of IAW DA Pam 385-61. When soil is contaminated with chemical agent and the AEL is exceeded, it will be decontaminated prior to off-site shipment for incineration at an approved facility. Soil characterized as hazardous will be incinerated or otherwise disposed of appropriately at a RCRA-permitted facility.

10-3. Liquid Waste.

a. Liquid waste may be generated during a RCWM response action in the form of environmental samples, drilling fluids, and/or decontamination water. Liquid waste that is suspected to be contaminated will be containerized and managed as IDW until characterization is complete.

b. Characterization.

(1) Liquid waste will be characterized by analyzing representative samples of the generated waste for any suspected contamination. Chemical agents generally break down in water to form less hazardous byproducts. However, if chemical agent is suspected, the environmental sampling procedures described in Chapter 9 of this document will apply.

(2) Disposal decisions shall be based on agent/ABP and HTRW disposal characterization sampling results. If HTRW characterization is performed, it shall be IAW EM 200-1-3 requirements for chemical analysis. Use of disposal facilities or onsite disposal is contingent upon compliance with the facility-specific requirements for waste acceptance, and state and local regulations. These requirements include, at minimum, complete analytical characterization data and disposal documentation paperwork.

(3) The presence of contamination in liquid wastes is based on positive detections of agent/ABP as determined by ECBC or equivalent, and characterized for disposal by an HTW laboratory. Typical HTW disposal analyses for liquid wastes include: TCLP list compounds,

corrosivity, and reactivity. Depending upon the site history and disposal facility requirements, TCLP pesticides, TCLP herbicides, and PCBs may also be analyzed.

c. Disposal. Liquid wastes that are determined to have contamination levels above the site-specific action levels will be classified as hazardous waste and managed IAW Federal, state, and local laws and regulations as appropriate.

10-4. Solid Waste.

a. Solid waste or scrap may be generated during a response action in the form of recovered debris (e.g., metal, glass, wood) resulting from former site activities. All recovered scrap will be managed as IDW; however, until it has been characterized, scrap will be segregated and managed based on possible contamination.

b. Characterization.

(1) Scrap. Scrap will be visually inspected to determine if an explosive hazard is present. If present, the explosive hazard must be mitigated prior to disposal. All scrap must be certified to be free of an explosive hazard prior to disposal.

(2) Scrap suspected to be contaminated with chemical agent must be monitored to determine if contamination is above the AEL. Scrap that will be considered suspect includes materials known to have been used for CWM operations, materials known to have been exposed to chemical agent, and materials that have been in direct contact with other media determined to be contaminated with chemical agent. If agent contamination is above the AEL, surface decontamination IAW DA Pam 385-61 is required. If agent contamination is below the AEL or when an item has been decontaminated to below the AEL, the scrap will be classified as 3X material.

(3) Scrap that has other indications that it may be contaminated with HTRW (e.g., biological waste, visual contamination, air monitoring indicators) will be managed as a hazardous waste.

c. Disposal. Scrap contaminated or suspected to be contaminated with chemical agent or HTRW will be classified as hazardous waste and managed IAW Federal, state, and local laws and regulations as appropriate. All 3X material will be disposed of IAW DA Pam 385-61. Scrap that is determined to be free of contamination may be disposed of in a sanitary or industrial landfill. Whenever possible, scrap that is uncontaminated will be recycled.

10-5. Personal Protective Equipment.

a. PPE is a generated waste when it is consumable, requiring disposal after its use is finished or when it becomes contaminated with chemical agent or HTRW and decontamination of the PPE is not possible or cost effective. When it is cost effective to do so, chemical agent contaminated PPE can be decontaminated to 3X levels and reused. There are exceptions to this reuse; however, property that is determined to be 3X must remain under the control of the Federal Government IAW DA Pam 385-61.

b. Decontamination and Disposal. PPE that is contaminated with chemical agent must be monitored to determine if contamination is above the AEL. If agent contamination is above the AEL, surface decontamination IAW DA Pam 385-61 is required. PPE contaminated or suspected to be contaminated with chemical agent or HTRW will be classified as hazardous waste and managed IAW Federal, state, and local laws and regulations as appropriate. All 3X material will be disposed of or managed IAW DA Pam 385-61. PPE that has not been in contact with agent liquid or vapor may be disposed of in a sanitary or industrial landfill.

10-6. Equipment Disposition.

a. Equipment is classified as either consumable or durable goods. Some examples of consumable goods are PPE and sampling equipment. Heavy equipment is an example of durable goods that is utilized at RCWM projects.

b. Equipment contaminated with agent requires disposition after its intended use is completed either through disposal or reuse. When cost effective to do so, chemical agent-contaminated equipment can be decontaminated to the 3X levels and reused. However, equipment classified as 3X must remain under the control of the Federal Government IAW DA Pam 385-61.

10-7. IDW Plan. The IDW Plan will be included in the Work Plan and will contain the following information:

a. Handling. Describe how IDW (RCWM-contaminated media, hazardous waste, and decontamination wastes) will be handled at this site.

(1) Identify methods to be used to containerize, store, test, transport and handle IDW.

(2) Identify methods used to minimizing the quantity of IDW.

(3) Identify the methods used to manage IDW consistent with the final remedy.

(4) Address how pre-transportation storage, transportation, treatment, and ultimate disposal of the various waste streams will be accomplished.

b. Contracting Office Recommendation. Include a letter report for the CO recommending appropriate disposal actions and treatment.

c. Timely Disposal. Identify how the IDW disposal will be accomplished in a timely manner. To be agreed upon prior to the SOW.

d. Regulated Facility. Document how the disposal of the IDW is conducted by a facility that operates as a Treatment, Storage, and Disposal Facility (TSDF) under RCRA regulations. USAESCH will identify a POC for signature of the hazardous waste manifest.

e. Packaging. Describe the packaging of the materiel IAW state and Federal laws and regulations. Packaging will be addressed in the Work Plan for the purpose of segregation of materiel (if necessary) for transportation and ultimate disposal of the IDW.

f. Personnel.

(1) Identify all personnel and equipment necessary to package, label, manifest, transport, and dispose of the IDW IAW the approved Work Plan.

(2) Provide copies of training certificates with respect to RCRA, HW, and DOT hazardous material regulations.

(3) Provide emergency response contacts.

g. Licenses and Permits. Describe the necessary licenses and permits, and will comply with applicable Federal, state, and local laws, codes, and regulations when executing this work.

h. Transportation. Identify the methods used to ensure the shipment or transportation of IDW is IAW DOT Hazardous Material Regulation 49 CFR 100-199.

i. Manifesting. Describe the preparation of all required hazardous waste manifests, which will include a correct description of all wastes to be shipped in a complete and legible manner and the appropriate details from Paragraph 10-8.

j. Waste Characterization.

(1) Prepare and provide a copy of the Waste Profile Sheet(s), along with a copy of the analytical results used to prepare the profile, to USAESCH and the District or installation.

(2) Include identification of the waste codes and underlying hazardous constituents.

(3) Demonstrate site-specific knowledge of COPCs.

(4) Estimate the type and quantity of IDW to be generated.

k. Weight Slip. Provide a signed weight slip to USAESCH and the District or installation that indicates the actual weight of the IDW that has been shipped to the TSDF.

l. Land Disposal Restriction (LDR) Notification Forms. A copy of the LDR Notification Form and the manifest will go to USAESCH for review prior to USAESCH signing the manifest. This form will identify associated treatment standards required in 40 CFR 268. The contractor will make any revisions to this form. USAESCH will provide a copy of the approved form to the District or installation.

m. Certificate of Disposal. TSDFs must be required under the contract to provide a Certification of Disposal indicating final disposition of all items, signed by the authorized agent of the TSDF, within 10 working days of final disposition. Final payment will not be made until ultimate disposal has been made. This certification will indicate:

(1) The materiel (by item and quantity) that was disposed.

(2) The specific method of treatment.

(3) The date of treatment.

(4) Manifest number of waste.

n. Applicable, Relevant, and Appropriate Requirements. Identify potential ARARs and any exemptions to ARARs. In some jurisdictions, chemical agent and chemical agent contaminated media are considered hazardous waste by regulation. Therefore, local and state hazardous waste regulations will be reviewed to determine which regulations apply.

10-8. Manifesting Requirements.

a. Manifests will be prepared IAW 40 CFR 260-268, applicable state regulations, and 49 CFR 171-178.

b. Completed copies of all manifests, land disposal restriction notification forms, and waste profiles will be forwarded to USAESCH (or the installation) for review at least 10 working days prior to shipment of the IDW.

c. The contractor will make revisions to the manifest as requested.

d. No shipment of the IDW will occur until the Government is satisfied that all entries are correct and the authorized representative of USAESCH has signed the manifest.

10-9. Government Responsibilities. Government responsibilities will include the following:

a. Inspection. Inspect the materiel in the IDW container to be transported for disposal prior to loading, to ensure that only authorized wastes are being offered for treatment/disposal. Upon completion of inspection, notify the contractor of any unauthorized wastes discovered.

b. Designated Generator. Be designated as the Generator at RCWM projects for the purpose of manifesting. For sites adjacent to active installations, where the active installation has assumed responsibility, the installation will make the necessary manifest certifications. For FUDS, the manifest signatory will be an authorized representative of USAESCH. The District's generator number will be used for manifests. A copy of all paperwork will be provided to the PM for information.

c. Manifest Retention. Maintain manifests at the project office for a minimum of three years as required by 40 CFR 262.40. Under Multiple Award Remediation Contracts, maintain records for extended lengths of time as required.

CHAPTER 11

Interim Holding Facility

11-1. Introduction. This chapter presents an overview of the regulatory requirements, organizational responsibilities, and general requirements for the IHF. The IHF is constructed onsite for the receipt and temporary storage of RCWM, pending onsite disposal or removal from the site. The PMNSCM is responsible for preparing an IHF Plan to provide information about the temporary storage of RCWM in a safe, secure, and environmentally sound manner.

11-2. IHF Regulatory Requirements. IHF operations will be in compliance with DA and other regulatory guidelines. Some of the major regulatory requirements for IHF operations include:

a. An EPA identification number will be obtained by the USACE District as the generator of RCWM per 40 CFR 264.11.

b. RCWM hazardous waste must be characterized according to 40 CFR 264.12, then labeled IAW 40 CFR 262.34. An operating record must be maintained IAW 40 CFR 264.73-264.76 and applicable local regulatory requirements.

c. Appropriate signs must be posted restricting access to the facility per 40 CFR 264.14. Agent and supplemental signs will be posted IAW DA Pam 385-61.

d. IHF inspection procedures must be IAW 40 CFR 254.15 and available on-site for inspection per 40 CFR 264.74.

e. All personnel involved in hazardous waste management must be 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained IAW 29 CFR 1910 to ensure they can implement emergency procedures and activate the facility contingency plan as required by 40 CFR 264.50-264.56.

f. The IHF must be equipped with a secondary containment system per 40 CFR 264.75, and all wastes must be stored separately in containers that are compatible with the waste they contain per 40 CFR 264.172.

g. Storage of RCWM will be IAW AR 385-61, DA Pam 385-61, AR 385-64, DA Pam 385-64, AR 50-6, and AR 190-11.

11-3. Organizational Responsibilities. The primary organizations participating in IHF activities on FUDS include the PM District, the CW-DC, PMECW/PMNSCM, the Guardian Brigade, and USAESCH.

a. The District. The District, in close coordination with the CW-DC and PMECW, has the following responsibilities for IHF operations:

(1) Exercise site control per the IHF Plan and Work Plan during all phases of RCWM recovery operations.

(2) Select the IHF location and exercise control of RCWM after receipt from the recovery site until the RCWM is removed from the IHF and destroyed onsite or shipped offsite for treatment.

(3) Be responsible for the RCWM until it is transported offsite. The physical custody of the RCWM will be immediately transferred to the TEU.

(4) Coordinate standby decontamination, medical support, and emergency response during all phases of recovery, on-site transport, and storage.

(5) Oversee site operations conducted by TEU to manage RCWM safely.

(6) Support routine maintenance of the IHF.

(7) Inspect IHF operations to ensure compliance with directives.

(8) Provide physical security support for site operations.

(9) Conduct public involvement in coordination with PMECW.

(10) Coordinate with PMNSCM if failure of the IHF structure or major components occurs. Should repair be impractical, coordinate with PMNSCM to replace the IHF and ensure that RCWM is transferred following procedures developed for receipt and storage of RCWM.

(11) Provide communications equipment to key organizations and emergency services.

b. PMECW/PMNSCM. The responsibilities of the PMECW/PMNSCM for IHF operation include:

(1) Provide safe and environmentally acceptable transportation and disposal of RCWM.

(2) Perform a Hazard Analysis that addresses the relative risk associated with the IHF Plan.

(3) Provide a portable IHF for use at the site, if required.

c. Guardian Brigade. The TEU is a specialized unit of the Guardian Brigade that may be tasked with the following IHF responsibilities:

(1) Support the District, PMECW, and USAESCH.

(2) Recover munitions with unknown fillers at the site.

(3) When directed by USAESCH, represent the Guardian Brigade, assume physical custody of RCWM when recovered, perform assessment to determine fill contents, and package the RCWM in overpack containers.

(4) Escort RCWM during on-site transportation and operation of the IHF.

(5) Provide direct support to USAESCH/PMECW to perform monitoring. The TEU, in the absence of ECBC or equivalent organization, will monitor the IHF for chemical agents stored in the IHF prior to opening. The TEU may be tasked to train District or District-designated personnel to perform surveillance monitoring. The TEU may also be tasked to perform periodic IHF monitoring during long-term storage.

(6) Inspect the IHF periodically for signs of deterioration or other damage that could lead to release of chemical agent.

(7) Provide first response during any emergency situations that occur during recovery, overpacking, transportation, and storage operations.

(8) Train personnel in IHF operations, including proper lifting techniques and hazard communication training for all chemicals used at the site.

d. Air Monitoring Personnel. The responsibilities of the air monitoring personnel (ECBC or equivalent organization) for IHF operations include:

(1) Provide direct support to the TEU.

(2) Perform laboratory analyses of samples to determine if chemical agent is present.

(3) Provide the TEU with material handling equipment, monitoring devices, and calibration solutions, as requested.

(4) Provide sampling capability (monitoring equipment and personnel) at the IHF for first entry monitoring.

e. USAESCH. The responsibilities of USAESCH during IHF operations include:

(1) Provide direct support to the District in preparation of the site work plan and Safety Submission.

(2) Provide on-site expertise during site investigation.

(3) Conduct the IHF vulnerability assessment.

(4) Review and certify all hazmat shipments. Sign all hazardous waste manifests and associated paperwork.

11-4. Design Requirements. The IHF is a storage building provided by PMNSCM and designed to hold RCWM. The IHF design is the product of PMNSCM and meets all storage parameters necessary for the temporary storage of RCWM. The specifications for the IHF are identified within the IHF Plan, one of PMNSCM's submittals for the CSS.

11-5. IHF Siting Plan. This section contains instructions for preparing a Work Plan chapter or Appendix to address the layout, explosive safety requirements, and security measures for the IHF at RCWM projects and incorporates guidance from AR 385-61, DA Pam 385-61, AR and DA Pam 385-64, EP 75-1-3, and DOD 6055.9.

a. The Contractor shall submit an IHF Siting Plan that describes the safety and security criteria to be employed during RCWM operations.

b. The following chemical operations shall be described in the plan and sited on the Quantity-Distance (Q-D) map:

(1) Static storage of RCWM in the IHF.

(2) Assessment of RCWM.

c. MCE for the operations at the IHF.

(1) The Government will provide the D2PC calculations for the MCE. For siting purposes, always use the following parameters:

(a) Wind speed of one meter per second.

(b) Stability factor of "D."

(2) Details for explosively-configured RCWM.

(3) Details for non-explosively-configured RCWM.

(4) The Government will provide the primary fragmentation characteristics for the explosively configured RCWM.

(5) The Government will provide the calculations for engineering controls necessary to prevent primary fragments from propagating the explosives wave between Multiple Round Containers (MRC), limiting the MCE to no more than one explosively configured RCWM item in the IHF (see Table 1 below).

(6) For explosively configured RCWM, an instantaneous release of all agent within the item will be assumed if the MCE occurs.

(7) For non-explosively-configured RCWM, the release of a percentage of the agent will be assumed and will be determined dependent upon specific item being identified and will be provided to the contractor by the Government.

d. Site Map. The recommended scale for the site map is one-inch equals 400 feet. However, a larger scale may be used if available and if the map can be logistically included in the Work Plan. A smaller scale is acceptable if distances can be accurately shown. If an unscaled map is used, the map must have all pertinent distances labeled. Ensure the following items are identified on the map:

(1) Q-D arc for the 1 Percent Lethality Distance, as calculated by D2PC.

(2) Q-D arc for the Net Explosive Weight (NEW) for the IHF (usually will be the NEW of the MCE, if explosively configured).

(3) Public Withdrawal Distance. This distance is usually the NOSE Distance calculated by the D2PC.

(4) Secondary fragment distance from DOD 6055.9-STD, usually the distance specified for less than 31 pounds NEW.

e. Describe any additional engineering controls that may be necessary to ensure the public is protected in the event the necessary Q-D cannot be achieved.

(1) Use of a primary fragmentation capturing device to eliminate primary fragments from penetrating another MRC should an MCE occur within the IHF (see the Table 11.1 below). The Government will provide this design, should it be required.

(2) Use of a Vapor Containment Structure (VCS) designed to mitigate the blast overpressure should the explosively configured MCE occur within the IHF. The VCS used by the USACE has been approved for use for explosive bursters up to 0.25 pounds without modification.

(3) Use of an Engineering Control Structure (ECS) for a non-explosively-configured MCE will be required during assessment activities outside of the IHF if the Q-D for the PWD cannot be achieved or absolute exclusion cannot be maintained.

(4) Use of a chemical agent filtering system, in conjunction with the VCS, to capture the agent release should the MCE occur within the IHF.

