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C.H.

THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 623

File: 541.460-000.9
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DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER CORPS OF ENGINEERS
P O BOX 1600
HUNTSVILLE ALABAMA 35807-4301

REPLY TO ATTENTION OF

CEHNC-OE-DC (200-1c)

5 MAY 2001

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Correction 1 to the Memphis Dunn Field Transportation and Disposal Plan for Disposal of Wastes Generated from the Chemical Warfare Materiel (CWM) Investigation/Removal Action, Dunn Field, Former Defense Distribution Depot, Memphis, TN

1. Enclosed for your information is Correction 1 to the Memphis Dunn Field Transportation and Disposal (T&D) Plan for Disposal of Wastes Generated from the Chemical Warfare Materiel (CWM) Investigation/Removal Action at Dunn Field. This correction is to modify the following items related to the previously approved T&D plan:

a. Shipment of exploded burster tubes and bomb casings which are classified 3X to Safety-Kleen, Colfax, LA (a subpart X certified facility) for incineration (instead of to Onyx Environmental Services) and discharge of the ash residue into a Subtitle C landfill located in Wayinoka, OK. The bomb casings are being manifested as explosive hazard 1.1.D. material (both as a precaution and to allow them to be incinerated at the Safety-Kleen subpart X facility, which only accepts items that are explosive hazards); the remaining metal is being manifested as 3X debris dry waste.

b. Addition of a second waste hauling contractor (Ferguson Harbors, Inc.) to Paragraph 9.2 to increase the waste disposal transport output for disposal of the wastes from the Memphis Dunn Field facility.

c. Modification of the Treatment/Disposal Cost Analysis shown in Table 13-1 to reflect a higher cost per pound, but a lower weight for the bomb casings to be disposed.

d. Modification of the footer of the T&D plan to read: "Revision 3 Correction 1".

2. These changes were mandated by a decision by Onyx Environmental Services (the initial company selected to process the burster tubes that were previously confirmed as free from explosives) to require that the burster tubes be shredded prior to incineration, at a higher cost for disposal. Selection of an

CEHNC-CE-DC (200-1c)
SUBJECT: Correction 01 to the Memphis Dunn Field Transportation and Disposal Plan for Disposal of Wastes Generated from the Chemical Warfare Materiel (CWM) Investigation/Removal Action, Dunn Field, Former Defense Distribution Depot, Memphis, TN

alternate disposal contractor capable of processing 3X material was preferred.

3. If you have any questions regarding this submittal, please contact Mr. Robert Torstrick at 256-895-1512, or Mr. Charles Twing, Program Manager, at 256-895-1543.

Encl

HARRY L. SPEAR
COL, EN
Commanding

CF (w/encl):
Headquarters, U.S. Army Corps of Engineers, ATTN: CESO-E (Mr. Harris Yeager), 441 G Street NW., Washington, D.C. 20314-1000

CF (wo/encl):
Headquarters, U.S. Army Technical Center for Explosives Safety, Defense Ammo Center, ATTN: SIOAC-ESM/Mr. Kurt Clasen, 1C Tree Road, Building 35, McAlester, OK 74501-9053
Office of the Chief of Staff, Army Safety Office, ATTN: DACS-SF/Mr. Jim Patton, 200 Army Pentagon, Washington, DC 20310-0200
Chairman, Department of Defense Explosives Safety Board, ATTN: DDESB-KO, 2461 Eisenhower Avenue, Alexandria, VA 22331-0600
Memphis Depot Caretaker, ATTN: Mr. John De Back, 2163 Airways Boulevard, Suite 137, Memphis, TN 38114-5210
Commander, SBCCOM (ECBC)/ATTN: AMSSB-RCB-C/ Mr. John Ditillo, Building E 3942, APG, MD 21010-5424
Commander, USATEU/ATTN: SMCTE/Mr. Dalys Talley, APG, MD 21010-5423
Product Manager for Non-Stockpile Chemical Materiel, ATTN: SFAE-CD-N/Mr. Tom Hoff, Aberdeen Proving Ground, MD 21010-4005

CEHNC-OE-CC (200-1c)
SUBJECT: Correction 01 to the Memphis Dunn Field Transportation and Disposal Plan for Disposal of Wastes Generated from the Chemical Warfare Materiel (CWM) Investigation/Removal Action, Dunn Field, Former Defense Distribution Depot, Memphis, TN

U.S. Environmental Protection Agency, ATTN: Mr. Turpin Ballard, Federal Facilities Branch, 61 Forsyth Street SW., Atlanta, GA 30303
Tennessee Department of Environmental and Conservation, ATTN: Mr. Jordan English, 2510 Mt. Moriah Road, Suite E645, Memphis, TN 38115-1520
Commander, U.S. Army Engineer District, ATTN: CESAM-PM-TA, (Mr. Harold K. Braun, Jr.), P.O. Box 2288, Mobile, AL 36628-0001

1.0 Introduction

1.1 This plan provides guidance on solid waste management for waste generated from the Chemical Warfare Materiel Investigation/Removal Action at Dunn Field, Memphis, Tennessee. These procedures meet or exceed the directives outlined by the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Resource, Compensation, Liability Act (CERCLA) on waste disposal policies and the appropriate disposition of chemical warfare materiel (CWM) as directed by Toxic Chemical Agent Safety Standards, DA-PAM 385-61.

1.2 Approval of this plan requires joint-concurrence of the U.S. Army Corps of Engineers, Huntsville Center (CEHNC), Base Realignment and Closure (BRAC) Cleanup Team (BCT), and UXB International, Inc. (UXB).

1.3 This plan does not supercede, amend, or otherwise change the approved Dunn Field Work Plan or Site Safety Submission. Should a conflict occur, the approved work plan and/or site safety submission shall have overriding precedence.

1.4 UXB uses procedures directed by 40CFR Part 261 and ECBC chemical warfare agent detection criteria to evaluate solid waste derived from this project.

2.0 Dunn Field Contaminant Categories and Treatment/Disposition

2.1 Waste Stream Categories. Solid wastes generated from this project are classified in nine (9) categories. These categories are represented below.

2.1.1 Soil within 40CFR Guidelines but Contains Foreign Debris. This soil is within TCLP standards, as defined in 40CFR Part 261, contains foreign debris, but does not contain mustard or mustard degradation by-products. Foreign debris may consist of broken glass, wood, construction debris, or metal fragments.