11-6. Physical Security Plan.

a. The contractor will submit a Physical Security Plan. The Physical Security Plan will describe the security criteria to be employed during RCWM operations, to include the storage of RCWM within the IHF. The general content of the Physical Security Plan is as described below:

Table 11.1
Penetration of Fragments from Explosively Configured Agent-Filled Munitions

Chemical Round	Thickness of Mild Steel Required to Prevent Perforation (inch)	Thickness of Mild Steel Required to Prevent Perforation After Perforation of MRC (inch)
4 lb Incendiary AN-M50X-A1	0.10	0.00
VB Rifle Grenade Mark I	0.21	0.08
M15 WP Grenade	0.09	0.00
115 mm M55 Rocket (Chemical)	0.22	0.09
6 lb Incendiary Bomb	0.35	0.22
75 mm MkII	0.31	0.18
75 mm M1/M8 (Chemical)	0.11	0.00
4 in Stokes (Chemical)	0.11	0.00
105 mm M60	0.25	0.12
105 mm M360	0.46	0.33
4.2 in M2/M2A1 (Chemical)	0.10	0.00
4.7 in (Chemical)	0.21	0.08
155 mm Mk 2	0.59	0.46
155 mm M122 (Chemical)	0.66	0.53
8 in M426 (Chemical)	0.85	0.72
8 in Livens (Chemical)	0.11	0.00

NOTE: Penetration is based upon design fragment weight and velocity calculated IAW HNC-ED-CS-S-98-1 and penetration of mild steel using the THOR equations.

(1) Project mission.

(2) Purpose of the Physical Security Plan.

(3) Objective of the security.

(4) Threat analysis.

(5) Vulnerabilities.

(6) Priorities.

(7) Limited and exclusion areas.

(8) Equipment and devices to detect or delay intrusion.

(9) Security lighting.

(10) Communication systems.

(11) Locks and keys.

(12) Measures to control personnel, vehicles, and material.

(13) Personnel identification system.

(14) Vehicle control.

b. A detailed outline for the Physical Security Plan is included in Appendix G including an example of instructions for the security force.

c. Before the Physical Security Plan can be developed a Vulnerability Assessment (VA) must be conducted. The assessment will determine the vulnerability to sabotage, theft, loss, seizure, unauthorized access, and use or diversion of chemical agents from both external and internal threats. The assessment will ensure that the security measures documented in the Physical Security Plan are adequate for the identified vulnerabilities. The key elements, annotated outline, and description of the phases are provided below.

(1) VA Key Elements.

(a) The VA will be accomplished by a team to include the following personnel:

- PM or his designated representative for FUDS projects.
- FBI or Military Intelligence office for specific project region.
- Members of site security forces.
- Local law enforcement personnel.
- Safety and Health representatives.
- Other personnel as designated by the PM.

(b) The VA team will be briefed on the purpose and scope of the VA.

(c) Briefings will be provided on the storage facility being assessed.

(d) Physical Security Plan and SOPS will be reviewed.

(e) The VA team will identify and target specific areas/items of security interest within the IHF, and will identify potential adversary acts for each target.

(f) The VA team will tour the IHF site to become familiar with site configuration, terrain, storage structures, security systems and forces, and technical operations. During the tour, the team will identify specific vulnerabilities from internal and external threats to include:

- Observing day and night operations.
- Interview of personnel as appropriate.
- Demonstration of equipment and procedures.
- Note how security systems are utilized, to include forces and backup forces.
- Table-top one or more scenarios to evaluate responses.
- Based on results of scenarios, the team will identify the necessary corrective actions.

- Conclusions and recommendations will be developed and documented by the team. Established vulnerabilities will have specific recommendations for actions to eliminate or reduce the vulnerabilities.
    - Conclusions will express results that logically flow from the team.
    - Recommendations will support conclusions.

(2) Vulnerability Assessment Outline.

(a) Introduction

- Purpose.
- Scope.
- Site Description.
- Site Mission.
- Security Interests.

(b) Identification and Description of Potential Threats.

- Target Identification.
- Identified Vulnerabilities.
- Scenarios Developed.
- Conclusions and Recommendations.
- Team Leader Signature.
- MACOM Decisions on Conclusions and Recommendations.

(3) Vulnerability Assessment Phases.

(a) In Phase I, the VA Team will:

- Assess the IHF Siting Plan.
- Converse with local law enforcement to discuss the Physical Security Plan (PSP) for the site.
- Converse with regional FBI or Military Intelligence personnel to discuss the threat situation for the site.
- Review the PSP and other SOPs applicable to physical security for the site.
- Review the IHF Plan.

(2) In Phase II, the VA team will perform a site visit to the IHF. If the location for the IHF is questionable, this phase may be performed first.

(3) In Phase III, a tabletop exercise will be conducted independently or in conjunction with the site operations tabletop exercise. Scenarios that incorporate physical security into the total picture will be executed during the tabletop exercise.

11-7. Industrial Chemicals. Safety and storage considerations concerning intact containers, other than ordnance configurations, which contain commercial chemicals such as chlorine, hydrogen cyanide, potassium cyanide, carbonyl chloride, cyanogen chloride, chloropicrin, etc. will conform to the requirements and guidance in AR 385-10 and practices which are generally acceptable for industrial operations.

CHAPTER 12

Transportation of Recovered Chemical Warfare Material

12-1. Introduction. This chapter documents the transportation and disposal procedures for RCWM.

12-2. Transportation Regulatory Requirements. Transportation operations of RCWM will follow DA and other regulatory guidelines. Some of the major requirements include:

a. Manifesting and preparing shipments in according to 40 CFR 260-268 and 49 CFR 171-179 as necessary.

b. Following applicable state, EPA, DOT, OSHA, and Army requirements for worker training and certifications for the transportation of hazmat including hazardous waste.

c. Following security guidelines provided in AR 190-11, AR 50-6, 49 CFR 172 Subpart I, DOD 4500.9-R Chapter 205 paragraph X, and ETL 1110-1-502, Security Planning and Training Requirements for Hazardous Materials Shipments.

d. Following 50 USC 1512-1517.

12-3. Organizational Responsibilities.

a. PMECW. The PMECW has command responsibility to ensure that the RCWM is handled in a safe and environmentally acceptable manner. The PMECW has responsibility for overseeing RCWM handling activities such as monitoring, inspecting, labeling, documenting, loading, trans-loading, unloading, and transporting. A PMECW coordinator will be identified for this transportation effort to ensure all required coordination is conducted and responsibilities are fulfilled. Other PMECW responsibilities include:

(1) Developing a hazard analysis that addresses the relative risk associated with the planned transportation of RCWM. This analysis will identify variables that impact selection of landing areas and air corridors. In addition, the hazard analysis will assess transportation activities along the selected truck and air routes and risks associated with the vehicles or aircraft selected for this mission.

(2) Coordinating to ensure that all transportation operations are conducted in a safe and environmentally acceptable manner.

(3) Coordinating to ensure that the RCWM is properly packaged and repackaged, if required.

(4) Coordinating to ensure that standby decontamination and medical support is available during all phases of the transport operation.

(5) Coordinating RCWM movement with the TEU.

(6) Monitoring the status of the movement in coordination with RDECOM.

(7) Coordinating the Transportation Plan with the DHHS.

(8) Coordinating RCWM movement with the state emergency management agencies for all states along the transportation route.

b. District. The responsibilities of the PM with regard to RCWM transportation include:

(1) Providing proper notification to the USEPA and state regarding the transportation operation.

(2) Providing physical security and emergency response capabilities in direct support of TEU transportation activities.

(4) Notifying the National Response Center and the state officials of RCWM spills within the state, if releases exceed the reportable quantity.

(5) Providing communications equipment to be used by the TEU supervisor, site safety officer, and the PM while transferring the RCWM from the IHF to helicopter for off-site transport. The radios and telephones permit communications among key organizations and with emergency services organizations.

c. USAESCH. USAESCH is responsible for signing the hazardous waste manifest(s) for the RCWM (RCRA hazardous waste).

d. RDECOM. The responsibilities for RDECOM include the following:

(1) Arranging for all aircraft and providing trained crews required to support the Transportation Plan.

(2) Coordinating air transportation with the appropriate agencies.

(3) Transporting RCWM from the site to the final disposition-site via helicopter and airplane.

(4) Operating an operations center to monitor the complete movement of RCWM to the arsenal for disposal.

(5) Implementing loading, trans-loading, and unloading plans for all operational activities.

e. TEU. The TEU is a specialized unit of the Guardian Brigade that has historically been the sole escort of RCWM as required by AR 50-6. TEU has the following responsibilities for transporting RCWM:

(1) Ensuring that all required permits are obtained to transport hazardous materials/waste through each jurisdiction, as required.

(2) Providing qualified escort personnel and trained emergency response teams to travel with the RCWM from the IHF until it reaches its final destination. The TEU will perform emergency response duties as required en route.

(3) Providing and operating chemical agent monitoring equipment for first entry, trans-loading, contingency, and confirmation monitoring.

(4) Ensuring that all personnel have completed required certification training prior to commencing the mission.

(5) Providing transport vehicle(s) to move RCWM from the IHF to the embarkation point.

(6) Selecting specific equipment to load, trans-load, and unload cargo and prepare a SOP for its use. The TEU will be required to develop inspection criteria to ensure equipment is operable.

12-4. IHF Plan. PMNSCM will provide an IHF plan for the project. The IHF plan will address transportation of the RCWM from the "work site" to the IHF, before, during and after actions of receiving RCWM into the IHF, and storage and monitoring procedures. This plan will be included in the Work Plan.

12-5. Transportation Plan. PMNSCM will provide a placeholder for the Transportation Plan for inclusion in the CSS. Once the response action is underway and RCWM has been encountered, packaged, and placed in the IHF, a site-specific Transportation Plan will be produced. This plan will address all transportation matters concerning the movement of the RCWM item from the IHF to its final offsite disposal location. A Transportation Plan will not be required if an onsite destruction option is used.

12-6. Destruction Plan. If determined to be feasible and more cost effective than offsite transportation, PMNSCM may develop an onsite destruction plan. This plan would detail the methods and procedures for the safe destruction of RCWM onsite. The onsite destruction would involve equipment such as the Explosives Destruction System to safely neutralize the RCWM. Unless incorporated as part the CSS, the destruction plan will require the same approval process as the CSS.

APPENDIX A

References

A-1. Section I
Required Publications

Base Realignment and Closure Act of 1988, Public Law (PL) 100-526, 102 Stat. 2632.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, PL 96-510, 94 Stat 2767, 42 USC 9601

Defense Base Realignment and Closure Act of 1990, PL 101-510, 104 Stat. 1808.

Defense Environmental Restoration Program, PL 99-499, Section 211, 100 Stat 1719, 10 USC 2701 et seq.

Resource Conservation and Recovery Act (RCRA) of 1976, PL 94-580, 90 Stat 2796, 42 USC 6901, et seq., as amended

Superfund Amendment and Reauthorization Act (SARA) of 1986, PL 99-499, 100 Stat 1613, amending CERCLA, 42 USC 9601 et seq., and miscellaneous other sections

29 CFR 1910.120
OSHA Hazardous Waste Operations and Emergency Response

29 CFR 1926
OSHA Safety and Health Regulations for Construction

40 CFR Part 260-280
EPA Resource Conservation and Recovery Act, as amended

40 CFR Part 300
EPA National Oil and Hazardous Substance Pollution Contingency Plan

49 CFR Part 171-178
Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements

DOD 4500.9-R
Defense Traffic Regulation

DOD 6055.9-STD
Ammunition and Explosives Safety Standards

AR 40-5
Preventive Medicine

AR 50-6
Chemical Surety

AR 190-11
Physical Security for Arms, Ammunition, and Explosives

AR 190-59
Chemical Agent Security Program

AR 200-1
Environmental Protection and Enhancement

AR 200-3
National Resources – Land, Forest, and Wildlife Management

AR 200-4
Cultural Resources Management

AR 385-10
The Army Safety Program

AR 385-61
Army Toxic Chemical Agent Safety Program

AR 385-64
Ammunition and Explosives Safety Program

AR 405-90
Disposal of Real Estate

DA Pam 40-8
Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Nerve Agents GA, GB, GD, and VX

DA Pam 40-173
Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Mustard Agents H, HD, and HT

DA Pam 50-6
Chemical Accident or Incident Response and Assistance (CAIRA) Operations

DA Pam 200-1
Environmental Protection and Enhancement

DA Pam 200-4
Cultural Resources Management

DA Pam 385-61
Toxic Chemical Agent Safety Program

DA Memorandum
Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel, 5 Sept 1997

DA Memorandum
Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance, 19 March 1998

DA Memorandum
Approval of Safety Submissions for Non-Stockpile Chemical Warfare Materiel Response Activities, 29 February 2000

DA Memorandum
Assignment of Responsibility for Conduct of Pre-Operational Surveys for USACE-led Response Actions Involving Chemical Warfare Materiel, 29 Mar 2004

DA Memorandum
Chemical Protective Undergarment (CPU) Service-Live, 17 September 2002

DA Memorandum
Generic Approval of Commercial Chemical Protective Equipment, 28 February 2002

DASA-ESOH Memorandum
Interim Guidance on Nerve and Mustard Agent Decontamination and Medical Services in Industrial Activities, 10 June 2003

ER 5-1-11
U.S. Army Corps of Engineers Business Process

ER 200-3-1
Formerly Used Defense Sites Program Guidance

ER 385-1-92
Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities

ER 385-1-95
Safety and Health Requirements for OE Operations

EP 385-1-95a
Basic Safety Concepts and Considerations for Munitions Response to Munitions and Explosives of Concern Operations

EP 385-1-95b
Explosives Safety Submissions

EP 1110-3-8
Public Participation in the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS)

ER 1110-1-12
Quality Management

ER 1110-1-263
Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities

ER 1110-1-8153
OE Response

ER 1110-1-8158
Corps-Wide Centers of Expertise Program

EP 75-1-2
Unexploded Ordnance (UXO) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities

EP 200-1-2
Process and Procedures for RCRA Manifesting

EP 415-1-266
Resident Engineer Management Guide (REMG) for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects

EP 1110-1-18
Ordnance and Explosives Response

EP 1110-1-24
Establishing and Maintaining Land Use Controls for Munitions Response to Munitions and Explosives of Concern Projects

EP 1110-3-8
Public Participation in the Defense Environmental Restoration Program for Formerly Used Defense Sites

EM 1110-1-4009
Munitions Response to Munitions and Explosives of Concern

EM 200-1-2
Technical Project Planning (TPP) Process

EM 200-1-3
Requirements for the Preparation of Sampling and Analysis Plans

EM 200-1-6
Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects

EM 385-1-1
Safety and Health Requirements Manual

EM 1110-1-1200
Conceptual Site Models for Ordnance and Explosives (OE) and Hazardous, Toxic, and Radioactive Waste (HTRW) Projects

ETL 1110-1-502
Security Planning and Training Requirements for Hazardous Materials Shipments

CESO-E Memorandum
Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel, 13 April 1998

CEHNC-OE-MCX Memorandum
Exclusion Zone Requirements and Requirements for the Location of Personnel Decontamination Stations at Recovered Chemical Warfare Materiel (RCWM) Projects, OE-MCX Interim Guidance Document Number 02-02, 13 March 2002.

CEHNC-OE-MCX Memorandum
Procedures for Assessing Munitions with Unknown Fillers, Ordnance, and Explosives Center of Expertise (OE-CX) Interim Guidance Document 02-03, 8 January 2003.

USACE Memorandum
Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance, 13 April 1998.

USAESCH "Geophysical Investigations For Buried Munitions, Operational Procedures And Quality Control Manual" Draft Final, 11 June 2002.

NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Activities."

A-2. Section II
Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this pamphlet.

AR 200-2
Environmental Effects of Army Actions

AR 385-40
Accident Reporting and Records

DA Pam 385-64
Ammunition and Explosives Safety Standards

TM 5-855-1
Fundamentals of Design for Conventional Weapons

EP 385-1-95a
U.S. Army Engineering and Support Center, Huntsville Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations

Department of Defense Explosives Safety Board Technical Paper No.16
Methodologies for Calculating Primary Fragment Characteristics, 1 December 2002.

Southwest Research Institute, Final Report
Environmental Chemistry and Fate of Chemical Warfare Agents, SwRI Project 01-5864
March 3, 1994.

The Sources, Fate, and Toxicity of Chemical Warfare Agent Degradation Products Nancy B. Munro, Sylvia S. Talmage, Guy D. Griffin, Larry C. Waters, Annetta P. Watson, Joseph F. King, and Veronique Hauschild. Environmental Health Perspectives Volume 107, Number 12, December 1999.

APPENDIX B

Chemical Event Reporting

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

CEMP-CE (200-1a) 23 Apr 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Interim Guidance - Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects

1. The enclosed subject Interim Guidance provides a summary of the notification requirements when suspected RCWM (with known or unknown fillers – herein called RCWM) are discovered. This guidance shall be distributed to all military munitions response and construction project teams for incorporation into future site health and safety plans. Existing site health and safety plans will be reviewed to comply with these requirements.

2. This guidance supersedes any prior USACE guidance on the subject. This guidance only addresses RCWM discovery notification procedures. It does not address notification requirements of other regulations for chemical release, accidents or incidents.

3. Questions regarding RCWM notification requirements should be directed to Ms. Toni Hamley of the CEHNC-OE-CX office at (256) 895-1761, or Ms. Blanca Roberts of the CESO-E office at (202) 761-4989.

FOR THE COMMANDER:

Patricia A. Rivers

Encl

PATRICIA A. RIVERS
Chief, Environmental
Community of Practice
Directorate of Military Programs

CEMP-CE (200-1a)

SUBJECT: Interim Guidance - Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects

DISTRIBUTION:

COMMANDER, U.S. ARMY ENGINEER DIVISION, NORTH ATLANTIC (CENAD-DE)

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CEMP-CE (200-1a)

SUBJECT: Interim Guidance - Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects

COMMANDER, U.S. ARMY ENGINEER DISTRICT, NEW ENGLAND
COMMANDER, U.S. ARMY ENGINEER DISTRICT, PORTLAND
COMMANDER, U.S. ARMY ENGINEER DISTRICT, WALLA WALLA
COMMANDER, U.S. ARMY ENGINEER DISTRICT, FAR EAST
COMMANDER, U.S. ARMY ENGINEER DISTRICT, JAPAN
COMMANDER, U.S. ARMY ENGINEER DISTRICT, SAN FRANSISCO
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COMMANDER, U.S. ARMY ENGINEER DISTRICT SOUTH, GULF REGIONAL

CEMP-CE (200-1a)

SUBJECT: Interim Guidance - Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects

COMMANDER, U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE (CEHNC-OE)

COMMANDER, U.S. ARMY CORPS OF ENGINEERS HTRW CENTER OF EXPERTISE (CENWO-HX)

CESO

CECW-E

CEMP-CE (200-1a)
23 Apr 2004

USACE Interim Guidance

Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects

1. **Purpose**. To provide interim guidance procedures for notification of RCWM discoveries during execution of USACE projects.

2. **Applicability**. This interim guidance applies to all USACE commands having responsibilities for munitions response action and construction projects.