2.1.1.1 Disposition. Soil that passes TCLP analysis will be removed from the site and placed in a Subtitle D (non-hazardous waste) landfill owned by Waste Management in Tunica, MS. Soil that fails to meet HTRW criteria, as defined in 40CFR Part 261, will be placed in a Subtitle C (hazardous waste) Landfill operated by Waste Management in Emelle, AL.. After any necessary treatment, by the Emelle facility, to meet land disposal restriction (LDR) treatment standards in 40 CFR Part 268, the soil will be manifested per 40 CFR Part 262 and LDR notice requirements of Part 268, will be followed.

2.1.2 HTRW Contaminated Soil. Soil that contains concentrations of HTRW constituents above regulatory compliance levels per 40CFR 261 but does not contain mustard or mustard degradation by-products.

2.1.2.1 Disposition. This soil will be removed from the site and placed in a Subtitle C Landfill operated by Waste Management in Emelle, AL. After any necessary treatment, by the Emelle facility, to meet land disposal restriction (LDR) treatment standards in 40 CFR Part 268, the soil will be

manifested per 40 CFR Part 262 and LDR notice requirements of Part 268, will be followed.

2.1.3 Mustard Degradation By-Product Contaminated Soil. This soil contains no mustard but does contain detectable levels of mustard degradation by-products. Mustard degradation by-products include 1,4-thioxane, 1,4 dithiane, and/or thiodiglycol (TDG). These constituents are not listed, as a hazardous waste in Part 261

Treatment and Disposition. Clean Harbors Environmental Services at Kimball, Nebraska, will incinerate this soil. Residue ash will be disposed of in a dedicated monofill landfill at the incineration facility.

2.1.4 Mustard Contaminated Soil. This soil contains any detectable amount of mustard.

2.1.4.1 Treatment and Disposition. Clean Harbors Environmental Services at Kimball, Nebraska, will incinerate this soil. Residue ash will be disposed of in a dedicated monofill landfill at the incineration facility.

2.1.5 3X Material 3X Material (a.k.a. XXX) is an agent symbol to identity an item that have been surface decontaminated and tested by approved methods to contain no CWM residue. The recovered 29 German chemical warfare bomb casings and metallic debris recovered from pits known to have at one time contained mustard agent (Sites 24-A and 24-B) qualify as 3X material.

2.1.5.1 Treatment and Disposition. Safety Kleen. Inc. will incinerate all 3X material in accordance with DA PAM 385-61. Ash residue will be placed in a Subtitle C landfill located near Wayinoka, OK

2.1.6 Investigative Derived Waste (IDW) Water. The waste stream consists of water collected as a result of decontamination of personnel and equipment, rain runoff recovered from excavation pits, and wash water derived from washing vehicles that have operated inside the VCS. This water sampled for HTRW constituents per 40CFR Part 261 and for CWM by ECBC protocols. This water does not contain mustard or mustard degradation by-products.

2.1.6.1 Treatment and Disposition. The below paragraphs describe treatment and disposition of non-contaminated and contaminated water.

2.1.6.1.1 Non-Contaminated Water. Chemical analysis of the water will be performed to determine if the water is within limits specified in 40CFR Part 261 and ECBC will confirm the water totally free of CWM and mustard degradation by-products. A letter, with attached TCLP sample analysis and ECBC's CWM clearance report, will be submitted to the City of Memphis Public Works Department (Mr. Akil Al-Chokahachi – [901-353-2392]). The letter text will address the source of the water, quantity, and request authorization to discharge this specific water into the Memphis Public Sewer system at a

discharge location and discharge flow rate. If water is not authorized for discharge in the Memphis Sewer System, it will be handled in accordance with paragraph 2.1.6.1.2 of this document.

2.1.6.1.2 Contaminated Water. Water containing unacceptable levels of HTRW will be treated and disposed of in a Subtitle C landfill operated by Waste Management, Inc. in Emelle, AL.

2.1.7 Mustard Degradation By-Product Contaminated Water. This water contains detectable levels of mustard degradation by-products.

2.1.7.1 Treatment and Disposition. Clean Harbors Environmental Services at Kimball, Nebraska, will incinerate this water. Residue solids will be disposed of in a dedicated monofill landfill at the incineration facility.

2.1.8 Mustard Contaminated Water. Mustard contaminated water contains any detectable level of mustard agent.

2.1.8.1 Treatment and Disposition. This water will be incinerated using a furnace injection process at Clean Harbors Environmental Services at Kimball, Nebraska, and the small quantity of residue (solids) will be disposed of in a dedicated monofill landfill at the incineration facility.

2.1.9 Ordnance and Explosives (OE). Ordnance and explosives may be recovered during excavation at Dunn Field. These items include unexploded ordnance (UXO), live explosive components, such as fuzes, detonators, boosters, explosive fillers, and/or ordnance components containing explosives or explosive residue.

2.1.9.1 Treatment and Disposition. Open detonation is not permitted at Dunn Field or any property owned or operated by the Memphis Depot Caretaker Division. OE items containing less than 20 pounds of TNT equivalent explosives/explosive residue or other energetic material will be incinerated by Safety-Kleen (Colfax), Inc., located in Colfax, Louisiana.