3. **References**.

a. EP 75-1-3, Recovered Chemical Warfare Materiel (RCWM) Response

b. AR 50-6. Chemical Surety

c. AR 360-1. The Army Public Affairs Program

d. EP 75-1-2. Unexploded Ordnance (UXO) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities

4. **Background**.

a. This Interim Guidance provides procedures to ensure the timely notification (AR 50-6, Chapter 11) of discovered RCWM.

b. USACE will report any discovery of RCWM at the projects it manages and/or executes:

1) For planned RCWM activities. The notification (see attached RCWM Notification Format) procedures will be addressed in the workplan (WP). At a minimum, it will include: (a) Project specific agencies and/or organizations receiving the report, (b) Reporting chain-of-command, (c) Initial telephonic notification within 3 hrs of discovery, (d) Written notification within 24 hrs of discovery, and (e) Follow up written notifications the first working day of each quarter, if changes to prior written reports occur or upon report closeout or suspension of operations.

2) For unplanned RCWM activities. Follow the procedures specified in paragraphs 4.c and 5, below.

c. Upon an unexpected discovery of RCWM, all work will immediately cease. Project personnel will withdraw along cleared path upwind from the discovery. A team, consisting of a minimum

of two personnel, will secure the area to prevent unauthorized access. Personnel must position themselves as far upwind as possible while still maintaining visual security of the area.

5. **Requirements/Procedures**. The following requirements/procedures apply to RCWM notifications and are for inclusion in the notification section of the project WP, as applicable. The attached RCWM Notification Format shall be used as a guide for both, telephonic and written notification. Provide as much information as is available at the time of report.

a. Projects managed and executed by USACE (e.g., FUDS sites).

1) Immediately after RCWM discovery, the UXO/HTRW/Construction team (or on-site USACE project team) will follow paragraph 4.c and notify the local point of contact (POC) as designated in the WP. The local POC will contact and facilitate Explosive Ordnance Disposal (EOD) response. If the local POC is not the local law enforcement agent, he/she will notify the local enforcement agency of the discovery, which will contact EOD. Simultaneously, the UXO/HTRW/Construction team (or on-site USACE project team) will notify the Chemical Warfare Design Center (OE-CW) at USAESCH by calling the 24/7 telephone number at 256-895-1180 (Email: Wilson.C.Walters@hnd01.usace.army.mil).

2) Within three hours of discovery, the OE-CW will (in coordination with the on-site USACE project team), notify the Army Operation Center, the Director of Army Safety and HQ USACE (USACE Operation Center, Safety and Environmental offices). After telephonic notification or as soon as additional information becomes available but not later than 24 hrs, the OE-CW will follow-up with written notification to offices above and those in AR 50-6, paragraph 11-3(7)(a). Status report will be required until the disposition of the item, see paragraph 5.a.5. Close out reports are required after final disposition of the item. The UXO/HTRW/Construction team (or on-site USACE project team) will also inform the project chain of Command, including its Public Affairs Office (PAO) within the same time limits stated above.

3) The UXO/HTRW/Construction Team with support from the PAO (or through the PAO) will notify State/local government officials and the local Congressional office before news releases to the general public if at all possible. If the attempt to notify the Congressional office is unsuccessful, state this fact in the chemical event report, and make the news release (see paragraph 5.a.4). In cases where health and safety reasons preclude prior Congressional notification, the news release and local Congressional notification may occur simultaneously.

4) The District Commander (in consultation with his/her staff) will authorize release of information to the media regarding RCWM discoveries. Prior to the initial release of information, the information will be coordinated with the Army Office of the Chief of Public Affairs (OCPA) through the chain of Command. This applies to all Army agencies, contractors, subcontractors, vendors, and suppliers. Releasing of new information on chemical munitions may become an item of national interest. Such information must be cleared through the Office of the Assistant Secretary of Defense for Public Affairs (OASD (PA)) by the OCPA (ref 3.c).

USACE Interim Guidance

Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects (page 3 of 4)

5) The UXO/HTRW/Construction team (or on-site USACE project team) will provide periodic status of the RCWM to the OE-CW. The OE-CW will provide status report the first working day of each month to offices on paragraph 5.a.2). Status reports are required when there are changes to prior written notifications (e.g., a) to confirm the item's identification as RCWM, b) to advise that it was determined not to be RCWM, c) to inform the item movement to storage, transport off-site for disposition, or demilitarization on-site, d) to inform of suspension of operations or upon project closeout). The EOD/TEU is also responsible for providing status reports thru their chain-of- command once they have custody of the item.

6) To ensure the notification has been accomplished, the on-site USACE project team will perform quality assurance check to ensure the notification was done. This quality assurance check could be feedback from the OE-CW and vice versa. Copies of the chemical event report shall be submitted to the Project Team for inclusion in the project administrative file.

b. Project executed for Active/BRAC installations.

1) The UXO/HTRW/Construction team (or on-site USACE project team) will notify the installation POC who will follow paragraph 4.c and notify the installation Range Control Officer, Facility Engineer, Post Headquarters, BRAC Environmental Coordinator (BEC) and others as designated in the WP. The installation POC will provide prompt information to the Commander for his/her notification. Per AR 50-6, Chapter 11-3, the installation Commander (or his/her designee) is responsible for making the chemical event report.

2) The installation Commander should follow their own established procedures for notification IAW AR 50-6 and AR 360-1.

3) The on-site USACE project team shall provide quality assurance check on the notification, verifying the telephonic notification was made and by requesting a copy of the written notification. The USACE project team shall document notification efforts in the project administrative file.

4) To ensure that UXO/HTRW/Construction team (or on-site USACE project team) keeps the USAESCH informed, the UXO/HTRW/Construction team (or on-site USACE project team) will notify the OE-CW of the discovery and actions taken by calling the 24/7 telephone number at 256-895-1180 (Email: Wilson.C.Walters@hnd01.usace.army.mil).

5) If USACE is responsible for the installation notification (per agreement or negotiation), then the UXO/HTRW/Construction team (or the on-site USACE project team) will contact and facilitate the closest Army EOD unit (unless USACE has an agreement with other services EOD or by the installation service EOD unit). The EOD unit will notify the Technical Escort Unit (TEU) after their assessment of the item, if required. If the item is a suspect RCWM, the BRAC/Installation will secure the item until TEU arrives. The UXO/HTRW/Construction team (or on-site USACE project team) will also notify the OE-CW by calling the 24/7 telephone

number at 256-895-1180 (Email: Wilson.C.Walters@hnd01.usace.army.mil)). The UXO/HTRW/Construction team (or on-site USACE project team) will also inform the project chain of Command, including its Public Affairs office. Then follow paragraph 5.a.2)-6). The on-site USACE team will keep the installation POC informed.

c. Projects executed for state, federal and/or local government (e.g., work for others (WFO)).

1) At discovery the UXO/HTRW/Construction team (or on-site USACE project team) will notify the WFO POC who will make notification as appropriate or as required by the WP. We understand that the WFO will notify the closest local EOD enforcement unit or closest DoD EOD unit. The on-site USACE project team will provide quality assurance, ensuring an EOD unit is called-up to the site since they are the primary group to handle the materiel and follow paragraph 4.c.

2) The WFO POC should follow their own established procedures for notification to State/local government officials, the local Congressional office, and to the general public.

3) To keep the USAESCH informed, the UXO/HTRW/Construction team (or on-site USACE project team) will notify the OE-CW of the discovery and actions taken by calling the 24/7 telephone number at 256-895-1180 (Email: Wilson.C.Walters@hnd01.usace.army.mil). The USACE project team shall document notification efforts in the project administrative file.

4) The OE-CW will (in coordination with the on-site USACE project team) provide notification to the Army Operation Center, the Director of Army Safety and HQ USACE (USACE Operation Center, Safety and Environmental offices), within three hours of discovery. As soon as information is available regarding ownership of the item (if munitions, it belongs to DOD), the OE-CW will provide status and follow paragraph 5.a. or b, and the WFO WP as applicable.

5) If USACE is responsible for the WFO notification (per agreement or negotiation), then follow paragraph 5.a, and the agreement requirements, as applicable. The on-site USACE team will keep the WFO POC informed.

APPENDIX C

Chemical Safety Submission Outline

C-1. General Guidelines.

a. It is intended for this document to be a "stand-alone" document from the Work Plan and other supplemental plans for the project.

b. This plan is built on the Work Plan and supplemental plans, so those plans must be complete before the CSS can be completed.

c. The overall length of the plan should not exceed 50 single-sided pages.

d. It is intended to provide those reviewing and approving agencies the necessary technical information, as required in the DA Interim Guidance of 1997. This outline has been agreed to by USAESCH and USATCES. No substantive changes will be made without the approval of the MM CX.

e. Document control is positively essential during the drafting, editing, and publishing of this CSS. Each page must have a footer that identifies the document, either original date or date of the latest change. Additionally, a sheet shall be inserted into the front of the document that specifies the latest dates and changes. All changes to the original document will leave the bars in the outside margins to identify change locations throughout the document.

f. It is intended for this document to include the necessary information required for an ESS as well, should it be necessary for the conduct of site operations for the RCWM activities.

C-2. Outline.

EXECUTIVE SUMMARY

ES1.0 Project Overview. Brief overview of the project, project objective, site history and background, expected RCWM/OE. (1 to 2 paragraphs maximum)

ES2.0 Synopsis of Site Operations.

ES2.1 Intrusive operations (brief paragraph on the activity covering; reacquisition of anomalies, use of UXO personnel, use of engineering controls or evacuation, use of fragmentation distances, use of 1 Percent Lethality distances, and anticipated date of startup of operations, include projected date of Pre-Operational Survey).

ES2.2 Brief description of the MGFD - list the MGFD and reference the appropriate section of the body of the CSS.

ES2.3 Brief description of the MCE - list the MCE and reference the appropriate section of the body of the CSS.

ES2.4 Brief description of discovery actions for: conventional ordnance items, suspect ordnance items, is EOD required, if suspect RCWM TEU does assessment, if preliminary assessment is RCWM then packaging by TEU, transportation to IHF by TEU, subsequent assessment by TEU.

ES3.0 Brief description of air monitoring for RCWM agents; using MINICAMS, for agents (name them), DAAMS, OP-FTIR, sentence on appropriate personal protective equipment dependent upon air monitoring results.

ES3.1 Brief description of actions to be taken in the event of a MINICAMS ring-off or discovery of RCWM.

ES4.0 Environmental Sampling.

ES4.1 Brief paragraph on the types of samples that will be taken on site; surficial sampling, subsurface soil, pit characterization, soil disposal, aqueous investigative waste, decontamination water, Investigation Derived Waste (IDW).

ES4.2 Brief paragraph on what CWA is expected and the applicable ABPs, and how and who will be doing the analysis.

ES5.0 Monitoring and Disposal. Briefly describe who will monitor for what and with what equipment.

ES6.0 Site Usage after cleanup, brief statement as to projected site usage after cleanup.

TABLE OF CONTENTS.

1.2.4 Activity Hazard Analysis for RCWM and Explosives-related tasks (all others will be located within the SSHP).

1.3 Organizational Responsibilities.

1.3.1 UXO Contractor.

1.3.2 HTW Contractor.

1.3.3 ECBC (or equivalent organization).

1.3.4 TEU.

1.3.5 Industrial Air monitoring (for the chemicals CG, AC, CK, PS, etc.)

1.3.6 USAESCH (include Chemical Event Reporting and Safety Oversight of Site Operations).

1.3.7 Corps District.

1.4 Exclusion Zones (MGFD and MCE).

1.4.1 Fragmentation Distance of MGFD.

1.4.2 Public Access Exclusion Distance (PAED)

1.4.3 1 Percent Lethality Distance for MCE.

1.4.4 Interim Holding Facility.

1.5 Maps and Drawings (use 1 inch = 400 feet, or when smaller scales are used, ensure all distances to objects within the map are clearly marked as to what the items are and the distances to those items (DOD 6055.9).

1.5.1 Fragmentation Zones (QD Arcs) (if applicable).

1.5.2 1 Percent Lethality Distance.

1.5.3 Public Access Exclusion Distance (PAED).

1.5.4 Installation Boundaries.

1.5.5 Explosive Storage Locations.

1.5.6 IHF Location.

1.5.7 Overall Site Map.

1.5.8 Predetermined UXO Disposal Locations for Safe-To-Move UXO.

2.0 Sampling Plan Summary.

2.1 Introduction.

2.2 Soil Sampling.

2.2.1 Pit Characterization Sampling.

2.2.2 Soil Disposal Sampling.

2.3 Aqueous Sampling.

2.4 Scrap and Non-RCWM Intact Container Sampling.

3.0 Air Monitoring Plan Summary.

3.1 Introduction.

3.2 HTW (for those chemicals that are agent-related only).

3.3 Chemical Warfare Agents.

3.4 Environmental/Industrial (for the chemicals CG, AC, CK, PS, etc.)

4.0 PPE and Decontamination Summary.

4.1 PPE Summary.

4.1.1 General Requirements.

4.1.2 Task-specific Levels of PPE.

4.2 Personal Decontamination Procedures.

4.2.1 General Decontamination Procedures.

4.2.2 Specific Decontamination Procedures.

4.3 Equipment Decontamination Procedures.

4.3.1 General Decontamination Procedures.

4.3.2 Specific Decontamination Procedures.

5.0 Medical Support Summary.

5.1 Project Resources.

5.2 Health Care Facilities - where to take casualties (chemical and non-chemical).

5.3 MedEvac Procedures.

5.4 Emergency Contact Information (for health care facilities).

5.5 Directions to health care facilities.

6.0 Public Protection Plan Summary.

6.1 Introduction.

6.2 Public Notifications.

6.3 Emergency Operations.

6.4 Downwind Hazard Modeling (D2PC) Calculations.

7.0 Interim Holding Facility Siting Plan Summary.

7.1 Introduction.

7.2 IHF Container Description.

7.2.1 Location and Layout (Include a map, or refer to existing maps that clearly show the layout and distances identified in 7.3).

7.3 IHF Siting Requirements.

7.3.1 Public Access Exclusion Distance and 1 Percent Lethality Distance.

7.3.2 Inhabited Building Distance (IBD).

7.3.3 Net Explosive Weight (NEW).

7.3.4 Evacuation/Protective Distance.

7.3.5 Intra-line Distance.

7.3.6 Public Traffic Route (PTR) Distance.

7.3.7 Public Notification.

7.3.8 IHF Access Controls.

7.3.9 Multiple IHF Siting.

7.4 IHF Use and Occupancy.

7.5 Security.

7.6 Evacuation.

7.6.1 Notification for IHF Entry.

7.6.2 Notification Procedures.

8.0 MEC Transportation Plan Summary.

8.1 Procedures.

8.1.1 Discovery and Transport to Storage Area.

8.1.2 Packaging.

8.1.3 Manifesting/Placards.

8.1.4 Off-site Selection.

8.1.5 On-site Disposal Facility.

8.2 Emergency Response.

8.2.1 Incident Containment and Controlling of Hazardous Waste.

8.2.2 Military EOD Participation.

9.0 RCWM Transportation Plan Summary

9.1 Discovery and Transport to IHF.

9.2 Off-site Transport (This is a placeholder for PMNS in the event that RCWM is discovered).

9.3 On-site Destruction

10.0 Engineering Controls Summary.

10.1 Introduction.

10.2 Brief description of what types will be used at the project: VCS, ECS, Filters, Blast mitigating devices and their effects on the safety distances for the MGFD and the NOSE distance. Full technical details will be available on-site, or upon request, or included for "first-used" technology.

10.3 Evacuation/Shelter-in-Place.

11.0 Post-Recovery Assessment Activities Summary.

11.1 Brief description of what assessment activities will be used at the project, what types of engineering controls will be used to mitigate release of RCWM vapors into the atmosphere during post-recovery assessment activities, brief discussion on what technologies

will be used during the assessment process. Identify 1 Percent Lethality Distance and NOSE distance for this operation and any necessary Q-D Arcs for explosively configured items.

LIST OF FIGURES.

a. In Section 1:

(1) Explosives Siting Distances, Storage Site (Q-D Arcs)(if applicable).

(2) Fragmentation Zones (Q-D Arcs)(if applicable).

(3) Installation/Site Boundaries.

(4) 1 Percent Lethality Distance/IBD/PAED.

(5) Areas Designated for Disposal of "safe-to-move" conventional UXO.

b. In Section 6: Wind Rose Data for Site.

c. In Section 7: IHF Layout with all applicable distances and Q-D arcs identified.

d. In Section 11: Layout of area where Assessment activities takes place.

LIST OF TABLES.

a. In Section 1:

(a) 1 Percent Lethality Distances for MCE(s).

(b) Activity Hazard Analysis Tables for all RCWM and Explosives-related tasks.

b. In Section 2: Analytical Methods for RCWM

c. In Section 3: Air Monitoring Matrix

d. In Section 4:

(1) PPE Requirements by Task.

(2) PPE Upgrade Criteria.

(3) Decontamination Applications.

(4) Personnel Decontamination Procedures.

C-3. Chemical Safety Submission Information Sheet (CSSIS).

The following items are keyed to the subparagraphs of DOD 6055.9-STD, Revision 3, Chapter 5, Paragraph 5.4.4. This sheet shall be used to identify where the following areas of interest may be found within the CSS. This CSSIS will be the first page in the CSS.