2.2 Disposition Path Table For Waste Streams. Refer to Table 2-1 for disposal of contaminated waste in table format.

Table 2-1 Disposition Paths for Waste Streams

Disposition Path for Waste Streams			
Category	**Treatment**	**Disposal**	**Comment**
1 Soil tested for Regulatory Compliance Per 40CFR Part 261 but contains Foreign Debris	1a Soil that passes TCLP	Subtitle D Landfill Waste Management Landfill, Tunica, MS Permit No. SWO720010459	After treatment to meet LDR standards
	1b. Soil that fails TCLP	Subtitle C Landfill Waste Management Landfill Emelle, AL RCRA Part B Permit No, ALD000622464	
2. HTRW Contaminated Soil	N/A	Subtitle C Landfill Waste Management Landfill Emelle, AL RCRA Part B Permit No, ALD000622464	After treatment to meet LDR standards
3 Mustard Degradation by-product Contaminated Soil	Incineration Clean Harbors Kimball, NE Permit No NEO203238 EPA ID NED981723513	Monofill Landfill At Clean Harbors Site, Kimball, NE Permit No NEO203238	
4 Mustard Contaminated Soil	Incineration Clean Harbors Kimball, NE Permit No. NEO203238 EPA ID NED981723513	Monofill Landfill At Clean Harbors Site, Kimball, NE Permit No. NEO203238	
5. 3X Material	Incineration Safety-Kleen Colfax, Louisiana RCRA Part B, Subpart X Permit: LAD981055791	Subtitle C Landfill Safety-Kleen Lorne Mt. 5 miles East and 1 mile North of Jct. 281 & 412 Waynoka, OK EPA Permit No OKD065438376	All 3X material treatment will meet or exceed DA Pam 385-61 requirements
6. Investigative Derived Waste Water	6a. Non-Contaminated	Discharge into Memphis Sewer System Treatment by sanitary sewer treatment	Authorization MUST be granted by Memphis Public Works
	6b. Contaminated Water	Subtitle C Landfill Waste Management Landfill Emelle, AL RCRA Part B Permit No, ALD000622464	No comment
7 Mustard Degradation By-Product Contaminated Water	Incineration Clean Harbors Kimball, NE Permit No NEO203238 EPA ID NED981723513	Monofill Landfill At Clean Harbors Site, Kimball, NE Permit No NEO203238	A waste disposal license was issued for the ash monofill by the Nebraska Dept of Environmental Quality (NDEQ)
8 Mustard Contaminated Water	Incineration Clean Harbors Kimball, NE Permit No. NEO203238 EPA ID NED981723513	Monofill Landfill At Clean Harbors Site, Kimball, NE Permit No NEO203238	A waste disposal license was issued for the ash monofill by the Nebraska Dept of Environmental

Disposition Path for Waste Streams			
Category	**Treatment**	**Disposal**	**Comment**
			Quality (NDEQ)
9. Ordnance and Explosives	Incineration Safety-Kleen Colfax, Louisiana RCRA Part B, Subpart X Permit: LAD981055791	Total Consumption through incineration	Thermal treatment will be in compliance with DA PAM 385-61 to fulfill conversion of 3X to 5X material A licensed explosive transporter will provide transportation

3.0 Soil and Aqueous Sampling for CWM.

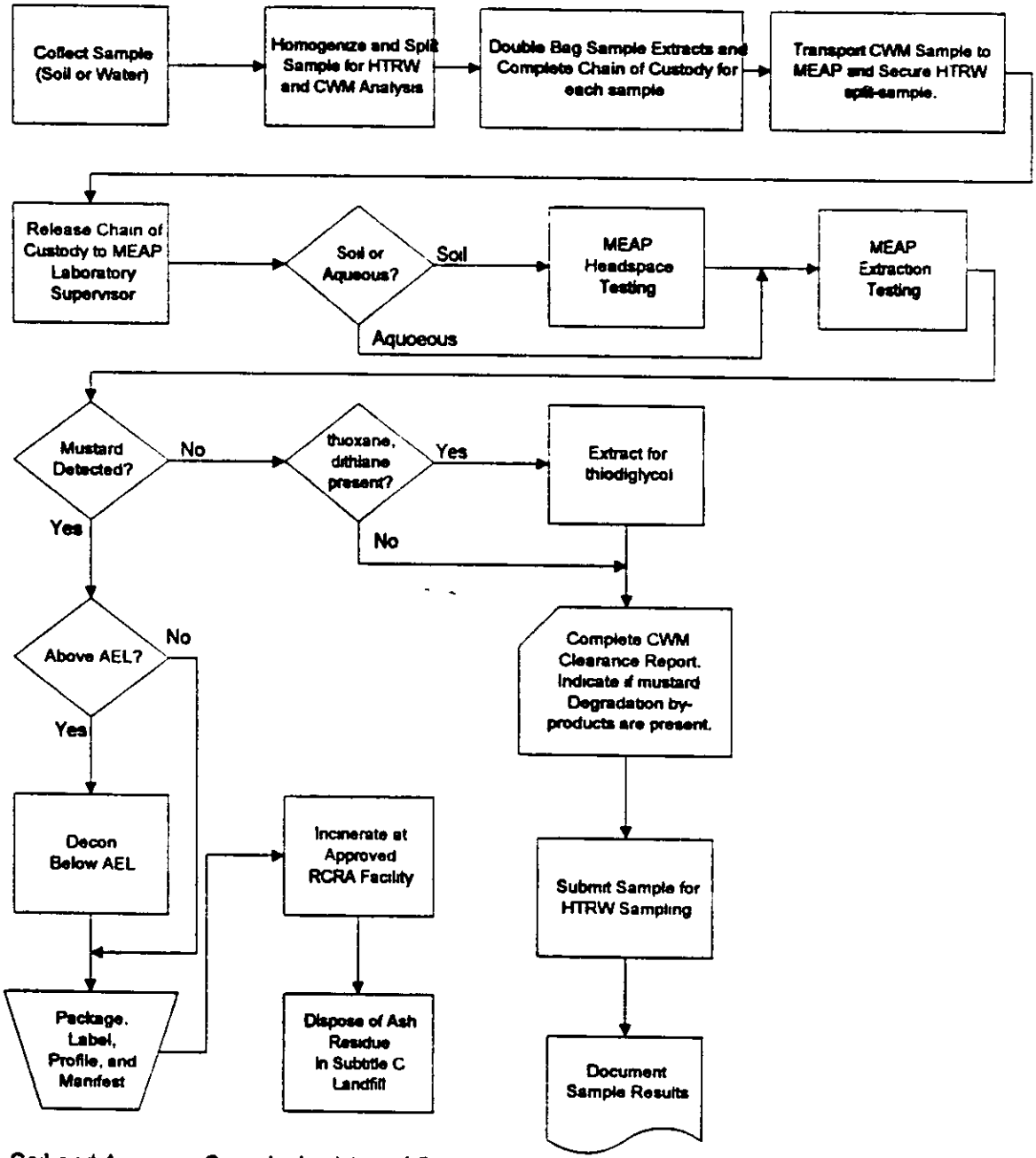
3.1 Purpose. The intent of CWM sampling is to properly profile the waste characteristics of the excavated soil and aqueous solutions to ensure appropriate disposition of soil/debris/water. The monitoring will provide information documenting the cleanup effort by indicating low-level CWM contamination areas. The results will also ensure that soils and aqueous samples may be safely shipped to off-site laboratories for further HTRW analyses. All soil samples will be analyzed for the presence of distilled mustard (HD). If the soil analysis detects the presence of HD, no further CWM testing will be performed, as this soil will be classified as mustard contaminated soil. Soils that do not contain mustard will be further tested for 1,4-dithiane, and 1,4-thioxane (1,4-oxathiane). If the compounds 1,4-dithiane or 1,4-thioxane are detected in the soil extract then the sample needs to be tested for TDG. ECBC's Mobile Environmental Analytical Platform (MEAP) will conduct the analysis on-site. The MEAP is a self-contained laboratory capable of providing all laboratory functions necessary to analyze soil and water samples for these chemicals. In the event that MEAP instrumentation is not functioning, ECBC team will package and ship the samples to the ECBC Laboratory in Edgewood, Maryland, for analysis.