DOD 6055.9 Paragraph	**Topic**	**Location found in the CSS**
5.4.4.3.2	Drawings of Site Maps (typically 1 in equals not more than 400 feet)	
5.4.4.3.2	Fragmentation range (MSDs and Overpressure)	
5.4.4.3.2	Downwind Hazard distances (1 Percent Lethality, PAED)	
5.4.4.3.3	Distances to installation/site boundaries	
5.4.4.3.3	Public Railways/Highways	
5.4.4.3.3	Power Transmission and utility lines	
5.4.4.3.4	Other inhabited facilities within the IBD	
5.4.4.3.5	Description of Hazardous materials or items	
5.4.4.3.5	Quantities, hazard class and division of material/items (IHF only)	
5.4.4.3.6	Personnel limits for each operation (IHF)	
5.4.4.3.1	General details (Project Background)	
5.4.4.3.8	Brief summary of design considerations to reduce Q-D (Engineering Controls)	
5.4.4.3.9	Type and arrangement of Operations	
5.4.4.3.10	Topographic map (usually not needed unless using topography to reduce or mitigate blast, downwind hazard areas)	
5.4.4.3.11.1	Personal protective clothing and equipment	
5.4.4.3.11.2	Treatment of effluent and waste	
5.4.4.3.11.3	Adequacy of medical support	

DOD 6055.9 Paragraph	Topic	Location found in the CSS
5.4.4.3.11.4	Average Wind Speed and Direction (Wind Rose data)	
5.4.4.3.11.5	Other support facilities pertinent to chemical safety	
5.4.4.3.11.6	Shelter-in-place	
5.4.4.3.11.5	Available resources (Project structure – organizations)	
5.4.4.3.11.6	Evacuation	
5.4.4.3.11.6	Disaster control plan (Public Protection Plan/PAP)	
5.4.4.3.8	Emergency destruction of (specify item) (only if EDS is programmed)	
5.4.4.3.9	Intentional detonation of munitions	
5.4.4.3.11.6	Warning and detection systems	
5.4.4.3.11.7	Hazard Analysis (Risk Assessment)	
5.4.4.3.12	Deviations from Safety Standards	

APPENDIX D

Pre-Operational Surveys

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
200 ARMY PENTAGON
WASHINGTON DC 20310-0200

REPLY TO
ATTENTION OF

DACS-SF

27 July 2004

MEMORANDUM FOR COMMANDER, HUNTSVILLE CENTER, ATTN: CEHNC-OE, P.O. BOX 1600, HUNTSVILLE, AL 35807-4301

SUBJECT: U.S. Army Corps of Engineers (USACE)-Led Pre-Operational Survey Plan

1. Reference CEHNC-OE memorandum dated 13 Jul 04, SAB.

2. The USACE Pre-Operational Survey Requirements and Procedures for MM-CX Recovered Chemical Warfare Materiel (RCWM) Response Actions has been reviewed by this office and the US Army Technical Center for Explosives Safety (USATCES). The plan is approved for implementation.

3. Please contact Mr. Ken Proper, Army Safety Office, (703) 601-2408, or Mr. Barry Wilmington, USATCES, (918) 420-8007, if you have any questions.

JAMES A. GIBSON
Senior Safety Manager
Office of the Director of Army Safety

CF:
HQDA, DASA(ESOH), ATTN: Mr. Patton
Cdr, USACE, ATTN: CESO-SWD (Ms. Roberts), 441 G St. NW, Wash, DC 20314-1000
USATCES, ATTN: SJMAC-ESM (Mr. Wilmington), Bldg 35, 1C Tree Road, McAlester, OK 74501-9053

USACE Pre-Operational Survey Requirements and Procedures for MM CX Recovered Chemical Warfare Materiel (RCWM) Response Actions

1. General.

a. All USACE Recovered Chemical Warfare Materiel (RCWM) projects will have a Pre-Operational Survey, here after called “Survey” conducted and successfully completed on the site prior to any intrusive activities. Headquarters, United States Army Corps of Engineers (HQUSACE) is responsible for the execution of the Survey, as the MACOM. HQUSACE has delegated the responsibility for the conduct of the Survey to the Commander, U.S. Army Corps of Engineers, U.S. Army Engineering and Support Center, Huntsville (USAESCH), Huntsville, Alabama. The Military Munitions Center of Expertise (MM CX) within USAESCH will lead the Survey.

b. All planned RCWM response actions must undergo a Survey prior to the start of operations. This includes sampling efforts, if the intent is to dig to an anomaly and there is a potential to encounter RCWM, or if provisions are made to store RCWM. Surveys are valuable and necessary tools in the preparation of chemical agent operations at response action projects. Surveys are intended to judge the readiness of those organizations performing response actions activities to operate in a safe and healthful manner and are the final step in gaining approval to conduct operations. Surveys are not training events, nor are they the time to draft safe work procedures. It is the responsibility of the Project Manager (PM) to have response personnel fully trained, practiced, and prepared for the Survey prior to arrival of the Survey team.

c. The Survey evaluates planned activities relative to safety, health, environment, and operational readiness and recommends whether the planned activities should be allowed to transition to chemical agent operations. Survey teams will consist of subject matter experts from the organizations listed below, as available. The Survey will be conducted under the direction and control of the U.S. Army Corps of Engineers. Survey team members will be selected based on technical background and areas of expertise**. The Project Delivery Team (PDT) consists of any personnel responsible for the execution of the project on the ground. Under no circumstances will members of the PDT serve as evaluators on the Survey Team. This is necessary to preclude any possibility of biased participation. The MM CX will select the team members and serve as the Survey Team Leader.** The organizations below will be invited to participate in the Survey. However, based on availability, the minimum acceptable number of personnel required to participate on the Survey team, as evaluators, will be three; the MM CX (lead), United States Army Technical Center for Explosives Safety (USATCES), and one from any of the other organizations identified as evaluators listed below.

(1) The PM for the site (both District and USAESCH) or Installation Commander (non- evaluator).

(2) U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) (evaluator).

(3) Each agency responsible for executing on-site RCWM activities (e.g., The Guardian Brigade (Technical Escort Unit), U.S. Army Research Development and Engineering Command (ECBC) (evaluator).

(4) Program Manager for the Elimination of Chemical Weapons (PMECW) (evaluator).

(5) HQ USACE Safety and Occupational Health Office (CESO) (evaluator).

(6) For active installations and BRAC project sites, or Work for Others, the corresponding Safety offices will be invited to attend (non-evaluator).

d. Surveys will examine all aspects of chemical agent operations and emergency response activities. The Survey team will review pertinent documentation, inspect selected processes, support equipment and facilities, as appropriate, and witness selected activities and operations. Operations during Surveys will be conducted as though chemical agent and/or explosives were present. If specific simulations or deviations from this concept are required, they must be approved by the Survey team leader before the start of the Survey and explained in the Survey report. The need for significant simulations or deviations may indicate that the system is not ready to operate, precluding successful completion of the Survey (e.g., having to simulate that the chemical agent filtration system (CAFS) (if used) is fully operational due to mechanical difficulties, or other similar instances). All approved Standing Operating Procedures (SOPs), work plans, checklists, maps of the project site, a copy of the Chemical Safety Submission (CSS) and approval documents, environmental requirements, security plan, and other documentation will be provided to team members prior to the Survey. Any documentation needed by or requested by Survey team members will be made available on site or, if requested, prior to the Survey. Fourteen days prior to the projected date of the Survey, the PM will provide 5 CDs with copies of all site documents discussed above to the MM CX for distribution to the Survey Team Members.

e. Deliberate unearthing, exposing, accessing, or contacting RCWM is not permitted until all required CSS approvals are obtained and a Survey has been successfully completed.

f. Operational personnel will perform a dry run in the presence of MM CX and Site Safety personnel prior to the restart of any RCWM operation that has not been conducted in the last 90 days. The MM CX, in coordination with project safety personnel, will determine the actions required to verify readiness. These actions will be based on the scope of operations and length of delay between the initial Survey and the re-start of operations and may result in conducting another Survey.

g. See Glossary for definitions and Attachment A for references and sources of information.

2. Applicability.

a. These requirements and procedures are applicable to all RCWM response activities. These requirements and procedures do not apply to RCWM emergency response actions, nor do they apply to stockpile activities, which are covered under AR

385-61. In addition, while requirements for Surveys of systems used for the disposal of RCWM are covered under AR 385-61, the interrelation between the disposal system and RCWM removal actions is subject to these requirements and procedures.

b. Changes in plans or operations that result in a greater hazard may require a follow-on Survey to assess safety, health, and readiness. In such situations, the MM CX, in coordination with project safety personnel, and others, as necessary, will determine the requirement for subsequent Surveys.

3. Survey Preparation. Key considerations in preparing for a Survey are coordinating, planning, defining the scope of the Survey, selecting a qualified Survey team, and developing a Survey plan. Planning timetables are provided at Appendix B for a Survey. A typical sequence of events associated with preparation for the Survey is as follows:

a. The PM, considering the progress toward operational readiness, initially coordinates the Survey date. This information will be provided to the MM CX to facilitate early planning for the Survey. Early coordination with the MM CX, even though the actual date may not be available, is important to facilitate planning and for coordination with external agencies which will be asked to participate. The PM will provide funding to MM CX and/or team members necessary for Survey activities.

b. Two weeks prior to the start of the Survey:

(1) MM CX will prepare a Survey plan. The plan will be written to reflect the scope of work and site-specific objectives, identify the personnel who will be members of the Survey team, and provide a general schedule for Survey team activities. Survey plans will include a comprehensive list of areas specific to the operation to be surveyed. The plan will be used to assure completeness of the Survey. A guide for selecting functional areas for inclusion in the Survey plan is at Appendix C. Survey plans establish personnel requirements and requirements for the use of technical specialists to accomplish the Survey. Personnel will be selected for specific assignments based on experience and training which are commensurate with the complexity and special nature of the activities being surveyed. The plan will be provided to the PM, and others as appropriate, for review and comment.

(2) The Survey team leader will certify to the site PM that all Survey team members have completed 40 hours of Hazardous Waste Operations and Emergency Response (HAZWOPER) training, and required refresher training, and have respirator/medical clearance. Survey team members must provide documentation to the Survey team leader so he or she can certify to the PM that team members are trained and cleared.) Exceptions to this requirement (e.g., subject matter experts brought on-site for limited duration to investigate a particular aspect of the Survey) require approval of the executing USACE District Safety and Occupational Health Office. Each team member is required to wear the appropriate personal protective equipment required by the site safety and health plan to include OSHA approved safety footwear while conducting the Survey.

c. One week prior to the start of the Survey:

(1) The PM will submit a memorandum to MM CX detailing the status of

preparation of the project site for the Survey and the status of the required documentation (CSS, Work Plan, etc.), in accordance with Attachment B of this guidance. Milestones will be provided for all required items not completed. At this time, the MM CX, in coordination with the PM, will determine if the Survey can be conducted on the date scheduled or must be re-scheduled.

(2) The Survey team leader will verify that all Survey team members have copies of the final approved version of the CSS (usually digital) via e-mail or telephone. The copies will be federal express shipped to the team members IAW Attachment B.

d. The PM will certify telephonically to the MM CX that the project is ready for the Survey. The Survey will not begin until the PM has made this verification.

4. On-Site Activities.

a. The first day of the Survey, the Survey team leader will meet with the Survey team members to designate roles, areas of responsibility, and to ensure all Survey team members understand how the category of Non-conformances/Observations will be determined.

b. An entrance interview will be held with the PM (and others as mutually agreed to by the PM and the Survey team leader). The purpose, scope, schedule, and requirements of the Survey will be discussed and administrative support requirements associated with the Survey will be agreed upon. The types of simulations permitted and the ground rules for conducting the Survey will be provided, in writing, by the Survey team leader to the PM. If previously agreed to by the PM and the Survey team leader, participation in the Survey may be opened to other interested parties (however, the PM is responsible for ensuring visitor compliance with safety and work plan requirements).

c. Daily out-briefs will be conducted so that the Survey team leader can discuss the Non-conformances/Observations related to that day's activities with the PM (and others as determined by the PM and the Survey team leader); all supervisors of the organizations who are responsible for correcting Non-conformances/Observations should be represented. Attendance at, and duration of, this meeting will be held to the minimum necessary.

d. The Survey team members will review the following activities/documents during the Survey:

(1) Plans, procedures, and other relevant documentation (including Material Safety Data Sheets (MSDSs), SOPs, laboratory procedures, and contingency plans) will be reviewed for availability, consistency with the CSS, and compliance with applicable regulations.

(2) Memorandums of Agreement (MOAs) or Memorandums of Understanding (MOUs), explosives storage licenses, pending and existing contracts (as applicable), and other permits, as applicable, will be reviewed for completeness and accuracy.

(3) System test reports and approvals, as necessary and as cited in the pre-op

Survey plan, will be reviewed for completeness and accuracy.

(4) Training records will be reviewed to verify the appropriateness of training subjects.

(5) Respirator issue documentation will be reviewed to verify completion of medical screening and respirator approval.

(6) All pertinent facilities and equipment (e.g., support facilities, interim holding facility,
laboratory, fire support, medical support, utilities, warehouses, offices, etc.) will be inspected to verify consistency and compliance with the CSS and supporting documentation.

(7) All portions of the operations are subject to being witnessed by the Survey team. The

contractor and support personnel must be prepared to conduct operations with the minimum number of simulations, but live chemical agents or explosives will not be processed during the Survey. All simulations must be approved by the Survey team leader prior to beginning the Survey.

(8) Emergency response plans will be exercised and evaluated for effectiveness, consistency and compliance with the CSS and supporting documentation, and availability of, and employee familiarization with, required emergency equipment. Emergency response exercises may include any of the following, individually, or in combination:

(a) Agent detected in selected areas of the site.

(b) Agent exposure to one or more workers.

(c) Explosion with or without agent release/contamination.

(d) Industrial accident requiring a response from the medical support.

(e) Accident requiring extraction of a worker.

(f) Loss of utilities.

(g) Fire.

(9) The wearing of Personal Protective Equipment (PPE).

(10) The use of monitoring equipment during the Survey.

e. At the conclusion of the Survey, the Survey team will prepare a draft report. (See Appendix D for report format.) The report will contain narrative related to the Survey conduct, Non-conformances/Observations, recommendations, and conclusions. Non-conformances/-Observations will be presented on Survey Worksheets (Appendix E) and

will be designated as follows:

(1) Category 1 - Items which are considered essential to the safety of personnel or the environment or the operational readiness of the system. These items must be resolved before the start of operations. Approval can be delegated to an appropriate person as determined by the Survey team leader, however it is anticipated the Survey team leader will remain on-site until all Category 1 findings have been resolved.

(2) Category 2 - Items which are not considered immediately essential to the safety of personnel or the environment or the operational readiness of the system, but which must be corrected. Category 2 Non-conformances/Observations must be resolved as soon as practical. A suspense date for correction of these items will be established before project site operation activities begin. A point of contact for reporting correction of category 2 Non-conformances/Observations will be specified in the Survey report.

(3) Category 3 - Items which were noted by the Survey team, but which were corrected

while the Survey was being conducted. No additional response is required.

(4) Category 4 - Items that were noted by the Survey team, but which are not categorized as 1, 2, or 3. No response is required.

f. An exit briefing will be conducted for the PM on the last day of the Survey. Attendance at the briefing may be opened to others, if previously agreed to by the Survey team leader and the PM.

g. Actions Following a Survey.

(1) The Survey team leader may remain on site at the conclusion of the Survey to verify resolution of Non-conformances/Observations.

(2) The final Survey report will be prepared by the Survey team leader within one week of Survey completion. Information copies will be provided to the site PM, CESO, and each Survey team member. In some cases, on-site validation may be necessary and may require repeating some or all phases of the original Survey. The determination will be reflected in the final Survey reports. On-site validation may delay the final Survey report until Non-conformances/Observations are satisfied.

(3) After the PM provides the MM CX written evidence of resolution of all category 1 recommendations and plans have been established for resolution of all category 2 recommendations, the MM CX will notify CESO the Survey has been successfully completed. Commander, USAESCH, upon satisfaction that the CSS has all required approvals and that category 1 and category 2 findings are properly resolved, will give approval to begin site operations.

Glossary

Chemical Safety Submission (CSS): The document that serves as the specifications for conducting work activities at the project. The CSS details the scope of the project, the planned work activities, and potential hazards (including the MCE) and the methods for their control.

Chemical Warfare Materiel (CWM): An item configured as a munition containing a chemical substance that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. Also includes V- and G-series nerve agent, H-series blister agent, and lewisite in other-than-munition configurations; and certain industrial chemicals (e.g. hydrogen cyanide (AC), cyanogens chloride (CK), or carbonyl chloride (called phosgene or CG) configured as military munitions. Chemical agent identification sets are considered CWM.

Deliberate unearthing/exposing: Intentionally exposing an item.

Non-conformance: Deviation from a written requirement.

Observation: Deviation from expected performance or a noted opportunity for improvement.

PM: The USACE individual with responsibility for managing a RCWM project.

Readiness review: A local activity, which includes process demonstrations, to assure that a system is ready to successfully undergo a Survey.

Recommendation: A method the Survey team believes will satisfy the intent of the associated non-conformance or observation. Unless otherwise noted, recommendations are not mandatory in detail.

Recovered chemical warfare materiel (RCWM): Non-stockpile CWM that was previously discarded, buried, or fired and discovered either unexpectedly or during planned environmental restoration projects. RCWM does not fall within the scope of the Army Chemical Surety Program.

RCWM response action: The planned, longer-term remediation of an area known or suspected to contain RCWM, in accordance with DERP procedures; may be preceded by time-critical or non-time critical removal activities. Incorporates the planned progression through the four phases of hazard identification, site investigation, response, design and cleanup, and site closeout.

Survey: A formal review/assessment of a response action project immediately prior to beginning RCWM and/or explosives operation activities. Surveys may also be applied to activities involving other hazardous materials when appropriate. In this guidance document, this term encompasses RCWM Surveys and readiness reviews.

Attachment A

References

1. AR 385-61, The Army Chemical Agent Safety Program

2. DA Pam 385-61, Toxic Chemical Agent Safety Standards

3. DASA(ESOH) memorandum dated 5 Sep 1997, SUBJECT: Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities

4. 29 CFR 1910, Occupational Safety and Health Standards

5. DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards

6. AR 50-6, Chemical Surety

7. AR 385-64, U.S. Army Explosives Safety Program

8. DA Pam 385-64, Ammunition and Explosives Safety Standards

9. AR 200-1, Environmental Protection and Enhancement

10. 40 CFR Part 260, et al. Military Munitions Rule: Hazardous Waste Identification and Management; Explosives Emergencies; Manifest Exemption for Transportation of Hazardous Waste on Right-of-Ways on contiguous properties; Final Rule

11. EP 75-1-3, RCWM Remedial/Response Actions.

12. Memorandum, DASA-ESOH, dated 29 Mar 2004, SUBJECT: Assignment of Responsibility for Conduct of Surveys for USACE-led Response Actions involving Chemical Warfare Materiel.

13. Memorandum, HQ, USACE-CESO-E, 25 Mar 2003, SUBJECT: HQs, COE Delegation of Authority.

14. Memorandum, HQ, USACE-CESO-E, 5 Apr 2004, SUBJECT: Assignment of Responsibilities for Conduct of Surveys for USACE-Led Response Actions involving Chemical Warfare Materiel.

Attachment B

Planning Timetable for Pre-Operational Surveys

Action	Time	Responsible Office/Individual
Pre-coordination	ASAP	PM
Preliminary request for Survey to MM CX Determine if Survey can be conducted as scheduled	5 weeks before Survey	PM MM CX, CESO
Prepare Survey plan (using CSS, WP/SSHP, and SOPs) Memo to MM CX detailing status of preparation for Survey and status of required documentation. Provide copies of final approved CSS, Work Plan, and Site SOPs to Survey team leader as required (normally 5 copies on CD) Survey plan to Survey team members	2 weeks before Survey	MM CX PM PM MM CX
Certify site readiness to MM CX telephonically	1 week before Survey	Site PM
Review final documentation	1 week before Survey	Survey team members
Initial team meeting	First day of scheduled Survey	Survey team leader
Entrance interview with site PM	First day of scheduled Survey	Survey team leader
Daily outbriefs	The last part of each Survey day	Survey team
Conduct the Survey	(usually 1 week in duration)	Survey team
Draft Survey report	Before exit briefing	Survey team
Exit briefing	Final day of scheduled Survey	Survey team leader
Final report Notification of successful completion to CESO	1 week after Survey	MM CX MM CX
Authorization to operate	After category 1 recommendations are resolved and MM CX recommendation obtained	Commander, USAESCH

Attachment C

Sample Pre-Operational Survey Guide

Operation-specific Survey plans will be developed for each Survey. Examples of items that might be included in a plan are provided below. This list should not be considered all-inclusive, nor should any item be included in an operation-specific Survey plan solely because it appears here.

Documentation
SOPs correct, approved, signed, and appropriately available at the work site
Chemical Safety Submission (CSS) current and approved
Contingency procedures approved
Site monitoring plan approved
Hazards analysis completed and all identified hazards managed appropriately
Hazard tracking log maintained
Training records complete and personnel appropriately certified
Operational test records for monitoring systems
Preventive maintenance plan complete and adequate
Preventive maintenance records available and accurate
Environmental compliance documentation complete
Policies in place for deviations from approved procedures
Data collection system adequate; all significant items recorded
Calibration and test records adequate
Identification of decontaminated items
Agent/munition accountability procedures/records
Waste Management Plan
Chemical Hygiene Plan
Test reports of engineering controls

Facilities and Equipment
System/process equipment properly operational
Monitoring and detection equipment in place and functioning properly
Equipment properly calibrated and marked
Decontamination systems adequate
Material handling equipment properly maintained and operated
Porous material in potentially contaminated areas minimized
Tools used in potentially contaminated areas segregated and marked

Operations/Maintenance
Emergency notification procedures demonstrated and adequate
Operator proficiency demonstrated
Maintenance proficiency demonstrated
Laboratory and monitoring procedures demonstrated
Adequacy of communications demonstrated
Protective clothing selection, inspection, and use demonstrated

Contingency
Emergency Operations Center
Communications
Handling of agent contaminated casualties
Loss of utilities
Industrial accident
Agent alarm
Non-agent alarm
Leaker detected
Hot line equipment and procedures
HAZMAT response
Knowledge/communication of muster points
Personnel accounting

Safety
Compliance with Occupational Safety and Health Administration standards
Electrical equipment properly rated and installed
Emergency showers and eyewashes properly located, marked/identified, and function tested
Lifting devices load/function tested, marked, and records maintained
Noise hazard areas marked and hearing protection available
Eye hazard areas marked and eye protection available
Proper labeling of chemicals
Current MSDSs are available
Respirators (to include SCBA) properly fit tested
Documentation of breathing air (Grade D or better)
Proper storage for flammable materials
Hand held fire extinguishers available
Personnel and explosives limits posted and observed
Explosives and chemical agent placarding
LPS (down conductors, air terminals, etc.)
Safety responsibilities properly located in the management structure
Eating, drinking, and smoking areas identified and approved
Mask fitting procedures
Criteria for change-out of mask canisters
First aid kits available where necessary

Environmental
Hazardous material and waste properly stored and labeled
90-day accumulation sites properly identified
Compliance with all RCRA, CAA, CWA, TSCA requirements and Permit Conditions
Spill cleanup kits properly constituted and located
Record keeping
Environmental inspections accomplished

Medical Support Operations
Training/certification of medical personnel
Manning levels adequate

Facilities and equipment adequate
Necessary support in place
Record keeping
Pre-employment physicals
Medical evaluations of potentially exposed individuals, as a result of the Survey simulated exposure

Security Support Operations
Access control/Entry Control Rosters
Key control
Security lighting
Guard orders

Fire Support Operations
Equipment
Personnel manning level
Response time
Fire inspections

Storage Facility (Interim Holding Facility Area)
Assessment Holding Facility
- Glovebox
- Engineering Controls
- Inventory Records
- Standing Operating Procedures

Munitions Assessment Review Board Holding Facility
Interim Holding Facility
- Inventory records
- Operations
- Standing Operating Procedures

Magazines
- Licensed
- Site approval
- Inventory Records
- Hazard symbols
  - Access control

Attachment D

Format for a Survey Recommendation to Approving Authority

1. Prepare in a memorandum format:

a. Title Page: Include project title, site location and organization, as appropriate, and signatures indicating submittal and approval of the report.

b. Introduction: Statement of purpose of the Survey

c. Background: Dates and facts pertinent to the Survey (briefings, meetings, notifications, etc.)

d. Team members

e. Scope: A statement of what was included and what was excluded from the Survey

f. General: When appropriate, any other comments bearing on the Survey or its result

g. Non-conformances/Observations: Each Non-conformance or Observation must be supported by a recommendation for improvement. A worksheet and instructions are at Attachment E.

h. Conclusions. The assessment of the Survey team leader regarding the ability of the operation to proceed in a safe and efficient manner.

ATTACHMENT E

Pre-Operational Survey Worksheet	Item No:
1. Location:	**2. Name of Survey Team Member:**
3. Description of Observation or Action:	
4. Reference/Recommendation: **(For non-conformances, reference specific requirement in this block)**	
5. Survey Report Category: (mark appropriate category) 1 Must be closed prior to recommendation to start operations 2 Corrective Action/improvement plan must be accepted prior to recommendation to start operations 3 Corrected and closed during the Survey; no additional response required 4 No Response required	
6. Response:	
7. Response provided by: _____ _____ _____ (Name and Org) (Signature) (Date)	
8. Evaluation of corrective action/improvement: **(Check one)** Satisfactory _____ _____ Unsatisfactory (Signature) (Date)	
9. Closed: Survey Team Leader: _____ _____ (Signature) (Date) Starting category: _____ Final category: _____	

Instructions

Block	Instructions
Item No.	Assigned by survey team chairman. Identifying numbers will have the form yyyy-xxx#-zzzz, where: yyyy = calendar year survey was conducted, xxx# = a three-letter code to identify the location with a single number to uniquely identify this survey, usually assigned sequentially, as scheduled. For surveys that are conducted in phases, a letter corresponding to the phase will be included zzzz = a sequential number assigned to worksheet Example: 2004-SIB-01 (First Worksheet for the Camp Sibert Pre-Op conducted in 2004) Note: Worksheets for a survey report will be numbered sequentially, without gaps. If a number in the sequence is not used for some reason, a placeholder worksheet will be included with that number and descriptive verbiage to identify that fact.
1	Location of Project Site
2	Name of team member who noted the condition.
3	Note the observation or action.
4	If the observation is a non-conformance action, a reference is required. The reference may include a brief restatement of the requirement. Include a recommended corrective action. A non-conformance finding is one that the action is required by a project document and not being accomplished.
5	Marked by the Survey Team Leader after consultation with team members.
6	The response from the project team to the observation and corrective action done to resolve the finding.
7	Which Project Team Member provided the response/corrective action..
8	The Survey Team Member who made the observation, or the Survey Team Leader will observe/review the corrective action and check the appropriate section (Satisfactory or Unsatisfactory)
9	The Survey Team Leader will close out the finding/observation in this block. Both the starting category of the finding/observation and final category will be annotated.

Note: It is intended this form be filled out in longhand, not to be typed in, and signatures of appropriate personnel on the form.

APPENDIX E

Generic Approval Letter

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
200 ARMY PENTAGON
WASHINGTON DC 20310-0200

REPLY TO
ATTENTION OF

DACS-SF

28 FEB 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Generic Approval of Commercial Chemical Protective Equipment

1 References:

a. DACS-SF memorandum dated 11 Apr 94, subject: Use of Commercially Available Chemical Protective Clothing.

b. DACS-SF memorandum dated 30 Dec 98, subject: Revised Policy for the Use of NIOSH-Certified Commercial Respirators with Chemical Agents.

2. In order to comply with Federal, Department of Defense, and Army safety and health standards, the U.S. Army Materiel Command Chemical Agent Safety and Health Policy Action Committee (CASHPAC), on behalf of the Director of Army Safety, developed a review and approval program (reference a and b) to allow the use of commercially available EPA Level A and B/C chemical protective equipment (clothing and respirators) during toxic chemical agent operations. The chemical protective clothing test criteria, developed by the CASHPAC, identifies the specific testing and documentation necessary for approval to use commercially available EPA Level A and B/C protective clothing in toxic chemical agent operations and requires development of supporting use scenarios and hazard analyses.

3. Many Department of the Army installations and activities have used the CASHPAC process to obtain approval to use commercial protective equipment, and approval for use of the same manufacturers and models of EPA Level A and B/C clothing under the same use scenario(s) are continuing to be requested. In order to facilitate selection and approval of commercial chemical protective clothing, the CASHPAC executive agent (the Edgewood Chemical Biological Center Safety/Surety/Security Office) has compiled the attached list of clothing and respirators approved for specific chemical agents and use scenarios and with specific limitations.

4. Use of CASHPAC-approved chemical protective clothing/respirator approved for the specific agent and in the specific use scenario listed on the attached eliminates the need to use the CASHPAC approval process outlined in reference a and b. Note that under the following situations the CASHPAC approval process outlined in reference "a"

DACS-SF
SUBJECT: Generic Approval of Commercial Chemical Protective Equipment

and "b" must be used:

a. An installation/activity wants to use a commercial EPA Level A or B/C ensemble/respirator that has not been approved and listed by the CASHPAC.

b. A different use scenario is desired.

c. An installation/activity desires to use the commercial EPA Level A or B/C ensemble/respirator with chemical agent for which it has not been tested.

d. An installation/activity desires to use a commercial EPA Level A or B/C ensemble/respirator beyond its approved limitations.

5. The enclosure contains the current list of approved clothing/respirators coupled with appropriate scenarios, limitations and chemical agents. There are many other manufacturers of EPA Level A and B/C clothing that may have been tested with chemical agent, but were not submitted by an installation/activity for approval and are therefore not on this list.

6. An installation/activity planning to use CASHPAC approved/listed commercial chemical protective equipment will furnish a copy of the equipment selection decision logic (listing potential agent exposures and use scenarios) to DACS-SF for future reference. The installation/activity shall also maintain a copy of their decision logic for review by any Department of Army Pre-Operational Inspection Team and include it in applicable chemical warfare materiel safety submissions.

7. Point of contact in this office is Jim Patton, 703/601-2413, DSN 329-; point of contact on the CASHPAC is Carol A. Eason, 410-436-2051 or DSN 584-.

Encl

JAMES A. GIBSON
Senior Safety Manager
Office of the Director of Army Safety

DISTRIBUTION:
Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health), 110 Army Pentagon, Washington, DC 20310-0110
continued

DACS-SF
SUBJECT: Generic Approval of Commercial Chemical Protective Equipment

DISTRIBUTION, cont.
Project Manager for Chemical Stockpile Disposal, ATTN: SFAE-CD-SQ, Aberdeen Proving Ground, MD 21010-5401
Project Manager for Non-Stockpile Chemical Materiel, ATTN: SFAE-CD-N, Aberdeen Proving Ground, MD 21010-5401
Chief, National Guard Bureau, Army Aviation and Safety Directorate, Arlington Hall Readiness Center, ATTN: NGB-AVN-S, 111 South George Mason Drive, Arlington, VA 22204-1382
Commander, U.S. Army Materiel Command, ATTN: AMCSF, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
Commander, U.S. Army Soldier, Biological and Chemical Defense Command, ATTN: AMSBC-RA, Aberdeen Proving Ground, MD 21010-5423
Commander, U.S. Army Soldier, Biological and Chemical Defense Command, ATTN: AMSBC-SO, Aberdeen Proving Ground, MD 21010-5423
Director, Edgewood Chemical Biological Center, ATTN: AMSCB-ODR-S, Aberdeen Proving Ground, MD 21010-5423
Commander, U.S. Forces Command, ATTN: AFPI-SO, Fort McPherson, GA 30330-6000
Commander, U.S. Army Corps of Engineers, ATTN: CESO-ZA, WASH DC 20314-1000
Commander, U.S. Army Training and Doctrine Command, ATTN: ATBO-S, Fort Monroe, VA 23651-5000
Director, U.S. Army Nuclear and Chemical Agency, ATTN: ATNA-CM, 7150 Heller Loop, Suite 101, Springfield, VA 22150-3198
Commander, U.S. Army Center for Health Promotion and Preventive Medicine, ATTN: MCHB-TS-OFS, Aberdeen Proving Ground, MD 21010-5422
Director, U.S. Army Technical Center for Explosives Safety, ATTN: SIOAC-ES, McAlester, OK 74501

Manufacturer: Dupont and Dupont-licensed suppliers

Model: Tyvek "F"

Level: B/C

Agent(s): G-series, HD, VX

Use Scenario(s):
1. Intrusive excavation using, heavy machinery, hand tools, by hand, sifting equipment, etc.
2. Environmental sample collection such as soil, sludge, water, etc.
3. Decontamination of agent contaminated media. For example, soil, debris, etc.
4. Operation of a PDS or EPDS.
5. Assessment, packaging, unpackaging and removal of excavated items.
6. Well drilling/installation.
7. General site work such as, equipment maintenance, cylinder change-out, other routine tasks as defined in the applicable safety submission.

Reuse: Not reusable if contaminated with vapor and/or liquid chemical agent. This is also a one-time use suit.

Limitations/Additional Requirements:
1. Must be removed immediately if contaminated with liquid chloroform/HD or GB and the wearer decontaminated within 30 minutes.
2. If workers encounter leaking CAIS they will immediately evacuate the area and don other approved chemical protective clothing.
3. CPU must be worn for HD operations.
4. May not be used if fire is expected (suit is not NFPA certified for flame resistance).
5. Have a heat stress plan developed, approved, and workers trained prior to use.
6. Suit must be thoroughly inspected before and during use for signs of wear.
7. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.

Manufacturer: GEOMET (via Kappler)

Model: Geomet Responder CSM

Level: A

Agent(s): G-series, HD/L, VX

Use Scenario(s):
1. Emergency response into an area in which an unplanned release of chemical agent has occurred.
2. Operation of a PDS/EPDS.
3. CAIRA operations such as, clean up of spills, air monitoring set up, first entry after engineering control failure, containment of open agent.
4. Demilitarization of CAIS (unpacking, segregating, storing, preparing, etc.).
5. Operations conducted in igloos or test chambers involving suspect chemical agent items.
6. Destruction/dismantling of contaminated buildings and equipment.
7. Isolation of leaking munitions.
8. Emergency back-up entries into IDLH areas.
9. Confined space entry into toxic/hazardous environments.
10. Routine first entry monitoring into outdoor or indoor agent storage areas/igloos.
11. Sampling and removal (manually or mechanically) of potentially contaminated soil and/or items from remediation sites.
12. Decontamination/treatment of soil samples.

Reuse: Not reusable if contaminated with vapor and/or liquid chemical agent. Otherwise, if not contaminated, this is a limited use suit.

Limitations/Additional Requirements:
1. May not be used if fire is expected (suit is not NFPA certified for flame resistance) unless the silver overshield is worn.
2. Have a heat stress plan developed, approved and workers trained prior to use.
3. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.
4. Pass-through (if worn tethered) must be compatible with airline system.

Manufacturer: Trelleborg Industri

Model: TRELLCHEM HPS

Level: A

Agent(s): G-series, HD, L, VX

Use Scenario(s):
1. Working within a vapor containment structure (VCS).
2. Decontamination of a VCS.
3. CAIRA operations such as, clean up of spills, air monitoring set up, first entry after engineering control failure, containment of open agent.
4. Routine first entry monitoring into outdoor or indoor agent storage areas/igloos.
5. Operations conducted in igloos or test chambers involving suspect chemical agent items.
6. Destruction/dismantling of contaminated buildings and equipment.
7. Isolation of leaking munitions.
8. Emergency back-up entries into IDLH areas.
9. Confined space entry into toxic/hazardous environments.
10. Operation of the PDTDF (decontamination of interior and work conducted in agent environment).
11. Operation of the MAPS facility (removal of drill/cut box from the explosion containment chamber (ECC); decontamination of the ECC; opening munition overpack in process room; decontamination of the process room).
12. Operation of the solvated electron technology (SET™) with in a chemical agent test chamber.
13. Sampling and removal (manually or mechanically) of potentially contaminated soil and/or items from remediation sites.
14. Decontamination/treatment of soil samples.

Reuse: Not reusable if contaminated with liquid agent; reusable if contaminated with vapor agent.

Limitations/Additional Requirements:
1. Have a heat stress plan developed, approved and workers trained prior to use.
2. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.
3. Pass-through (if worn tethered) must be compatible with airline system.

Manufacturer: Trelleborg Industri

Model: TRELLECHEM TLU

Level: A

Agent(s): G-series, HD/L, VX

Use Scenario(s): CAIRA operations such as, clean up of spills, air monitoring set up, first entry after engineering control failure, containment of open agent.

Reuse: Not reusable if contaminated with vapor and/or liquid chemical agent. Otherwise, if not contaminated, this is a limited use suit.

Limitations/Additional Requirements:

1. May not be used if fire is expected (suit is not NFPA certified for flame resistance).
2. Have a heat stress plan developed, approved and workers trained prior to use.
3. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.
4. Pass-through (if worn tethered) must be compatible with airline system.

Manufacturer: GEOMET

Model: Commercial STEPO

Level: A

Agent(s): G-series, HD/L, VX

Use Scenario(s): CAIRA operations such as, clean up of spills, air monitoring set up, first entry after engineering control failure, containment of open agent.

Reuse: Not reusable if contaminated with vapor and/or liquid chemical agent.

Limitations/Additional Requirements:

1. Have a heat stress plan developed, approved and workers trained prior to use.
2. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.

Manufacturer: Trelleborg Industri

Model: TRELLCHEM HPS-TS

Level: B

Agent(s): G-series, HD/L, VX

Use Scenario(s):

Reuse: Not reusable if contaminated with liquid agent; reusable if contaminated with vapor agent.