3.2 Soil Samples. UXB determines soil-sampling locations and collects the soil samples according to the procedures set in the work plan. UXB double bags the samples, issues a unique identification number, transports the samples to the ECBC site representative, and ensures the chain-of-custody procedures are implemented and followed. The double-bagged soil samples will be cleared by the MINICAMS or Depot Area Air Monitoring System (DAAMS) Soil Headspace Procedure defined in the Site Safety Submission, ECBC Air Monitoring Plan, (Section 3.3.4). Once cleared, the sample will be transported to the on-site MEAP or (if necessary) shipped by Federal Express to the ECBC laboratory in Edgewood, Maryland, for soil extraction testing.

3.3 Aqueous Samples UXB determines the aqueous sample locations. Aqueous samples are collected from water generated through decontamination procedures, rainwater that may migrate into the excavation pit, and from washing vehicles used inside the vapor containment structure (VCS). The samples are tested with M8 paper to preclude transporting neat agent material to the laboratory. The aqueous samples are extracted similarly to the procedure for soils and analyzed by injection into a Hewlett-Packard Gas Chromatograph/Mass Spectrometer. If the initial analysis detects the presence of HD, no further CWM testing will be performed. If HD is not present, the soil extract is tested for 1,4-dithiane, or 1,4-thioxane. The presence of either of these compounds will require a subsequent extraction of the sample for TDG. If the initial analysis does not detect the presence of 1,4-dithiane or 1,4-thioxane, then the TDG extraction is not conducted.

3.4 Sampling Process. Refer to Chart 3-1 for flow-process of CWM/HTRW Sampling

CWM/HTRW Sampling Process



3.5 Soil and Aqueous Sample Analytes of Concern and Detection Limits. Refer to Table 3-1 for Soil and Aqueous Sample Analytes of Concern and Detection Limits

Table 3-1 Analytes of Concern and Detection Limits

Analyte	Method of Analysis	Detection Limit Soil Matrix (ppb)	Detection Limit Aqueous Matrix (ppb)
HD	1	200	200
1,4-Dithiane	1	200	200
1,4-Thioxane	1	200	200
Thiodiglycol	2	250	250

1: "Application of Gas Chromatography/Mass Spectroscopy (GC/MS) for the Detection of Military Agents Mustard and Mustard Breakdown products 1,4-Dithiane and 1,4-Thioxane in Water and Soil"
2: "Application of Gas Chromatography/Mass Spectroscopy (GC/MS) for the Detection of Military Agent Breakdown Product Thiodiglycol in Soil and Water"

3.6 Below Detection Limits (BDL) For Mustard. Due to higher instrument detection standards set by ECBC, MEAP instruments are capable of identifying the presence of mustard below regulatory detectable limits, as defined in Table 3-1. The enhanced chemical detection capability, of these instruments, permits quantifiable detection of mustard concentrations in soil to 100 parts per billion (ppb) and near 0.1 ppb in aqueous samples. The Dunn Field Chemical Warfare Matenel Investigation/Removal Action Contract specifications require site removal and incineration of soil or water containing any detectable amount of mustard agent.

3.7 Non-Detect Limits For Mustard (ND). The non-detect limit for mustard in soil is below 100 ppb and below 0.1 ppb for aqueous solutions (water).

4.0 Soil and Aqueous Sampling for HTRW

4.1 Toxicity Characteristic Leaching Procedure (TCLP) Sampling. A sample is collected for analysis from each 20 cubic yard pile of soil excavated. The contracted laboratory tests for reactivity, corrosivity, and ignitability on unextracted waste samples and an arsenic count is performed on TCLP extract.waste samples.A water sample is also collected for each 500 gallons of Investigative Derived Waste (IDW) water generated. These samples are analyzed for Target Compounds List (TCL) volatiles, TCL semi-volatiles & pyridine, TCL pesticides, TCL PCBs, herbicides (2 compounds), Target Analytes List (TAL) metals, cyanide, sulfide, pH, and flashpoint. Samples will be sent to an independent laboratory. Severn-Trent or ETC is currently testing samples collected for these sample sources.

4.2 Testing Protocols. Table 4-1 identifies the constituent of concern for each test category and the laboratory testing method.

Table 4-1 Testing Protocols

Testing Protocols	
IDW Water	
Constituent	*Analytical Method*
Cyanide	9012A
Flash Point	1010
Sulfide	371.1
pH - aqueous	9040
Mercury	7470A
Metals ICP-total	6010B
Metals ICP Trace-total	6010B
Herbicides	8151A
TCL PCBs	8082
TCL Pesticides	8081A
TCL BNA & Pyridine	8270C
TCL VOA	8260B
Solids	
Constituent	*Analytical Method*
TCL VOA	8260B
TCL BNA	8270C
TCL Pesticides	8081A
TCL PCBs	8082
TAL Metals ICP Trace	6010B
Mercury	7471A
Cyanide	9012A
TCLP	
Constituent	*Analytical Method*
TCLP Volatile	8260B
TCLP Semivolatiles	8270C
TCLP Pesticides	8081A
TCLP Herbicides	8151A
TCLP ICP Metals	6010B
TCLP Mercury	7470A
Arsenic	6010A

4.3 TCLP Soil Analysis Laboratories. At the onset of the Dunn Field Project, Severn-Trent Laboratories performed all HTRW water and soil analysis. In mid-February, the task of analyzing TCLP soil samples was assigned to Environmental Testing & Consulting, Inc. (ETC). Severn-Trent and ETC perform the following sampling functions.