Limitations/Additional Requirements:

1. Working within a vapor containment structure (VCS).
2. Decontamination of a VCS.
3. CAIRA operations such as, clean up of spills, air monitoring set up, first entry after engineering control failure, containment of open agent.
4. Routine first entry monitoring into outdoor or indoor agent storage areas/igloos.
5. Operations conducted in igloos or test chambers involving suspect chemical agent items.
6. Destruction/dismantling of contaminated buildings and equipment.
7. Isolation of leaking munitions.
8. Emergency back-up entries into IDLH areas.
9. Confined space entry into toxic/hazardous environments.
10. Operation of the PDTDF (decontamination of interior and work conducted in agent environment).
11. Operation of the MAPS facility (removal of drill/cut box from the explosion containment chamber (ECC); decontamination of the ECC; opening munition overpack in process room; decontamination of the process room).
12. Operation of the solvated electron technology (SET™) with in a chemical agent test chamber.
13. Sampling and removal of potentially contaminated soil and/or items from remediation sites.
14. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.

Manufacturer: Kappler®

Model: Kappler® Coverall Style 41250 FV

Level: N/A

Agent(s): GB, HD, L, VX

Use Scenario(s):
1. Routine disposal of the industrial and warfare chemicals found in CAIS sets.

Reuse: Not reusable if contaminated with liquid or vapor agent.

Limitations/Additional Requirements:
1. The Kappler® Coverall is approved for use as a replacement for the Army Level B apron.
2. Prior to use of suit, manufacturer shall provide validation of QA/QC batch testing of suit material swatches to ensure consistent materiel quality over time and between production lots.
3. Must have a complete inspection program in place and employed to ensure that damaged coveralls are not reused.

Manufacturer: North

Model: North 7600-8A NIOSH-Certified Full Facepiece Air-Purifying Respirator with North 7583/P100 Organic Vapors/Acid Gases Cartridge/Filter

Level: N/A

Agent(s): Specific chemical agents listed in AR 50-6.

Use Scenario(s):
1. Added protection in chemical agent laboratory operations when chemical agent is inside a certified chemical agent laboratory ventilation hood.
2. Emergency-escape from a chemical agent laboratory.

Reuse: Respirators and cartridges that have been exposed to chemical agents will be decontaminated, monitored, and disposed of.

Limitations/Additional Requirements:
1. Near Real Time (NRT) monitoring must be conducted to ensure agent levels do not exceed the Maximum Use Concentration (MUC) for the specific agent involved. The MUC is the assigned protection factor of the respirator (50) multiplied times the Airborne Exposure Limit (AEL) for the agent. The MUC for mustard and Lewisite will not exceed 0.003 mg/m3.
2. The user's Respiratory Protection Program will meet the requirements of 29 CFR 1910.134, to include establishing filter/canister change-out schedules.
3. Additional personal protective clothing and equipment will be adequate for the work being performed.

Manufacturer: North

Model: North 7600 Series NIOSH-Certified Full Facepiece Air-Purifying Respirator with North 7583/P100 Organic Vapors/Acid Gases Cartridge/Filter

Level: N/A

Agent(s): Specific chemical agents listed in AR 50-6.

Use Scenario(s):
1. Environmental sampling.
2. Excavation into anomalies.
3. Operations where personnel are responsible for decontaminating personnel and equipment.
4. Emergency escape for personnel working outside the exclusion zone but within the No Significant Effects zone, in the event the near real time (NRT) monitoring devices alarm.
5. Emergency escape from chemical area.
6. Maintenance operations.
7. Industrial chemical operations in support of MMD-1 operations.
8. Processing of munitions/container carcasses already processed in the MMD-1 Process Trailer.
9. Agent treatment process liquid and/or vapor sampling filter unit, and gas reactor carbon replacement in support of MMD-1 operations.

Reuse: Respirators and cartridges that have been exposed to chemical agents will be decontaminated, monitored, and disposed of.

Limitations/Additional Requirements:
1. Near Real Time (NRT) monitoring must be conducted to ensure agent levels do not exceed the Maximum Use Concentration (MUC) for the specific agent involved. The MUC is the assigned protection factor of the respirator (50) multiplied times the Airborne Exposure Limit (AEL) for the agent. The MUC for mustard and Lewisite will not exceed 0.003 mg/m3.
2. The user's Respiratory Protection Program will meet the requirements of 29 CFR 1910.134, to include establishing filter/canister change-out schedules.
3. Additional personal protective clothing and equipment will be adequate for the work being performed.

Manufacturer: MSA

Model: MSA Ultra-Twin NIOSH-Certified Full Facepiece Air-Purifying Respirator with MSA GME Super Cartridges/P100 Filters

Level: N/A

Agent(s): Specific chemical agents listed in AR 50-6.

Use Scenario(s):
1. Environmental sampling.
2. Excavation into anomalies.
3. Operations where personnel are responsible for decontaminating personnel and equipment.
4. Emergency escape for personnel working outside the exclusion zone but within the No Significant Effects zone, in the event the near real time (NRT) monitoring devices alarm.
5. Emergency escape from chemical area.
6. Maintenance operations.

Reuse: Respirators and cartridges that have been exposed to chemical agents will be decontaminated, monitored, and disposed of.

Limitations/Additional Requirements:
1. NRT monitoring must be conducted to ensure agent levels do not exceed the Maximum Use Concentration (MUC) for the specific agent involved. The MUC is the assigned protection factor of the respirator (50) multiplied times the Airborne Exposure Limit (AEL) for the agent. The MUC for mustard and Lewisite will not exceed 0.003 mg/m3.
2. The user's Respiratory Protection Program will meet the requirements of 29 CFR 1910.134, to include establishing filter/canister change-out schedules.
3. Additional personal protective clothing and equipment will be adequate for the work being performed.

Manufacturer: MSA

Model: MSA Advantage 1000 NIOSH-Certified Full Facepiece Air-Purifying Respirator with MSA GME Super Cartridges/P100 Filters

Level: N/A

Agent(s): Specific chemical agents listed in AR 50-6.

Use Scenario(s):
1. Industrial chemical operations where there is a potential for chemical agent exposure.
2. Operation of Rapid Response System (RRS).
3. Operation of the Emergency Personnel Decontamination Station (EPDS).
4. Maintenance and housekeeping operations.
5. Emergency escape from chemical area.
6. Industrial chemical operations in support of MMD-1 operations.
7. Processing of munitions/container carcasses already processed in the MMD-1 Process Trailer.
8. Agent treatment process liquid and/or vapor sampling filter unit, and gas reactor carbon replacement in support of MMD-1 operations.

Reuse: Respirators and cartridges that have been exposed to chemical agents will be decontaminated, monitored, and disposed of.

Limitations/Additional Requirements:
1. NRT monitoring must be conducted to ensure agent levels do not exceed the Maximum Use Concentration (MUC) for the specific agent involved. The MUC is the assigned protection factor of the respirator (50) multiplied times the Airborne Exposure Limit (AEL) for the agent. The MUC for mustard and Lewisite will not exceed 0.003 mg/m3.
2. The user's Respiratory Protection Program will meet the requirements of 29 CFR 1910.134, to include establishing filter/canister change-out schedules.
3. Additional personal protective clothing and equipment will be adequate for the work being performed.

JUN-04-2003 11:08 ASO P.02

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
200 ARMY PENTAGON
WASHINGTON DC 20310-0200

REPLY TO ATTENTION OF

DACS-SF 2 June 2003

MEMORANDUM FOR COMMANDER, U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER, P.O. BOX 1600, ATTN: CEHNC-OE-DC (MS. WILLIAMS), HUNTSVILLE, AL 35807-4301

SUBJECT: Approval of Tyvek 'F" Chemical Protective Ensemble with Nitrogen Mustard

1. Reference:

a. Memorandum, ECBC, AMSSB-RCB-RS, 29 May 2003, SAB.

b. Memorandum, USACE, CEHNC-OE-DC, 6 May 2003, subject: Results of Nitrogen Mustard Testing for the Tyvek "F."

c. Memorandum, DACS-SF, 1 May 2003, subject: Generic Approval of Commercial Chemical Protective Equipment.

2. The request at ref 1b was reviewed by members of the Alternate Commercial Protective Clothing and Equipment Subcommittee (ACPCES) of the Department of the Army Chemical Agent Steering Committee. Approval for the Corps of Engineers to use the subject ensemble, in scenarios described in ref 1b, was recommended in ref 1a.

3. After review of the provided information, this office approves the use of the Tyvek "F" chemical protective ensemble for the scenarios in ref 1b provided all of the previous requirements/restrictions in reference 1c are followed.

4. Point of contact for any questions is the undersigned or Ms. Emma Forrest, Edgewood Chemical and Biological Center, commercial (410) 436-2585, DSN 584-2585, e-mail emma.forrest@us.army.mil.

Encl

JAMES A. GIBSON
Senior Safety Manager
Office of the Director of Army Safety

Copy Furnished
Technical Director, Edgewood Chemical and Biological Center, ATTN: AMSSB-RCB-RS (Ms. Eason), Aberdeen Proving Ground, MD 21010-5424

TOTAL P.02

APPENDIX F

Soil and Bulk Item Headspace Analysis Procedures

SOIL: Under normal conditions soil sample headspace analysis will be conducted using the Miniature Chemical Agent Monitoring System (MINICAMS). If Depot Area Air Monitoring System (DAAMS) tubes are used in place of MINICAMS, start the following sequence at step 12. DAAMS tubes must be used to confirm all positive MINICAMS results above 0.2 Airborne Exposure Limit (AEL). This monitoring shall be used to screen soil samples for H, HN1, HN3, and L contamination. Headspace monitoring for Phosgene (CG), Chloropicrin (PS), Cyanogen Chloride (CK), or chloroform is not necessary due to the extreme volatility of these compounds. Headspace Monitoring Procedures of soil samples using the MINICAMS and DAAMS are as follows:

1. Contractor delivers soil sample to monitoring personnel with proper CoC documentation.

2. Don protective gloves. Don protective mask when soil sample is collected by personnel wearing Environmental Protection Agency (EPA)/ Occupational Safety and Health Administration (OSHA) Level C Personal Protective Equipment (PPE) or above.

3. Place up to six samples in a heated sample box. Open bags and remove sample jar lids. Insert temperature probe into a selected soil sample. Close sample box lid and allow samples to equilibrate at 90°F (plus or minus 10°F) for 15 minutes.

4. Insert MINICAMS probe into the heated sample box. Monitor headspace for two complete cycles on the MINICAMS.

    a. If MINICAMS result is below a 0.2 AEL reading, go to step 13.

    b. If MINICAMS result is above the alarm set point or the result is above 0.2 AEL reading, go to step 5.

5. Don Mask and Gloves.

6. Open sample box and replace lids on sample containers and close bags.

7. Allow sample box to re-equilibrate for 15 minutes.

8. Insert MINICAMS into heated sample box and monitor headspace. Once the MINICAMS result is below the alarm set point go to step 9.

9. Don mask and gloves, open lid of sample box. Samples will be monitored one at a time.

10. Open bag and remove lid from a single sample container. Insert temperature probe into soil sample. Close sample box lid and allow sample to equilibrate at 90 degrees (plus or minus 10 degrees) Fahrenheit for 15 minutes.

11. Insert MINICAMS probe into the heated sample box. Monitor the headspace for two complete cycles on the MINICAMS.

    a. If MINICAMS result is below the alarm set point, replace lid and close bag, go to step 9 for next sample container.

    b. If MINICAMS result is above the alarm set point for agent or the result is above 0.2 AEL, sample must be confirmed with DAAMS tubes. Go to step 12.

12. Allow samples to re-equilibrate at 90 degrees (plus or minus 10 degrees) Fahrenheit for 15 minutes. Collect DAAMS tubes at 400 milliliters per minute for 60 minutes. Transport DAAMS tubes to the MAP for analysis by Dynatherm/GC/MS.

    a. If agent is detected from the DAAMS tubes analysis, the U.S. Army Engineering and Support Center, Huntsville (USAESCH) On-Site Safety Specialist must be immediately notified.

    b. If DAAMS analysis results in a non-detect for agent the go to step 13.

13. Give clear samples to the contractor for proper disposition.

Soil Headspace Data Notification. The USAESCH On-Site Safety Specialist will be notified of all confirmed detection's. This includes concentration levels below the AEL value.

Soil Resample Procedure: In the event that soil has been decontaminated, the soil can not be re-sampled using the headspace analysis procedure. Therefore, the ECBC shall request a sample of the decontaminated soil for extraction and subsequent analysis for H, HN1, HN3 and L by GC/MS to confirm complete decontamination.

Soil Headspace Sampling Records. Copies of all soil headspace air sampling results will be maintained.

SCRAP/PPE/BULK ITEM: A sample of scrap, PPE, or a bulk item must be contained in an environment heated to a minimum of 70 degrees (plus or minus 10 degrees) Fahrenheit for four hours prior to monitoring with the MINICAMS/DAAMS. The item may be monitored at temperatures of at least 50 degrees Fahrenheit if the item is under full sunlight for four hours. However, the use of a heated box may be used to raise the temperature of the items in the case of inclement weather. Once the item has been contained for four hours and meets the referenced temperatures, monitoring may. Any items suspected of CWM contamination must follow the procedures using the DAAMS tubes rather than screening with MINICAMS.

1. Contractor delivers scrap/PPE/bulk sample to monitoring personnel with proper CoC documentation.

2. Utilize heated sample box, if necessary, to achieve temperature requirements stated above.

3. Don protective gloves and safety glasses. Don protective mask when sample is collected by personnel wearing EPA/OSHA Level C PPE or above.

4. Insert MINICAMS probe directly into single sample bag or container. Monitor headspace for two complete cycles on the MINICAMS.

    a. If MINICAMS result is below a 0.2 AEL reading, go to step 6.

    b. If MINICAMS result is above the alarm set point or the result is above 0.2 AEL reading, go to step 5.

5. Allow samples to re-equilibrate at 70 degrees (plus or minus10) degrees Fahrenheit for four hours. Collect DAAMS tubes at 400 milliliters per minute for 60 minutes. Transport DAAMS tubes to for analysis by Dynatherm/GC/MS.

    a. If agent is detected from the DAAMS tubes analysis, the USAESCH On-Site Safety Specialist must be immediately notified.

    b. If DAAMS analysis results in a non-detect for agent the go to step 6.

6. Give clear samples to the contractor for proper disposition.

Headspace Data Notification: The USAESCH On-Site Safety Specialist will be notified of all confirmed detection's. This includes concentration levels below the AEL value.

Headspace Sampling Records: Copies of all headspace air sampling results will be maintained.

APPENDIX G

Physical Security Plan Outline

Physical Security Plan

DEPARTMENT OF THE ARMY

U.S. ARMY CORPS OF ENGINEERS, (District)

(District Address)

PHYSICAL SECURITY PLAN (U)

(Project)

(Date)

1. Mission. The mission of the (project name) is to investigate (what are we doing at the project) and remove any recovered chemical warfare material (RCWM) and contaminated media.

2. Purpose. This plan defines the areas of security interest related to (project location) and specifies the equipment, forces, and devices utilized to protect RCWM and provide an effective security posture.

3. Objective.

   a. Prevent unauthorized access to RCWM.

   b. Prevent damage from sabotage, espionage, or unauthorized use of RCWM.

   c. Prevent theft or diversion of RCWM or government equipment and supplies.

4. Threat Analysis. Contact with the (insert local/regional physical security office) indicates (no terrorist threat, extreme terrorist threat, whatever the situation is) at this time. The most likely threat comes from (trespassers and other unauthorized attempts or other appropriate terminology) to access the property.

5. Vulnerabilities. The following security areas are considered the most vulnerable because of their locations and uses: (Use EP 75-1-3, Chapter 11 for Vulnerability Assessment guidance.)

a. The site (project name) consists of (enter size) and is (fenced or not fenced). This site is where the intrusive investigation will take place. (Depending upon the location of the site, fencing of the entire project may not be possible.)

b. The location at (enter name) is the Interim Holding Facility (IHF) where all RCWM will be stored. (The entire area will be surrounded with a fence meeting the minimum requirements)

c. (FE-5) as specified in Chapter 5, AR 190-11.) (Possible statements for this section.)

6. Priorities. The priority of physical security is:

a. First to RCWM at the site, then during transportation to the IHF.

b. Second to the security of equipment and supplies at the (project location) site due to the sensitive nature of the work and the property.

c. Third to the security of the equipment and supplies at the (administrative) location.

7. Limited and Exclusion Areas. Access to the (project location) will be controlled by (name of security force) security force. Only those personnel on approved access rosters will be allowed on the site without an escort. The IHF will also be a limited access area. Only personnel from CEHNC, Technical Escort Unit (TEU), and the Edgewood Chemical and Biological Center (ECBC) will be allowed access to the inside of the IHF area once RCWM has been placed in the facility.

8. Equipment and Devices to Detect or Delay Intrusion.

a. (Project name)

(1) Perimeter boundary: List what, if any equipment or devices are located at the project, for example: “An FE-5 type fence surrounds the entire site with privacy fencing on 3 of the sides. A video camera is focused on the personnel gate facing the home at the site. This camera is monitored during daylight hours.”

(2) Clear zones: (Does one exist for the project? May not be necessary for the entire project.)

(3) Gates: All gates will be locked during the non-operational hours and monitored during operational periods when it is unlocked. The (Security Force) will monitor the vehicle and personnel gate during all hours.

(4) Signs: Metallic Restricted Area signs are used on the fence, one per side (if the project is fenced).

(5) Inspections and maintenance: The security force checks the fences at the site every (two hours during both operational and non-operational hours—this cyclic rate will be determined based on the threat analysis and if there is RCWM within the IHF). Maintenance of the site is provided by (contractor's name) through contract with the Huntsville Engineering and Support Center.

(6) When RCWM is secured within the IHF, a 24-hour security guard will be positioned at the IHF.

b. (Secondary location within the project, if applicable.)

(1) Perimeter boundary: An FE-5 type fence surrounds the IHF.

(2) Clear zones: A 12-foot clear zone exists around the IHF (if practicable).

(3) Gates: The gate to the IHF is locked at all times except during transportation of RCWM and when authorized operations are ongoing.

(4) Signs: Metallic Restricted Area signs are used on all four sides of the IHF fence.

(5) Inspections and maintenance: The security force checks the fences at the site every two hours during both operational and non-operational hours.

9. Security Lighting.

a. (IHF Location).

(1) Types – Lighting is provided around the IHF.

(2) Types of light source – Per FM 3-19.30, Chapter 5.

(3) Use control and standards: Lighting will remain on at all times when RCWM is placed in the IHF. The control switch for the lighting will be locked to prevent unauthorized access.

(4) Inspections and maintenance: The security force checks the security lighting at the site every two hours during non-operational hours. Maintenance of the site is provided by (USACE District or specified agency).

(5) Emergency actions for power failure: If power failure occurs, Security Forces may be enlarged until the situation is corrected. Generator power will be coordinated by (USACE District or specified agency) in the event the power failure is prolonged.