4.3.1 Severn-Trent Laboratories:

- TCLP Water analysis (for each 500 gallons of investigative derived waste [IDW] water)

4.3.2 Environmental Testing & Consulting, Inc. (ETC)

- TCLP Soil analysis (for each 20 cubic yards of soil excavated)

4.4 TCLP Sampling Extraction Method. Laboratory standard extraction method 1311 is utilized for the TCLP extraction of samples and for extraction, followed by subsequent analysis of TCLP volatiles, TCLP semi-volatiles, TCLP pesticides, TCLP herbicides, and TCLP metals.

4.5 Sampling TCL, TAL, Methods, RL, and Compounds. Refer to Annex B, for the Target Compounds List (TCL), Target Analytes List (TAL), and specific lists of compounds, methods, and reporting limits associated with sample protocols for this Project.

4.6 Analytical Review. The TCLP and solid sample results are provided to the UXB chemist; Defense Logistics Agency (DLA) Dunn Field Caretaker; and CEHNC environmental engineers for review. Final soil disposition is determined by this joint review

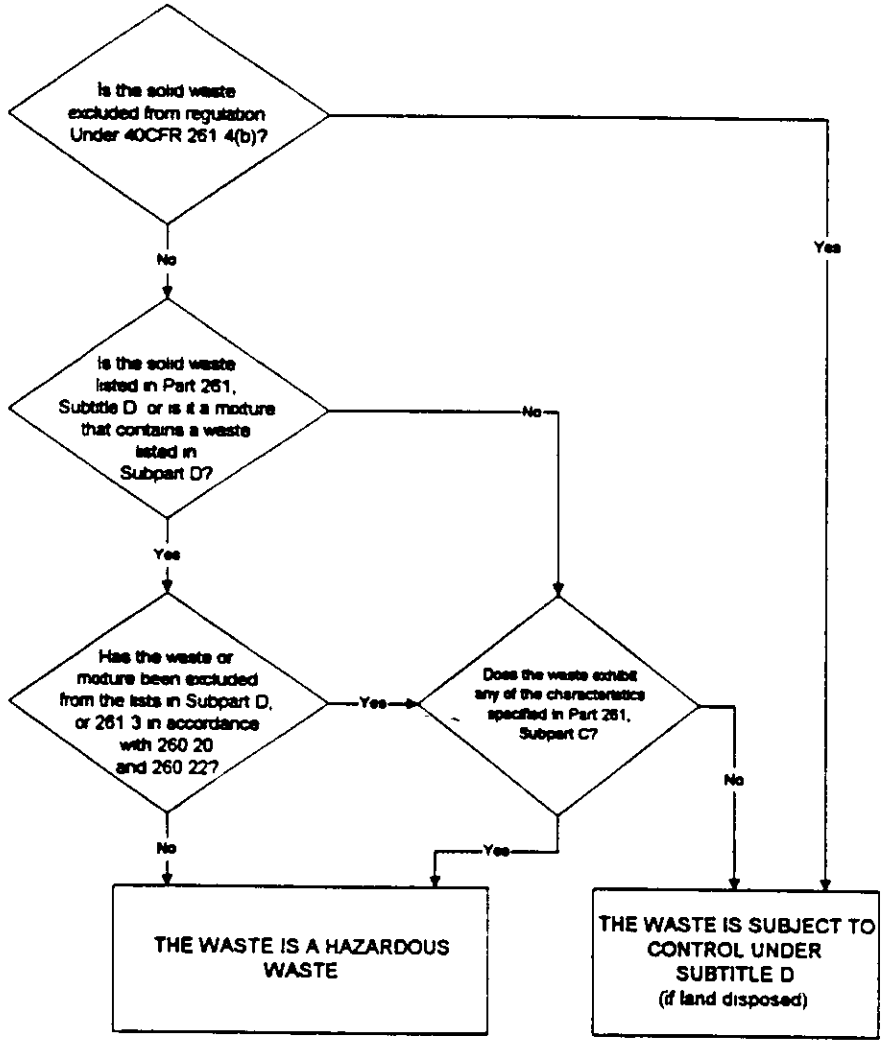
5.0 Soil Characterization

5.1 General. All soil excavated at Dunn Field sites must be characterized for chemical content, and the results compared with a set of criteria to determine its ultimate disposition. There are several types of chemical analyses required, and during the analyses, the soil must be held on site. Only soil that meets all of the criteria for cleanliness will be allowed to remain on-site. All other soils will be disposed of off-site by one of the approved methods outlined in the document.

5.2 CWM/Mustard Degradation Characterization. The first criteria, is that the soil contain no detectable mustard or mustard degradation by-products. Soil removed from the pit is sampled and tested for mustard and mustard degradation by-products before it is removed from the vapor containment structure (VCS). Any soil containing mustard above the airborne exposure limit (AEL) must be decontaminated, within the VCS, until the AEL is below one. Soil will not depart the VCS until this level of protection is confirmed.

5.3 Waste Determination If the soil meets the criteria of no mustard or mustard degradation by-products, the soil is sampled and the sample is sent off-site for HTRW characterization. The samples are extracted using EPA TCLPs. The extract is analyzed for metals, volatiles, semivolatiles, herbicides, pesticides, and pH. Hazardous wastes determination are determined by the processes defined in Flow Chart 5.1

Flow Chart 5-1 Waste Determination



5.4 Data Quality Control. The UXB Chemist evaluates data packages (laboratory raw data) to ensure that data quality is maintained and the data reported represents the actual soil analytical results.

6.0 Hazardous Waste Checklist.

6.1 Dunn Field Hazardous Waste Checklist. Refer to Annex C for a detailed list of hazardous waste generator steps taken by UXB and CEHNC and the generator.

7.0 Profiling

7.1 Profiling Responsibility The Quality Control (QC) Manager shall be responsible for reviewing the pre-qualifications information to determine how to characterize waste streams for profiling. The evaluation shall be based on the highest range within a composite samples and a review and comparison of the following determinations.

7.1.1 CERCLA Determination. The QC Manager shall determine if the waste is originated from a CERCLA site. CERCLA regulations do apply to all waste generated at the Dunn Field.

7.1.2 Waste Generation Determination. The QC Manager shall have generator knowledge and certification on how waste was generated.