10. Communication Systems. The security force is equipped with both cellular telephones and radios. This provides immediate access to on-call project personnel and to emergency response forces from the (Security Force).

11. Locks and Keys. Locks and keys for the IHF gate are controlled by the USACE, and the IHF doors are controlled by TEU, once RCWM is stored within the IHF. Locks and Keys for collateral areas and equipment will be maintained by (specify who). (Use Appendix A of the Physical Security Plan for Key and Lock Control Log.)

12. Measures to Control Personnel, Vehicles, and Material.

a. Personnel Access Controls: Only authorized personnel will be permitted entry into the site or the IHF. Control procedures will assure positive identification of all personnel prior to entry. Visitors and maintenance personnel will be escorted at all times.

b. Escort Requirements: Escorts will keep the visitor under constant observation at all times.

c. Non-operational hours access procedures: The On-site Operations Officer or his designated representative must approve non-duty hour access. All pertinent facts concerning the access will be recorded and reviewed the by the operations officer.

13. Personnel Identification System. Security personnel will check photo identification against the Access Roster prior to admittance to both the site and to the IHF.

14. Vehicle Control. Only authorized vehicles are allowed at the site. Only authorized transportation vehicles are allowed in the IHF.

15. Material Control. The TEU will manifest all material being transported from the site to the IHF. RCWM will be transported by TEU with an escort.

16. Security Forces.

a. Type and composition: (Security Force) provides (one or however many is determined to be necessary) security person(s) at the (Project) and then an additional security person(s) when RCWM is placed in the IHF.

b. Authority and Jurisdiction: (Name of) District has contracted with the local authorities to provide security at both the project and the IHF.

c. Weapons, Ammunition, and Equipment: Security personnel are armed and equipped IAW standard local procedures.

d. Rules of engagement and use of deadly force: These are commensurate with the rules employed by the local security forces.

e. Training: This is the responsibility of the (Security Force). Site specific instructions have been provided by the on-site Operations Officer and are included in Appendix B. (Use Appendix B of the Physical Security Plan to provide Security Force Instructions.)

f. Actions to be taken under adverse weather and limited visibility conditions: Patrols will be maintained during these conditions to ensure security integrity.

g. Posts: (Explain post locations.)

h. Working dogs: (May or may not be applicable.)

i. Response force: The (Security Officer) on duty will call for the appropriate response force from the (depends on his assessment of the situation). Response times will be (identify the requirements).

17. Emergency Actions of General Nature. Actions pertaining to emergency situations will be IAW the (Project) Chemical Safety Submission (CSS).

18. Recovered Chemical Warfare Material Movement. Procedures for movement of recovered chemical warfare material are as outlined in the CSS.

19. Coordination. This plan has been coordinated with all members of the (Project) team to include local security, TEU, ECBC, PM Non-stockpile, U.S. Army Engineering and Support Center, Huntsville, and (name of Contractor(s) on-site).

20. Appendices.

A. Key and Lock Control Log

B. Instructions for the Security Force

(Contractor Project Manager's Signature Block)

DISTRIBUTION:

Name of Security Force

(Applicable) District, Corps of Engineers, Attention: Project Manager and Security Office

U.S. Army Engineering & Support Center, Huntsville (OE Design Center Point of Contact)

Contractor(s) working the site

Customer's designated representative

CDR, TEU, Attention: (Name)

CDR, ECBC, Attention: (Name)

PM Non-stockpile, Attention: (Name)

ATTACHMENT 1

Key and Lock Control Log

Project Name:_____Location:_____

Lock Number	Where Located	Number of Keys	Key Numbers

Date	Key Number	Time Out	Time In	Print Name and Signature

Example (Variations may be used.)

ATTACHMENT 2

Instructions for the Security Force

(Name of Site)

a. Security officers at the excavation-site will visually check the site at least once every two hours.

b. Officers will make radio communication on a periodic basis between posts.

c. When items are stored at the IHF, officers at the (IHF Location) will station themselves in the vicinity of the IHF to allow maximum observation of the area. Officers will walk around the IHF area at least once every two hours.

d. In the event an intruder is detected at either site, the officers will take appropriate action to stop the intruder and maintain the security of the site. If necessary, the officer will call for appropriate additional support from the (backup security force name). Response times would be IAW standard police protocols.

e. If anything unusual is detected, the officer should contact (name of person the security force should contact) during daytime operations at (phone number). After hours the officer should contact (who) at pager number (_____) or cell phone number (_____).

f. Questions concerning these instructions should be directed to (name of designated individual).

g. Enter any additional instructions to the security force.

Appendix H
Delegation of Authority

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO ATTENTION OF:
CESO-E (385-10) 25 Mar 2003

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, Huntsville Center, ATTN: CEHNC-OE, P.O. Box 1600, Huntsville, Alabama 35807-4321

SUBJECT: Headquarters, Corps of Engineers Delegation of Authority

1. References:

a. CEHNC-OE memorandum, 17 Mar 2003, subject: Pre-Operational Surveys for Chemical Warfare Materiel (CWM) Project Sites.

b. AR and PAM 385-64, U. S. Army Explosives Safety Program and Ammunitions and Explosives Safety Standards, respectively.

c. AR and AR PAM 385-61, Toxic Chemical Agent Safety Standards.

d. CESO memorandum, 25 Aug 1999, subject: MACOM Explosives Safety Submission Approval.

2. This memorandum supersedes reference 1.d.

3. Per reference 1.b and c, HQ USACE Safety Office has the responsibility for this MACOM's explosives and chemical safety programs. By this memorandum, HQ USACE authorizes the Commander, U.S. Army Corps of Engineers Engineering and Support Center, Huntsville (USAESCH) to carry out some of these responsibilities regarding the response actions at ordnance and explosives (OE), and/or chemical warfare materiel (CWM) sites. These responsibilities include: certification of personnel qualifications and training; approval and transmittal of safety submissions; request priority reviews and approval; approve and request approval of waiver and exemption; management of contractor safety requirements; report, investigate and analyze accidents/mishaps (IAW USACE Supplement 1 to AR 385-40); and conducting pre-operational safety surveys (reference 1.a).

CESO-E 29 Mar 03
SUBJECT: Headquarters, Corps of Engineers Delegation of Authority

4. The USAESCH will copy furnished CESO-E with all correspondence, concerning this delegation, shared with higher HQs. Ensure you keep this Office informed (don't allow it to escalate) of issues and disputes with other parties. Unresolved disputes will be forwarded to CESO-E for review and resolution.

5. The CESO-E office will retain the right to make changes to this delegation of authority. This memorandum will remain a living document.

6. Should you have any questions, refer them to my staff POC, Ms. Blanca Roberts at voice: 202-761-8691, Fax: 202-761-1369, E-mail blanca.o.Roberts@hqda.army.mil.

FOR THE COMMANDER:

for Samuel G. Testerman, PE, CSP
Acting Chief, Safety and
Occupational Health Office

CF:
CEMP-R
HQDA(DACS-SF)
SJMAC-ESL/ESM

GLOSSARY

Section I
Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AEL	Airborne Exposure Limit
AIHA	American Industrial Hygiene Association
AMC	Army Materiel Command
AOC	Army Operations Center
ABP	Agent Breakdown Products
AR	Army Regulation
ARAR	Applicable, Relevant and Appropriate Requirement
ARB	Anomaly Review Board
ASA (I&E)	Assistant Secretary of the Army (Installation and Environment)
ASR	Archives Search Report
ASSHP	Abbreviated Site Safety and Health Plan
BRAC	Base Realignment and Closure
BWM	Biological Warfare Material
CACM	Chemical Agent Contaminated Media
CAIRA	Chemical Accident or Incident Response or Assistance
CAIS	Chemical Agent Identification Sets
CBD	Commerce Business Daily
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CG	Phosgene
CHP	Certified Health Physicist
CIH	Certified Industrial Hygienist
CK	Cyanogen Chloride
CO	Contracting Officer
CoC	Chain-of-Custody
COPC	Contaminants of Potential Concern
COR	Contracting Officer's Representative
CPR	Cardiopulmonary Resuscitation
CPU	Chemical Protective Undergarment
CRP	Community Relations Plan

CSP ..... Certified Safety Professional or Conceptual Site Plan
CSS ..... Chemical Safety Submission
CSSIS ..... Chemical Safety Submission Information Sheet
CWA ..... Chemical Warfare Agent
CWM ..... Chemical Warfare Materiel
CX ..... Mandatory Center of Expertise
D2PC ..... Downwind Hazard Prediction Model
DA ..... Department of the Army
DA Pam ..... Department of the Army Pamphlet
DAAMS ..... Depot Area Air Monitoring System
DACASC ..... Department of Army Chemical Agent Safety Council
DACS-SF ..... Department of the Army, Office of the Chief of Staff
DASAF ..... Director of Army Safety
DDESB ..... Department of Defense Explosives Safety Board
DERP ..... Defense Environmental Restoration Program
DHHS ..... Department of Health and Human Services
DID ..... Data Item Description
DOD ..... Department of Defense
DOT ..... Department of Transportation
ECBC ..... Edgewood Chemical and Biological Center
ECS ..... Engineering Control Structure
EE/CA ..... Engineering Evaluation/Cost Analysis
EM ..... Engineer Manual
EOD ..... Explosive Ordnance Disposal
EP ..... Engineer Pamphlet
EPA ..... Environmental Protection Agency
ER ..... Engineer Regulation
ESS ..... Explosives Safety Submission
EZ ..... Exclusion Zone
FAR ..... Federal Acquisition Regulation
FBI ..... Federal Bureau of Investigation
FPD ..... Flame Photometric Detector
FUDS ..... Formerly Used Defense Site
GB ..... Sarin (Isopropyl methylphosphonofluoridate)
GC ..... Gas Chromatography
GFP ..... Government Furnished Property
GIS ..... Geographic Information System
GPL ..... General Population Limit

H ..... Levinstein Mustard (bis[2-chloroethyl] sulfide)
HN-1 ..... Nitrogen Mustard (2.2' dichloro-triethylamine)
HN-3 ..... Nitrogen Mustard (2.2'.2-trichloro-triethylamine)
HAZWOPER ..... Hazardous Waste Operations and Emergency Response
HQDA ..... Headquarters, Department of the Army
HQUSACE ..... Headquarters, United States Army Corps of Engineers
HTRW ..... Hazardous, Toxic, and Radioactive Waste
HTW ..... Hazardous and Toxic Waste
IAW ..... IAW
IDLH ..... Immediately Dangerous to Life or Health
IDW ..... Investigation Derived Waste
IGE ..... Independent Government Estimate
IHF ..... Interim Holding Facility
INPR ..... Inventory Project Report
IRP ..... Installation Restoration Program
L ..... Lewisite
LDR ..... Land Disposal Restriction
LPM ..... Liters Per Minute
LUC ..... Land Use Control
MACOM ..... Major Command
MAP ..... Mobile Analytical Platform
MARB ..... Materiel Assessment Review Board
MCE ..... Maximum Credible Event
MCX ..... Mandatory Center of Expertise
MEC ..... Munitions and Explosives of Concern
MINICAMS ..... Miniature Chemical Agent Monitoring System
MM CX ..... Military Munitions Response Mandatory Center of Expertise
MMR MCX ..... Military Munitions Response Mandatory Center of Expertise
MOA ..... Memorandum of Agreement
MRC ..... Multiple Round Container
MSC ..... Major Subordinate Command
MSD ..... Minimal Separation Distance
MSDS ..... Material Safety Data Sheet
NCP ..... National Oil and Hazardous Substance Pollution Contingency Plan
NDAI ..... No DOD Action Indicated
NEPA ..... National Environmental Policy Act
NEW ..... Net Explosive Weight
NIOSH ..... National Institute for Occupational Safety and Health

NOSE.....No Significant Effects
NTCRA.....Non-Time Critical Removal Action
NVLAP.....National Voluntary Laboratory Accreditation Program
OC.....Office of Counsel
OSG.....Office of the Surgeon General
OSHA.....Occupational Safety and Health Administration
PA.....Preliminary Assessment
PAED.....Public Access Exclusion Distance
PAO.....Public Affairs Office (or Officer)
PAT.....Proficiency Analytical Test
PCB.....Poly-Chlorinated Biphenyl
PDS.....Personnel Decontamination Station
PDT.....Project Delivery Team
PINS.....Portable Isotopic Neutron Spectroscopy
PL.....Public Law
PM.....Project Manager
PMNSCM.....Product Manager for Non-Stockpile Chemical Materiel
PMECW.....Program Manager for the Elimination of Chemical Weapons
POC.....Point of Contact
PPE.....Personal Protective Equipment
Pre-Op.....Pre-Operational Survey
PS.....Chloropicrin
PSP.....Physical Security Plan
Q-D.....Quantity Distance
QA.....Quality Assurance
QC.....Quality Control
OP-FTIR.....Open-Path Fourier Transform Infrared Spectrometry Air Monitoring
RAB.....Restoration Advisory Board
RCRA.....Resource Conservation and Recovery Act
RCWM.....Recovered Chemical Warfare Materiel
RDECOM.....Research, Development, and Engineering Command
RFP.....Request for Proposal
RI/FS.....Remedial Investigation/Feasibility Study
ROE.....Right-of-Entry
RSO.....Radiation Safety Officer
SARA.....Superfund Amendments and Reauthorization Act of 1986
SI.....Site Inspection
SOP.....Standard Operating Procedure

SOW ..... Statement of Work
SSHP..... Site Safety and Health Plan
STEL..... Short-term Exposure Limit
SUXOS ..... Senior UXO Supervisor
SVOC ..... Semi-Volatile Organic Compound
TCL..... Target Compound List
TCLP ..... Toxicity Characteristic Leaching Procedure
TCRA ..... Time-Critical Removal Action
TEU ..... Technical Escort Unit
TM ..... Technical Manual
TSDF ..... Treatment, Storage, and Disposal Facility
TWA..... Time Weighted Average
U.S. ..... United States
USACE ..... United States Army Corps of Engineers
USACHPPM..... U.S. Army Center for Health Promotion and Preventive Medicine
USAESCH..... U.S. Army Engineering and Support Center, Huntsville
USATCES ..... U.S. Army Technical Center for Explosives Safety
USC ..... United States Code
UXO ..... Unexploded Ordnance
UXOSO ..... UXO Safety Officer
VCS ..... Vapor Containment Structure
VOC..... Volatile Organic Compounds
VX ..... V Agent (O-ethyl ester)
WPL..... Worker Population Limit
XSD ..... Halogen Specific Detector

Section II
Terms

1 Percent Lethality Distance
Distance that is calculated from a given MCE and meteorological conditions (temperature, wind speed, and so forth) and is established as the distance at which dosage from an MCE or actual agent release would be 150 mg-min/m^3 for H and HD agents, 75 mg-min/m^3 for HT agent, 150 mg-min/m^3 Lewisite, 10 mg-min/m^3 for GB agent, 4.3 mg-min/m^3 for VX vapor, and 0.1 mg for inhalation/deposition of liquid VX. The meteorological conditions used will be the existing conditions in the event of an actual release or the realistic, worst-case conditions used will be the existing conditions for siting purposes.

3X
This is an indication of the level of decontamination to which an item has been subjected. XXX indicates the item has been surface decontaminated by locally approved procedures, has been bagged or contained in an agent-tight barrier (plastic bags may be used if they have been tested and found to be effective for the purpose) of sufficient volume to permit sample air to be withdrawn while minimizing dilution with incoming air, and/or appropriate tests/monitoring have verified that concentrations above 0.0001 mg/m^3 for agents GA/GB, 0.00001 mg/m^3 for agent VX, 0.003 mg/m^3 for H or L, or 0.00003 mg/m^3 for agent GD (unmasked worker AEL values for other covered chemicals do not exist.

Action Memorandum
Approves time-critical removal action and also concludes the engineering evaluation/cost analysis. Provides a concise, written record of the decision to select an appropriate removal action. As the primary decision document, it substantiates the need for a removal action, identifies the proposed action, and explains the rationale for the removal action selected.

Active Installations
Installations under the custody and control of DOD. Includes operating installations, installations in a standby or layaway status, and installations awaiting closure under the Base Realignment and Closure (BRAC) legislation. Examples include but are not limited to posts, camps (including National Guard camps), forts, depots, activities, ports, ammunition supply points, basic load ammunition storage areas, and ammunition plants.

Active Range
A military range that is currently in service and is being regularly used for range activities. (40 CFR 266.201)

Administrative Record
The body of documents that "forms the basis" for the selection of a particular response at a site. Documents that are included are relevant documents that were relied upon in selecting the response action as well as relevant documents that were considered but were ultimately rejected. (ER 1110-1-8153)

Anomaly
Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity should deviate from the expected subsurface ferrous and non-ferrous material at a site (i.e., pipes, power lines, etc.). (EP 1110-1-18)

Anomaly Avoidance
Techniques employed by EOD or UXO personnel at sites with known or suspected MEC to avoid any potential surface MEC and any subsurface anomalies. This usually occurs at mixed hazard sites when HTRW investigations must occur prior to execution of munitions response. Intrusive anomaly investigation is not authorized during ordnance avoidance operations. (EP 75-1-2)

Anomaly Review Board (ARB)
A technical group established to provide technical guidance and quality assurance oversight of the review and resolution of geophysical information related to unresolved anomalies at a site. (EP 1110-1-18)

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

Approval Memorandum
Secures management approval and funding to conduct the engineering evaluation/cost analysis.

Archives Search Report (ASR)
A detailed investigation to report on past munitions-related activities conducted at an installation. The principal purpose of the Archives Search is to assemble historical records and available field data, assess potential ordnance presence, and recommend follow-up actions at a DERP-FUDS. There are four general steps in an Archives Search: records search phase, site safety and health plan, site survey, archives search report including risk assessment.

Base Realignment and Closure (BRAC)
Program governing the scheduled closing of Department of Defense sites. (Base Closure and Realignment Act of 1988, Public Law 100-526, 102 Stat. 2623, and the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 104 Stat. 1808)

Chemical Agent
A chemical substance that is intended for use in military operations to kill, seriously injure, or incapacitate a person through its physiological effects. Excluded are research, development, test, and evaluation (RDTE) solutions, industrial chemicals, riot control agents, chemical defoliants and herbicides, smoke flame, and incendiaries. (ER 385-1-95)

Chemical Agent Contaminated Media (CACM)
Any mixture of detectable concentrations of chemical agent(s) with soil, water, debris, or other solid or liquid media.