7.1.3 Required Supporting Documentation. The following supporting documentation is provided to the QC Manager. This information includes, but is not limited to:

1. Manufacturer's information
2. Material Safety Data Sheets (MSDSs)
3. Physical characteristics
4. Analytical data gained from testing and/representative sample(s)
5. Physical Description
   - Phases/Layers
   - Color
6. Physical State
   - Density
7. pH (if liquid)
8. Free Liquid (Visual Determination)
9. Compatibility Test
10. Water Reactivity
11. Ignitability

7.1.4 40CFR 261.4(b). The QC Manager shall determine if the solid waste is excluded from regulation under 40CFR 261.4(b)

7.1.5 40CFR Part 261, subpart D. The QC Manager shall determine if solid waste is listed under 40CFR part 261, subpart D, or if it is a mixture that contains a waste listed in subpart D.

7.1.6 CFR Exclusion Determination. The QC Manager shall determine if the waste or mixture has been excluded from the list in subpart D or 40CFR 261.3 in accordance with 40CFR 260.20 or 260.22.

7.1.7 Characteristic Determination The QC Manager shall determine if the waste exhibits any of the characteristics specified in 40CFR part 261, subpart C.

7.1.8 USEPA Waste Codes. The QC Manager shall determine any USEPA waste codes that may apply.

7.1.9 Shipping Name. The QC Manager shall determine proper shipping name through the hazardous materials table – DOT49CFR.

7.1.10 Shipping Manifest. The QC Manager shall determine proper shipping manifest to use in accordance with DOT, state and USEPA guidelines, i.e., Reference DOT 49 Code of Federal Regulations (CFR) and USEPA 40CFR.

7.1.11 Land Disposal Restriction Determination If applicable, The QC Manager shall provide Land Disposal Restriction (LDR) forms.

8.0 Manifest. All manifests will be in strict compliance with DOT 49CFR and USEPA 40CFR. Refer to Annex D for samples of manifest for each hazard category

9.0 Transportation

9.1 Hazardous Wastes Transport Contractor. Action Resource, Inc will transport contaminated water, soil, and debris from Dunn Field to an approved treatment facility and/or landfill. Annex E contains Action Resource's Permit List and Waste Transport Permits for Alabama, Tennessee, and Texas. Mississippi and Nebraska do not require an actual copy. They accept Action Resource's EPA number ALR 000007237.

9.2 Waste Material Loading Standing Operating Procedures. Action Resource, Inc. and/or Ferguson Harbors, Inc. will accomplish loading of waste material for transport. Wearing of proper personal protective equipment (PPE), Occupational Safety and Health Administration (OSHA) required training, OSHA required medical exams for personnel directly involved with hazardous waste, and the UXB Site Safety Officer and the CEHNC Safety Specialist will strictly enforce monitoring requirements. Standing Operating Procedures (SOPs) for loading waste material for off-site transport will be reviewed by CEHNC prior to loading operations. The SOP will detail PPE, monitoring, dust control measures, emergency notification, safety measures, and proper securing of load for transport. All workers must present in-date OSHA required credentials for working with hazardous waste. The UXB Site Safety Officer will inspect these documents prior to commencement of waste loading operations. Additional information regarding waste transporter contractors may be obtained by contacting:

Ms. Carolyn Payne
Action Resource, Inc.
355 County Road 513
Hanceville, AL 35077
1-800-228-8845

and

Mr. Aaron Clark
Ferguson Harbors, Inc
503 Winchester
Memphis, TN 38116
901 398 3295

9.3 Inspection. All required transportation forms will be accurately completed and inspected by the QC Manager.

9.4 Release of Manifest. Mr. Mike Lee or Mr. Jack Kallal, Defense Logistics Agency, will review, require corrections (if necessary), and sign the waste manifest as the generator.

10.0 Treatment Methods

10.1 Combustion System for 3X Material.

10.1.1 Thermal Oxidation Unit The combustion system and ancillary equipment are called the Thermal Oxidation Unit (TOU). The TOU is a rectangular fluidized bed incinerator consisting of three separate zones

called the primary combustion chamber (PCC), the secondary reaction chamber (SRC), and the prequench chamber. The TOU is lined with refractory and has inside dimensions of 7 5 feet wide by 15 feet long by 59 feet high. The cross-section area of the TOU is 112.5 square feet.

10.1.2 Primary Combustion Chamber. The PCC is the fluidized bed portion of the TOU. The auxiliary fuel, fluidizing air, and the four main waste feeds are introduced into the system and are thermally oxidized in the PCC. Within the PCC, granular refractory material is fluidized with air from the fluidizing air system and distributed uniformly across the bed through the air distribution manifold in the bottom of the vessel. The waste is injected into the fluidized bed (approximately 48-60" deep) through nozzles spaced around the bed zone. The fluidizing velocity is maintained between 2-9 feet per second. Given the range of bed depth and fluidizing velocity, the residence time within the PCC is between 0.4 seconds and 2.5 seconds. The SRC allows additional reaction time for complete combustion of the off gases from the PCC. The SRC extends 33 feet above the fluidized bed zone. To ensure adequate residence time in the SRC, the NDEQ has set the permit limit for maximum fluidizing velocity at 13 feet per second. The SRC velocity typically ranges between 8-13 feet per second. Given the height and range of SRC velocity, the residence time in the SRC is between 2.5-4.1 seconds Therefore, the total residence time within the combustion chamber is between 3.1-6.6 seconds.

10.1.3 Prequench Chamber. The prequench chamber consists of the top 16 feet of the TOU. The prequench chamber cools and conditions the combustion gases exiting the TOU prior to entering the off-gas treatment system. Water is atomized into the combustion gases to cool the gases to a temperature ranging from 950° F to 1300° F.

10.1.4 Destruction Efficiency. The TOU has demonstrated a destruction and removal efficiency of 99.9999% for several hard-to-destroy principle organic hazardous constituents in the Trial Burn performed in 1994 and subsequent annual performance tests.

10.2 Incineration of Mustard Contaminated Soil and Mustard Degradation By-Product Contaminated Soil. All incineration temperatures shall be continuously monitored to meet the following specification:

10.2.1 Primary Combustion Chamber. The primary combustion chamber (bed) temperature 24 inches above the bubble caps shall be:

10.2.1.1 Thermal Treatment Temperature – Primary Chamber. Material will be exposed to at least 1424 degrees Fahrenheit but no greater than 1630 degrees Fahrenheit, instantaneous.

10.2.2 Secondary Reaction Chamber The secondary reaction chamber (SRC) temperature, at approximately 42 feet above the bubble caps, shall be:

10.2.2.1 Thermal Treatment Temperature – Secondary Chamber. Material will be exposed to at least 1426 degrees Fahrenheit, instantaneous basis.

10.3 Incineration of 3X Material These materials will be subjected to temperatures listed in paragraphs 10.3.1 through 10 3.3.2.

10.3.1 Kiln Temperature. The kiln temperature shall not be less than 1300 degree Fahrenheit (measured at exit).

10.3.2 Secondary Combustion Chamber Temperature Material will be exposed to not less than 2030 degree Fahrenheit with a rolling average and not less than 2012 degree Farhenheit instantaneous.

10.3.3 Secondary Combustion Chamber Material Exposure Duration.

10.3.3.1 Solids. Solids retention in the Kiln is approximately 60 minutes.

10.3.3.2 Gas. Gas entering the secondary combustion chamber are exposed to high temperatures for approx. 2 seconds, total destruction of organics is >99.9999%.

10.3.4 Post-Treatment Land Disposal Restrictions. Since this material is not a RCRA regulated material, there are no Land Disposal Restriction Standards. Refer to 40 CFR 261 and 268.

10.4 Incineration/Disposal of Ordnance and Explosives Items laden with explosives, explosive residue or other energetic material will be incinerated at Safety-Kleen (Colfax) Facility. This facility is the only commercial operation in the United States with a RCRA Part B, Subpart X permit. The treatment temperatures and thermal exposure duration will satisfy DA PAM 385-61's requirement to convert 3X material to 5X material. Prior to off-site shipment, the Louisiana Department of Environmental Quality (LDEQ) will be contacted to obtain approval to bring a CERCLA waste into the State of Louisiana. Point of contact for LDEQ is Ms. Carla Vidrine; phone number (225) 765-0036.

11.0 Treatment Facilities Information

11.1 Onyx Environmental Services, LLC.

11.1.1 General Information This facility is located on about 3,100 acres of agricultural land, just over three miles west of Port Arthur city limits on Texas State Highway 73. Onyx operates a rotary kiln incinerator that is capable of destroying RCRA and TSCA bulk solids, sludges, bulk liquids, combustible containers, and steel drums that meet specifications. The facility received CERCLA status in December 1993.

11.1.2 Permit Data. Onyx permits include RCRA Part B Permit Number HW-50212-001. TSCA authorization was received on June 1, 1992. Their EPA ID number is TXD 000838896.

11.1.3 Point of contact. For additional information regarding Onyx Environmental, LLC, contact:

Ms. Margie Ratcliff
P.O. Box 2563
Port Arthur, TX 77643-2563
(409) 736-4103
email: mratcliff@onyxes.com

11.2 Clean Harbors Environmental Services, Inc.

11.2.1 General Information. The Clean Harbors Kimball facility is an RCRA Part B permitted commercial facility for incineration, treatment, storage, and disposal of hazardous waste. The facility is located on approximately 640 acres near Interstate 80, 5 miles south of the town of Kimball, NE, in the southeast corner of the state. The site includes a 45,000-ton-per-year fluidized-bed incinerator for thermal destruction of hazardous waste, a monofill for disposal of de-listed ash, and an analytical laboratory for waste analysis.

11.2.2 Permit Data. Clean Harbors operates under permit number NEO203238. Their EPA ID is NED981723513.

11.2.3 Point of Contact. Additional information regarding this facility is available from:

Clean Harbors of Kimball
Ms. Danielle Reader
HC54 Box 2B
Kimball, NE 68145
(308) 235-8207
reader@cleanharbors.com

11.3 Waste Management, Inc – Sulphur, LA Landfill.

11.3.1 General Information. The Waste Management Sulphur, LA, Facility provides secure landfill, metals fixation (stabilization, micorencapsulation, macroencapsulation), solidification, acid neutralization, cyanide/sulfide destruction, and waste storage for shipment to incinerator and recycling. Additionally, the facility can accept Non-Hazardous Oilfield Waste (NOW) and recently began operation of a unit for bioremediation of organically contaminated soils and other wastes. The facility is permitted for disposal of RCRA Part II (Part B) material.

11.3.2 Permit Data. EPA RCRA Permit No. LAD000777201-OP-1 was issued to Waste Management Sulpher, LA Landfill effective May 30, 1996.

11.3.3 Point of Contact. Addition information regarding this facility is available from:

Mr. Carl Carlsson
Chemical Waste Management, Inc. (CWM)
7170 John Branon Road
Sulphur, LA 70665
(337) 583-3654 or
email: ccarlsson@wm.com

11.4 Waste Management, Inc – Tunica, Mississippi Landfill.

11.4.1 General Information The Tunica County New Landfill is a Class 1, Subtitle D facility with leachate extraction and a composite liner system consisting of 2 feet of re-compacted clay exhibiting a minimum permeability rating of 10 to the minus 7 (exponential) cm/second overlaid

with HDPE flexible membrane liner with a thickness of 60 mil. The liner system in place exceeds Federal EPA requirements for landfill construction. Therefore, the only limitation is hazardous materials. The landfill will accept friable and non-friable asbestos, petroleum contaminated soils, industrial wastewater sludges, and non-hazardous industrial process wastes as well as Municipal Solid Waste.

11.4.2 Permit Data The United States Environmental Protection Agency issued the Solid Waste Permit (no. SW-0720010459), through an initial assessment, and found the landfill acceptable for receipt of non-hazardous CERCLA off-site waste at the Subtitle D lined section of Tunica Country Landfill.

11.4.3 Point of Contact. Addition information regarding this facility is available from:

Facilities Manager
The Tunica Landfill
6035 Bowdre Road
Robinsonville, MS 38664
(662) 363-2282

11.5 Waste Management, Inc. – Emelle, AL Landfill.

11.5.1 General Information. The Waste Management (WM) facility is located on the east and west sides of Highway 17, to the south of its intersection with Highway 116 in a sparsely populated area of Emelle, Alabama. Only a portion of the property on the east side of Highway 17 is active. The 2,700-acre facility is surrounded by a sparsely developed rangeland. The facility maintains permits related to air discharges, surface water and storm water discharges, and holds a RCRA Part B operating permit with the Alabama Department of Environment Management (ADEM). The facility also maintains a permit with the US EPA to operate in accordance with the Toxic Substances Control Act (TSCA).