Chemical Warfare Materiel (CWM)
An item configured as a munition containing a chemical substance that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. Also includes V- and G- series nerve agent, H- series blister agent, and lewisite in other- than-munition configurations. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include: riot control agents, chemical herbicides; smoke and flame producing items; or soil, water, debris, or other media contaminated with chemical agent. (HQDA Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities)

Chemical Weapons Design Center (CW-DC)
A design center is the specified USACE field office assigned a singular technical mission that is permanent and USACE-wide in scope. This designated office is to be considered the "lead activity" in a specialized area where capability needs to be concentrated for maximum effectiveness, economy, and efficiency. The CW-DC is the USACE Design Center

authorized to execute RCWM response actions. The CW-DC is located within USAESCH. (ER 1110-1-8153)

Collective Protection
Protective equipment or methods used to insulate a group of people from the chemical, thermal, explosive or other hazards presented by the environment in which they are working. For example, such items as tents and engineering control structures.

Community Relations Plan (CRP)
The Community Relations Plan (CRP) or Public Involvement Plan for FUDS projects serves as the framework to establish a successful information exchange with the public for munitions response actions. The CRP follows guidelines set forth under CERCLA and the SARA. Each CRP must be tailored to fit the individual site and situation and should also accommodate any site-specific agreements between the U.S. Army and the EPA or state environmental agencies. The CRP is not a static document and should be revised to reflect the project's development/progress.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)
Also known as "Superfund", this congressionally enacted legislation provides the methodology for the removal of former operations. Response actions must be performed IAW the National Oil and Hazardous Substances Pollution Contingency Plan.

Construction Support
Support provided by qualified UXO personnel during construction activities at potential MEC sites to ensure the safety of construction personnel from the harmful effects of UXO. When a determination is made that the probability of encountering UXO is low, a two-person UXO team stands by in case the construction contractor encounters a suspected UXO. When a determination is made that the probability of encountering a UXO is moderate to high, UXO teams are required to conduct subsurface UXO clearance for the known construction footprint in conjunction with the construction contractor during intrusive activities. The level of effort for construction support will be determined on a case-by-case basis in coordination with MM CX. (ER 1110-1-8153)

Conventional Munitions and Explosives of Concern (MEC)
The term "conventional MEC" refers to munitions and explosives of concern (see definition) other than CWM, BWM and nuclear ordnance. (EP 75-1-2)

Defense Environmental Restoration Program (DERP)
Established in 1984, DERP promotes and coordinates efforts for the evaluation and cleanup of contamination at Department of Defense installations. (10 U.S.C. 2701)

Discarded Military Munitions (DMM)
Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. (10 U.S.C. 2710(e)(2))

Districts Approved to Execute Munitions Response Actions
These districts are selected and approved by the MSC Commander with concurrence from the MM CX, trained, and assigned the mission of conducting munitions response actions. The districts are responsible for final response action execution. Only USAESCH is authorized to execute any phase of a RCWM response action. (ER 1110-1-8153)

Easement
An easement allows the holder to use the land of another or to restrict the uses of the land. An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, benefits by having beach access through your land. An easement "in gross" benefits an individual or company. For example, allowing the utility company to come on your land to lay a gas line. The utility company, the holder of the easement, benefits by having use of the land to lay the gas line. An affirmative easement allows the holder to use another person's land in a way that, without the easement, would be unlawful - for example, allowing a use that would otherwise be a trespass. A negative easement prohibits a lawful use of land - for example, creating a restriction on the type and amount of development of land.

Engineering Evaluation/Cost Analysis (EE/CA)
An EE/CA is prepared for all non-time-critical removal actions as required by Section 300.415(b)(4)(i) of the NCP. The goals of the EE/CA are to identify the extent of a hazard, to identify the objectives of the removal action, and to analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability.

Exclusion Zone (EZ)
A safety zone established around a MEC work area. Only project personnel and authorized, escorted visitors are allowed within the EZ. Examples of EZs are safety zones around MEC

intrusive activities and safety zones where MEC is intentionally detonated. The EZ is the area where potential contamination may exist. (DDESB-KO, 27 January 1990)

Explosive Ordnance Disposal (EOD)
The detection, identification, field evaluation, rendering safe, recovery, and final disposal of unexploded ordnance or munitions.

Explosives or Munitions Emergency Response
An immediate response by explosives and munitions emergency response personnel to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place render-safe procedures, treatment or destruction of the explosives or munitions or their transport to another location to be rendered safe, treated, or destroyed. Reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen or uncontrollable circumstance does not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities. (40 CFR §260.10)

Explosives Safety Submission (ESS)
The document that serves as the specifications for conducting work activities at the project. The ESS details the scope of the project, the planned work activities, and potential hazards (including the maximum credible event) and the methods for their control. (EP 1110-1-18)

Explosive Soil
Explosive soil refers to mixtures of explosives in soil, sand, clay, or other solid media at concentrations such that the mixture itself is explosive.

(a) The concentration of a particular explosive in soil necessary to present an explosion hazard depends on whether the particular explosive is classified as "primary" or "secondary." Guidance on whether an explosive is classified as "primary" or "secondary" can be obtained from the MM CX or Chapters 7 and 8 of TM 9-1300-214, Military Explosives.

(b) Primary explosives are those extremely sensitive explosives (or mixtures thereof) that are used in primers, detonators, and blasting caps. They are easily detonated by heat, sparks, impact, or friction. Examples of primary explosives include Lead Azide, Lead Styphnate, and Mercury Fulminate.

(c) Secondary explosives are bursting and booster explosives (i.e., they are used as the main bursting charge or as the booster that sets off the main bursting charge). Secondary

explosives are much less sensitive than primary explosives. They are less likely to detonate if struck or when exposed to friction or to electrical sparks. Examples of secondary explosives include Trinitrotoluene (TNT), Composition B, and Ammonium Picrate (Explosive D).

(d) Soil containing 10 percent or more by weight of any secondary explosive or mixture of secondary explosives is considered "explosive soil." This determination was based on information provided by the USAEC as a result of studies conducted and reported in USAEC Report AMXTH-TE-CR 86096.

(e) Soil containing propellants (as opposed to primary or secondary high explosives) may also present explosion hazards.

Formerly Used Defense Sites (FUDS)
FUDS includes those properties previously owned, leased, or otherwise possessed by the U.S. and under the jurisdiction of the Secretary of Defense; or manufacturing facilities for which real property accountability rested with DOD but were operated by contractors (Government owned - contractor operated) and which were later legally disposed of. FUDS is a subprogram of the DERP. Restoration of military land was extended to formerly used sites in 1983 under Public Law 98-212 (DOD Appropriations Act of FY84).

General Population Limit (GPL)
The GPL is an occupational chemical exposure limit for the general population. It is expressed as a time-weighted average that should not be exceeded during any twenty-four hour period.

Geophysical Techniques
Techniques utilized for the detection and measurement of buried anomalies (e.g., ferromagnetic indicators and ground penetrating radar) to investigate the presence of munitions. (ER 385-1-95)

Hazardous, Toxic, and Radioactive Waste (HTRW) Activities
HTRW activities include those activities undertaken for the Environmental Protection Agency's Superfund program, the Defense Environmental Restoration Program (DERP), including Formerly Used Defense Sites (FUDS), and Installation Restoration Program (IRP) sites at active DOD facilities, HTRW actions associated with Civil Works activities, and any other mission or non-mission work performed for others at HTRW sites. (ER 385-1-92)

Immediately Dangerous to Life and Health (IDLH)
The IDLH concentration is a limit for personal exposure to a substance defined by the National Institute of Occupational Safety and Health (NIOSH) that is normally expressed in parts per million (ppm). Th IDLH concentration is considered to be the limit beyond which an individual will not be capable of escaping death or permanent injury without help in less than thirty minutes.

Information Repository
A repository, generally located at libraries or other publicly accessible locations, which contains documents reflecting the on-going environmental restoration activities. This may include the EE/CA, CRP, RAB meeting minutes, public notices, public comments and responses to those comments, etc.

Intrusive activity
An activity that involves or results in the penetration of the ground surface at an area known or suspected to contain MEC. Intrusive activities can be of an investigative or removal action nature. (ER 385-1-95)

Inventory Project Report (INPR)
The report resulting from the preliminary assessment. The INPR includes data as well as a recommendation for further action and guides investigators through further site studies. Documents whether DOD is responsible for contamination at a FUDS.

Mandatory Center of Expertise (CX)
A CX is a USACE organization that has been approved by HQUSACE as having a unique or exceptional technical capability in a specialized subject area that is critical to other USACE commands. Specific mandatory services to be rendered by a CX are identified on the CX's homepage. These services may be reimbursable or centrally funded. The USAESCH is the MM CX for the USACE. (ER 1110-1-8153)

Material Potentially Presenting an Explosive Hazard (MPPEH)
Material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially contaminated with a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, ventilation ducts) associated with munitions production, demilitarization or disposal operations. Excluded from MPPEH are munitions within DOD's established munitions management system and other hazardous

items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

Maximum Credible Event (MCE)
The worst single event that could occur at any time, with maximum release of a chemical agent from a munition, container, or process as a result of unintended, unplanned, or accidental occurrence. (HQDA Interim Guidance for Biological Warfare Materiel (BWM) and Non-Stockpile Chemical Warfare Materiel (CWM) Response Activities)

Military Munitions
All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, except that the term does include non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954, (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C. 2710(e)(3)(A))

Minimum Separation Distance (MSD)
The minimum separation distance required for personnel (public and UXO Qualified), as a result of an intentional and unintentional detonation of an item of ordnance, that could occur during activities involving MEC. The event must be realistic with reasonable probability of occurrence. (ER 385-1-95)

Most Probable Event (MPE)
The MPE is the most likely event that could occur during munitions response activities as a result of an accidental, unplanned, or unintended detonation of an ordnance item. The event must be realistic with reasonable probability of occurrence. (ER 385-1-95)

Munition with the Greatest Fragmentation Distance (MGFD)
The munition with the greatest fragmentation distance that might be recovered as a result of previous training during actions based on historical information. The selected MGFD must be realistic with reasonable probability of occurrence. (DOD 6055.9-STD)

Munitions and Explosives of Concern (MEC)
This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means:

(a) Unexploded Ordnance (UXO), as defined in 10 U.S.C. 2710 (e) (9);

(b) Discarded Military Munitions (DMM), as defined in 10 U.S.C. 2710 (e) (2), or

(c) Munitions constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard.

Munitions Constituents (MC)
Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance and munitions. (10 U.S.C. 2710(e)(4))

Munitions Debris
Remnants of munitions (e.g., penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions Response
Response actions, including investigation, removal and remedial actions to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC).

Munitions Response Area (MRA)
Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A MRA is comprised of one or more MRSs.

Munitions Response Site (MRS)
A discrete location within a MRA that is known to require a munitions response.

National Oil and Hazardous Substance Pollution Contingency Plan (NCP)
Revised in 1990, the NCP provides the regulatory framework for responses under CERCLA. The NCP designates the Department of Defense as the removal response authority for ordnance and explosives hazards.

Non-Stockpile Chemical Warfare Materiel
CWM (see definition) that is not included in the chemical stockpile. Non-stockpile CWM is divided into five categories: buried CWM, recovered CWM (items recovered during range clearing operations, from chemical burial sites, and from research and development testing), former chemical weapon production facilities, binary chemical weapons, and miscellaneous CWM (unfilled munitions and devices and equipment specially designed for use directly in connection with employment of chemical weapons). (HQDA Interim Guidance for Biological Warfare Materiel [BWM] and Non-stockpile Chemical Warfare Materiel [CWM] Response Activities)

Non-Time-Critical Removal Action (NTCRA)
NTCRAs are actions initiated in response to a release or threat of a release that poses a risk to human health, its welfare, or the environment. Initiation of removal cleanup actions may be delayed for six months or more.

Ordnance and Explosive Safety Specialist
USACE Personnel, classified as a GS-018 Safety Specialist, and who is UXO-qualified. Ordnance and Explosive Safety Specialists perform safety, quality assurance and UXO subject matter expert functions for the Government. The Ordnance and Explosive Safety Specialist for RCWM response actions is located within the USAESCH Ordnance and Explosives Directorate.. (ER 1110-1-8153)

Personal Protective Equipment (PPE)
Whatever protective equipment may be used to insulate an individual from the chemical, thermal, explosive or other hazards presented by the environment in which he or she is working. For example, such items as safety glasses, hard hats, protective shoes, chemical-resistant clothing, and breathing apparatus.

Preliminary Assessment of Eligibility (PA)
The PA is the initial phase of the non-time-critical response action process. A PA includes a review of existing information and an off-site reconnaissance, if appropriate, to determine if a release may require additional investigation or action. A PA may include an on-site reconnaissance, if appropriate. The findings of the PA are reported in the INPR, along with

recommendations for further action, if appropriate. This document is used to determine property and project eligibility under DERP-FUDS.

Project Delivery Team (PDT)
The PDT is a multi-disciplined team, led by the Project Manager, with responsibility for assuring that project activities stay focused, first and foremost on the public interest, and on the customer's needs and expectations and that all work is integrated and done IAW a PMP and approved business and quality management processes. The PDT focuses on the quality of project delivery, with heavy reliance on partnering and relationship development to achieve better performance. (ER 5-1-11)

Project Manager (PM)
Within the TPP process, the PM is the decision maker responsible for leading the team's TPP efforts, progressing towards site closeout, and meeting the customer's expectations. (EM 200-1-2).

Public Access Exclusion Distance (PAED)
The greater of the inhabited building distance (IBD) (based on the fragment hazard distance or the net explosive weight (NEW) of the munitions) or the one percent lethality distance of the MCE.

Quality Assurance (QA)
A process that provides oversight to quality control and involves an audit/review of the quality control process. (ER 1110-1-12)

Quality Control (QC)
A process that monitors and checks the design process to insure that the product will meet agreed-upon requirements of the customer, is on schedule and within budget. (ER 1110-1-12)

Quantity Distance (Q-D)
The quantity of explosives material and distance separation relationships that provide defined types of protection. These relationships are based on levels of risk considered acceptable for the stipulated exposures and are tabulated in the appropriate Q-D tables provided in DOD 6055.9-STD. Separation distances are not absolute safe distances but are relative protective safe distances. Greater distances than those shown in the Q-D tables will be used whenever possible. (DOD 6055.9-STD)

Recovered Chemical Warfare Materiel (RCWM)
Non-stockpile CWM that was previously discarded, buried, or fired and discovered either unexpectedly or during planned environmental restoration operations. (ER 385-1-95)

Remedial or Remedial Action
Those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health, welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage; confinement; perimeter protection using dikes, trenches, or ditches; clay cover; neutralization; cleanup of released hazardous substances and associated contaminated materials; recycling or reuse; diversion; destruction; segregation of reactive wastes; dredging or excavations; repair or replacement of leaking containers; collection of leachate and runoff; onsite treatment or incineration; provision of alternative water supplies; and any monitoring reasonably required to assure that such actions protect the public health, welfare and the environment. The term includes the costs of permanent relocation of residents and businesses and community facilities where the President determines that, alone or in combination with other measures, such relocation is more cost-effective and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare. The term includes offsite transport and offsite storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials. (DERP Management Guidance)

Remedial Investigation/Feasibility Study (RI/FS)
An in depth study designed to gather the data necessary to determine the nature and extent of known contamination at a site, assess risk to human health and the environment, and establish criteria for cleaning up the site. During the FS, the RI data is analyzed and remedial alternatives are identified. The FS serves as the mechanism for the development, screening, and detailed evaluation of alternative remedial actions.

Removal or Removal Action
The cleanup or removal of released hazardous substances from the environment. Such actions may be taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of

release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 9604(b) of this title, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act [42 U.S.C. 5121 et seq.] The requirements for removal actions are addressed in 40 CFR §§300.410 and 330.415. The three types of removals are emergency, time-critical, and non time-critical removals. (DERP Management Guidance)

Resource Conservation and Recovery Act (RCRA)
Enacted in 1976, RCRA promotes the protection of health and the environment. It regulates waste generation, treatment, storage, transportation, and disposal for facilities currently in operation. The munitions response process is affected by RCRA if MEC must be disposed off-site.

Restoration Advisory Board (RAB)
A forum for discussion and exchange of information between agencies and the affected communities. RABs provide an opportunity for stakeholders to have a voice and actively participate in the review of technical documents, to review restoration progress, and to provide individual advice to decision makers regarding restoration activities. (ER 1110-1-8153)

Risk Assessment Code (RAC)
An expression of the risk associated with a hazard. The RAC combines the hazard severity and accident probability into a single arabic number on a scale from 1 to 5, with 1 being the greatest risk and 5 the lowest. The RAC is used to prioritize response actions.

Short-term Exposure Limit (STEL)
The STEL is defined by the American Conference of Governmental Industrial Hygienists (ACGIH) as the concentration to which workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency. Workers can be exposed to a maximum of four STEL periods per eight-hour shift, with at least 60 minutes between exposure periods.

Site Inspection (SI)
Activities undertaken to determine whether there is a release or potential release and the nature associated threats. The purpose is to augment the data collected in the PA and to generate, if necessary, sampling and other field data to determine the presence, type,

distribution, density and location of MEC. The results of the SI are reported in an Archives Search Report (ASR).

Stakeholder
Stakeholders include federal, state, and local officials, community organizations, property owners, and others having a personal interest or involvement, or having a monetary or commercial involvement in the real property that is to undergo a munitions response. (ER 385-1-95)

Superfund Amendments and Reauthorization (SARA)
Enacted in 1986, this legislation establishes standards for cleanup activities, requires federal facility compliance with CERCLA, and clarifies public involvement requirements.

Time-Critical Removal Action (TCRA)
TCRAs respond to a release or threat of release that poses such a risk to public health (serious injury or death), or the environment, that clean up or stabilization actions must be initiated within six months.

Technical Assistance for Public Participation (TAPP)
Program that can provide independent assistance to Restoration Advisory Boards in interpreting scientific and engineering issues with regard to the nature of MEC hazards and response activities at a MEC project. (ER 1110-1-8153)

Technical Escort Unit (TEU)
Military chemical agent response unit. (EP 1110-1-18)

Unexploded Ordnance (UXO)
Military munitions that: (a) Have been primed, fuzed, armed, or otherwise prepared for action; (b) Have been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (c) Remain unexploded either by malfunction, design, or any other cause. (U.S.C. 2710 (e) (9))

UXO Personnel
Contractor personnel who have completed specialized military training in EOD methods and have satisfactorily performed the EOD function while serving in the military. Various grades and contract positions are established based on skills and experience. Check with the MM CX for current ratings. (ER 1110-1-8153)

Worker Population Limit (WPL)
The WPL is an occupational chemical exposure limit for workers. It is expressed as a time-weighted average that should not be exceeded during an eight hour working day.