11.5.2 Permit Data. The EPA Identification Number for the WM-Emelle facility is ALD000622464 The five-year permit was issued in September 1997.

11.5.3 Point of Contact. Additional information regarding this facility is available from:

Dr. Rodger Henson, Division Manager
Waste Management – Emelle Division
P.O. Box 55
Highway 17N. at Mile Marker 163
Emelle, Alabama 25470
(205) 652-9721

11.6 Safety-Kleen, Inc. – Colfax, Louisiana

11.6 1 General Information. Safety-Kleen (Colfax) is located at 3763 Highway 471, Colfax, Grant Parish, Louisiana. Safety-Kleen purchased this facility from Laidlaw Environmental Services during 1998. The facility spans more than 700 acres The facility is fully permitted to incinerate explosive and reactive materials The explosive incineration facility is capable of incinerating 350 pounds of TNT equivalent per hour. This

facility is the only commercial operation in the U S. with a RCRA, Part B, Subpart X permit.

11.6.2 Permit Data. The Safety-Kleen Colfax Facility is permitted under LDEQ Permit Number LAD981055791.

11.6.3 Point of Contact. Additional information regarding this facility is available from:

Mr. Jim Gallion, Facility Manager
3763 Highway 471
Colfax, LA 71417
(318) 627-3443

11.7 Facility Audit Manuals. Facility audit manuals are available from:

Mr. Frank Johnson
UXB International, Inc.
Dunn Field Project Manager
21641 Beaumeade Circle, Suite 301
Ashburn, Virginia 20147-6002
(703) 625-3792
email: fejohnson@uxb.com

12.0 Table of Authorities

12.1 Waste Management Task and Responsible Persons Table 13-1 identifies specific waste management task and responsible persons for each task.

Table 12-1 Table of Authorities

Table of Authorities			
Task	*Responsible Person*	*Agency*	*Contact Information*
Collect and Submit Samples for CWM Clearance	Mr. Jim Dunkle UXB QC Manager	UXB International, Inc.	(901) 754-4999
Collect and Submit Samples for HTRW Clearance	Mr. Jim Dunkle UXB QC Manager	UXB International, Inc.	(901) 754-4999
Perform CWM Sample Analysis	ECBC Field Supervisor – *Supervisors Rotate bi-monthly*	Edgewood Chemical and Biological Center	(901) 745-4278 /4279
Perform HTRW	Mr. Dave Dunlap	Severn-Trent	(412) 820-2088

Table of Authorities			
Task	*Responsible Person*	*Agency*	*Contact Information*
Sample Analysis	Mr. Nathan Pera	ETC	(901) 327-2750
Evaluate CWM Sample Results	ECBC Field Supervisor – *Supervisors Rotate bi-monthly*	Edgewood Chemical and Biological Center	(901) 745-4278 /4279
Evaluate HTRW Sample Results	Mr. Mike Lee Mr. Harley Heaton Mr. Bob Torstrick	DLA – Environmental Specialist/Safety Manager UXB Chemist CEHNC Project Manager	(901) 544-0612 (703) 724-9646 (256) 895-1512
Prepare Hazardous Waste Profile	Mr. Gerry Girardeau	Innovative Waste, Inc.	(843) 725-2000
Prepare Hazardous Waste Manifest	Mr. Gerry Girardeau	Innovative Waste, Inc.	(843) 725-2000
Approve Treatment/Landfill for Hazardous Waste	Mr. Gerry Girardeau	Innovative Waste, Inc.	(843) 725-2000
Review for Accuracy and Sign Manifest	Mr. Mike Lee or Mr. Jack Kallal	Defense Logistics Agency	(901) 544-0612 (901) 544-0614

13.0 Cost Analysis

13.1 Waste Management Treatment and Disposal Costs. Table 13-1 identifies waste treatment/disposal costs associated with hazardous wastes at Dunn Field.

Table 13-1 Treatment/Disposal Cost Analysis

Treatment/Disposal Cost Analysis				
Treatment Method	**Applicable Hazard Category(s) See Notes**	**Loading/ Shipping Cost**	**Landfill Cost**	**Treatment Cost**
Landfill Subtitle D	1a	Included	$105/cu yd.	N/A
Landfill Subtitle C	1b, 2, 6b	$1,046 per load (~20 cu. yds.)	$215/ cu. yd. $21 AL Tax per cu. yd. (soil) $324.88 per 55 Gallon Drum (water)	N/A
3X Material	5	$2,200	Included	$3.85/lb
Incineration of Mustard Degradation By-Product contaminated (soil and Water)	3, 7	Included	No Charge for residue ash from soil and water. This material will be placed in monofill. 3X Slag will be placed in Landfill Subtitle C (refer to Landfill Subtitle C Costs	$0.50 per lb.

			Column)	
Incineration of mustard contaminated soil and water	4, , 8	Included	Included –Ash from soil will be placed in monofill	$1.06 per lb.
Incineration of Ordnance and Explosives	9	$1,927.00 (two bursters)	N/A	Incineration of Suspected Live FLAM 250 Bursters $3,083.64 each
Discharge into Memphis Sewer System	6a	Time and Materials (minimal costs)	N/A	T & M through existing contract

Note
Category 1a – Soil Within 40CFR Guidelines but Contains Foreign Debris
Category 1b – Soil Outside of 40CFR Guidelines but Contains Foreign Debris
Category 2 – HTRW Contaminated Soil
Category 3 – Mustard Degradation By-Product Contaminated Soil
Category 4 – Mustard Contaminated Soil
Category 5 – 3X Material
Category 6a – Non-Contaminated Investigative Derived Waste (IDW) Water
Category 6b – Contaminated Investigative Derived Waste (IDW) Water
Category 7 – Mustard Degradation By-Product Contaminated Water
Category 8 – Mustard Contaminated Water
Category 9 – Ordnance and Explosives (OE)

14.0 Definition of Terms

14.1 CWM Terms and Definitions. Annex F Contains definitions of CWM unique terms.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE