File: 541.460.000n
M.D.

# THE MEMPHIS DEPOT
# TENNESSEE

## ADMINISTRATIVE RECORD
## COVER SHEET

**AR File Number** 1046

1046 1

File:
M.D. 212.700.000.b

AR 1046

# FINDING OF SUITABILITY TO TRANSFER
# (FOST) #5

**Defense Distribution Depot Memphis, Tennessee**

**Subparcels 36.1, 36.2, 36.3, 36.4, 36.5, 36.6, 36.7, 36.8, 36.9, 36.10, 36.11, 36.15, 36.16, 36.17, 36.18, 36.19, 36.20, 36.21, 36.22, 36.23, 36.28, 36.29**

**June 2010**

# FINDING OF SUITABILITY TO TRANSFER (FOST) #5
## Defense Distribution Depot Memphis, Tennessee
## Subparcels 36.1, 36.2, 36.3, 36.4, 36.5, 36.6, 36.7, 36.8, 36.9, 36.10, 36.11, 36.15, 36.16, 36.17, 36.18, 36.19, 36.20, 36.21, 36.22, 36.23, 36.28, 36.29
## June 2010

### 1. PURPOSE

The purpose of this Finding of Suitability to Transfer (FOST) is to document the environmental suitability of certain parcels or property (the Property) on Dunn Field at Defense Distribution Depot Memphis, Tennessee (DDMT) for transfer consistent with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h) and Department of Defense (DOD) policy. In addition, the FOST includes the CERCLA Notice, Covenant, and Access Provisions and other Deed Provisions (Enclosure 7) and the Environmental Protection Provisions (EPPs) (Enclosure 8) necessary to protect human health or the environment after such transfer.

### 2. PROPERTY DESCRIPTION

The Property consists of 24.5 acres of undeveloped land. The Property was previously used for mineral storage and waste disposal. The Property is intended to be transferred as light industrial/commercial property consistent with the intended reuse of the Property as set forth in the *Memphis Depot Redevelopment Plan* (The Pathfinders, 1997). A site map of the Property is attached (Enclosure 1-1).

### 3. ENVIRONMENTAL DOCUMENTATION

A determination of the environmental condition of the Property was made based upon the *Ordnance and Explosive Waste Chemical Warfare Materiels (CWM) Archives Search Report for Memphis Defense Depot – Findings* (U.S. Army USACE of Engineers (USACE)– St. Louis, 1995), *Ordnance and Explosive Waste Chemical Warfare Materiels Archives Search Report for Memphis Defense Depot – Conclusions and Recommendations* (U.S. Army USACE of Engineers – St. Louis, 1995), *Final Report Chemical Warfare Materiel Investigation and Removal Action at Defense Depot Dunn Field* (UXB International, Inc., 2001), *Dunn Field Record of Decision* (CH2M Hill, 2004), *Disposal Sites Remedial Action Completion Report* (MACTEC, 2006), *BRAC Cleanup Plan Version 12* ($e^2$M, 2008), *Dunn Field Record of Decision Amendment* ($e^2$M, 2009), and *Dunn Field Source Areas Interim Remedial Action Completion Report* ($e^2$M, 2009). The information provided is a result of a complete search of agency files during the development of these environmental surveys.

A complete list of documents providing information on environmental conditions of the Property is attached (Enclosure 2).

### 4. ENVIRONMENTAL CONDITION OF PROPERTY

The DOD Environmental Condition of Property (ECP) category for the Property is ECP Category 4. A list of the subparcels included in this FOST is provided on Table 1 (Enclosure 3). Table 1 also includes sites of potential environmental impact identified by the the Defense Site Environmental Restoration Tracking System (DSERTS) site number. DSERTS is used by the

Defense Logistics Agency (DLA); Department of the Army has implemented an updated database for tracking environmental liabilities, Army Environmental Database-Restoration (AEDB-R), which does not include DSERTS listings.

A summary of the ECP categories for specific buildings, parcels, or operable units and the ECP category definition is provided in Table 1 – Description of Property (Enclosure 3). The Environmental Condition of Property map is attached (Enclosure 1-2).

### 4.1. Munitions and Explosives of Concern (MEC) and Chemical Agent Identification Sets (CAIS)

Based on a review of existing records and available information, there was evidence that Munitions and Explosives of Concern (MEC), including chemical munitions, and Chemical Agent Identification Sets (CAIS), may have been present on the Property. (At the time, such munitions were referred to as Ordnance and Explosives, with chemical munitions and CAIS referred to as Chemical Warfare Material (CWM).) The Property was previously used for disposal of 29 captured German bomb casings used to transport sulfur mustard, mustard and lewisite (L); CAIS; and souvenir munitions (World War II and Korean War era) that could result in the presence of MEC, specifically, discarded military munitions (DMM), or CAIS on the proper.

- The term "MEC" means military munitions that may pose unique explosives safety risks, including: (A) unexploded ordnance (UXO), as defined in 10 U.S.C. §101(e)(5); (B) DMM, as defined in 10 U.S.C. §2710(e)(2); or (C) munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard.
- Most CAIS consist of small quantities of various dilute chemical agents (CA) in glass ampoules, vials or bottles that were packed in metal shipping containers or wooden boxes. The K941/2 CAIS consists of neat mustard in 3.5 ounce bottles. The glass vials and bottles can be found packed in their original storage and shipping containers or they may be loose. With the exception of CAIS K941, CAIS, once positively identified as to type, may be considered as Hazardous, Toxic, Radiological Waste and destroyed at a permitted Treatment, Storage, Disposal Facility.

The below munition response sites (MRS) are on the Property.

- Site 1 - Mustard and Lewisite Training Sets Burial Site (CAIS Burial Site)
- Site 24 - Bomb Casings Used to Transport Mustard Agent to Burial Site and Neutralization Pit
- TA-3 - Area of crushed drums containing petroleum hydrocarbons identified during construction of and excavated during the Source Areas RA

In 2000, USACE completed a munitions response investigation that identified two separate disposal pits associated with Site 24. USACE conducted a non time-critical removal action (NTCRA) to reduce or eliminate the potential risk posed by DMM, CAIS and any CA contamination at MRSs 1, 24-A and MRS 24-B. During the removal, USACE recovered 29 captured German bomb casings. USACE evaluated these and determined them to be inert (not pose an explosive hazard). USACE also recovered 5.5 pounds of TNT from 2 suspected live burster tubes. USACE completed the NTCRA in May 2001 (see *Final Report Chemical Warfare Materiel Investigation and Removal Action at Defense Depot Dunn Field* (UXB International, Inc., 2001)).

In August 2003, USACE provided a Statement of Clearance (Enclosure 9) for the completed munitions response. USACE concluded that:

- All MEC reasonably possible to detect had been removed from the Property.
- The Property should be made available for any purpose for which the land was suited.
- Any residual risk should be managed through a deed notice.

In December 2007, during excavation activities for the Dunn Field Source Areas RA at TA-3, environmental contractors unearthed two possible munitions casings. Excavation activities were halted and the site was secured. Personnel from the U.S. Army 22nd Chemical Battalion, Gadsden, Alabama, responded and determined the casings were inert. The Memphis Police Department Bomb Squad removed one casing for disposal, with the other disposed of as scrap metal with other excavated debris. (See the *Source Areas Interim Remedial Action Completion Report* ($e^2$M, Inc., 2009d) regarding excavations at TA-3.)

A summary of MEC discovered on the Property is provided in Table 4 – Notification of Munitions and Explosives of Concern (Enclosure 6). A map showing the excavation locations is attached (Enclosure 1-3). Given the Property's past use, the Deed for the Property will include the Table 4- Notification of MEC, and a MEC Notice will be included in the CERCLA Notice, Covenant, and Access Provisions and Other Deed Provisions (Enclosure 7).

### 4.2. Environmental Remediation Sites

A list of the 31 remediation sites located on the Property is provided below. These are identified by the DSERTS site number.

- Site 1 - Mustard and Lewsite Training Sets Burial Site
- Site 2 - Ammonia Hydroxide and Acetic Acid Burial Site
- Site 3 - Mixed Chemical Burial Site
- Site 4 - POL Burial Site
- Site 5 - Methyl Bromide Burial Site A
- Site 6 - 40,037 units of eye ointment
- Site 7 - Nitric Acid Burial Site
- Site 8 - Methyl Bromide Burial Site B
- Site 9 - Ashes and Metal Burial Site
- Site 10 - Solid Waste Burial Site
- Site 11 - Trichloroacetic Acid Burial Site
- Site 12 - IRP 12 and IRP 12.1/Sulfuric and Hydrochloric Acid Burial
- Site 13 - Mixed Chemical Burial
- Site 14 - Municipal Waste Burial Site B
- Site 15 - Sodium Burial Sites)
- Site 16 - Unknown Acid Burial Site
- Site 17 - Mixed Chemical Burial Site C
- Site 18 - Plane Crash Residue
- Site 22 - Hardware Burial Site
- Site 23 - Construction Debris and Food Burial Site
- Site 24 - Bomb Casings Used to Transport Mustard Agent Burial Site and Neutralization Pit

- Site 61 - Buried Drain Pipe Northwest Quadrant
- Site 63 - Fluorspar Storage
- Site 64 - Bauxite Storage, CC-2 Burial Site and IA Site 31
- Site 86 - Food Supplies
- Site 90 - IRP 4.1/POL Burial Site
- Site 91 - IRP 15.1/Sodium Phosphate Burial
- Site 92 - IRP 15.2/14 Burial Pits: Sodium Phosphate, Sodium, Acid, Medical Supplies and Chlorinated Lime
- Site 93 - IRP 16.1/Unknown Acid Burial Sites
- TA-1F - Area of elevated VOCs identified during Source Areas Remedial Design Investigation and excavated as part of the Source Areas RA
- TA-3 - Area of crushed drums containing petroleum hydrocarbons identified during construction and excavated as part of the Source Areas RA

The Army developed DDMT as a military facility in the early 1940s to provide stock control, material storage, and maintenance services. Storage and distribution activities continued until DDMT closed in September 1997. DDMT covered approximately 642 acres and had two components: the Main Installation (578 acres), which included open storage areas, warehouses, military family housing, and outdoor recreational areas; and Dunn Field (64 acres), which included former mineral storage and waste disposal areas. Approximately two-thirds of Dunn Field is grassed. The remaining area is covered with crushed rock and paved surfaces. The Property consists of approximately 24.5 acres on the west side of Dunn Field

In 1990, the U.S. Environmental Protection Agency (USEPA) conducted a Resource Conservation and Recovery Act (RCRA) Facility Assessment of DDMT and prepared a Hazard Ranking System Scoring Package for the facility. In 1992, DDMT was added to the National Priorities List (57 Federal Register 47180 No. 199). In 1995, DDMT was placed on the list of DoD facilities to be closed under the Base Realignment and Closure (BRAC) Act.

Records indicate that chemical munitions, CAIS, chlorinated lime, super tropical bleach, calcium hypochlorite, food stocks, paints/thinners, petroleum/oils/lubricants (POLs), acids, herbicides, mixed chemicals, and medical waste were reportedly destroyed or buried in pits and trenches at disposal sites on the Property. Disposal records and interviews with facility personnel identified specific instances when some waste burials occurred, with the earliest record of burial in 1946.

Between 1993 and 1996, the DDMT collected additional geological and groundwater data to support the *Interim Record of Decision (ROD) for Groundwater at Dunn Field* (DDMT, 1996) that USEPA signed in April 1996. The Interim Remedial Action (IRA) consisted of a system of groundwater recovery wells to create a hydraulic barrier to prevent further migration and to remove contaminated groundwater, and a discharge system connected to the City of Memphis sanitary sewer. Construction of the recovery well system along the western fence line of Dunn Field was completed in September 1998, and the system was fully operational in October 1998. In 1999, the Army installed four additional recovery wells to enhance system performance. These wells became operational in 2001.

The *Five Year Review for Dunn Field* (CH2M Hill, 2003) concluded that over 300 pounds of contaminants had been removed by the IRA from 1998 to 2002. However, the extraction system did not adequately control groundwater flow and plume migration in the fluvial aquifer. Potentiometric surface maps indicated that groundwater was captured in the immediate vicinity of each recovery well, but the capture zones were not connected between wells, and portions of the groundwater plume were able to pass through the voids in the extraction well capture zones. An increase in chlorinated volatile organic compounds (CVOC) concentrations was observed in monitoring wells west of Dunn Field.

The IRA was found to be protective in the short term, because there was no current or planned use of the fluvial aquifer as a drinking water supply and local ordinances restrict installation of private wells. The initial Five Year Review stated that monitoring data from the IRA and the remedial investigation suggested that aquifer restoration could be accomplished more effectively by other technologies rather than expanding the groundwater extraction system. Fully protective remedies for all media were selected in the *Dunn Field Record of Decision* (CH2M Hill, 2004), signed by USEPA in April 2004. The selected remedies from the ROD were being implemented during the *Second Five Year Review* (e2M, 2008), which was completed in January 2008. That review stated the remedies are expected to be protective of human health and the environment upon completion of remedial action, and, in the interim, exposure pathways that could result in unacceptable risks are being controlled and institutional controls are preventing exposure to or ingestion of contaminated groundwater.

The selected remedy in the Dunn Field ROD addressed surface soil, material within disposal sites and associated soil, and CVOCs in subsurface soil and groundwater. CVOCs detected by laboratory analysis of soil samples correlate well with the extent of CVOCs detected during a passive soil gas survey. The apparent clustering of the higher CVOC concentrations correlates with the historical information indicating that the disposal pits and trenches were relatively small and separate. CVOCs have been transported from near the base of the disposal trenches (8 to 10 feet below ground surface [bgs]) to the fluvial aquifer (up to 83 feet bgs).

Studies and monitoring results completed after the Dunn Field ROD led to recommended changes to components of the selected remedy resulting in the *Dunn Field Record of Decision Amendment* ($e^2$M, 2009) that USEPA signed in March 2009.

The major components of the selected remedy from the Dunn Field ROD, as modified by the ROD Amendment, are:

- Excavation, transportation, and disposal of soil and material contained within disposal sites based upon results from a pre-design investigation;
- Soil vapor extraction (SVE) in the fluvial deposits and use of thermal-enhanced SVE in the loess deposits to reduce CVOC concentrations in subsurface soils to levels that are protective of the intended land use and groundwater;
- Injection of zero valent iron (ZVI) within Dunn Field to treat CVOCs in the most contaminated part of the groundwater plume (defined as groundwater having total CVOC concentrations above 1,000 µg/L);
- Use of air sparging with soil vapor extraction (AS-SVE) for the off-Depot groundwater plume;

- Use of excavation, transportation, and off-site disposal (ET&D) in two areas with shallow impacts (a small area of VOC-impacted subsurface soils and an area of buried crushed drums not previously identified);
- Monitored natural attenuation (MNA) and long-term monitoring (LTM) of groundwater to document changes in plume concentrations, detect potential plume migration to off-site areas or into deeper aquifers, and track progress toward remediation goals;
- Implementation of land use controls (LUCs) to restrict land uses and prevent groundwater use, which consist of the following institutional controls: Deed and/or lease restrictions; Notice of Land Use Restrictions; City of Memphis/Shelby County zoning restrictions; and the Memphis and Shelby County Health Department groundwater well restrictions.

To implement the selected remedies for Dunn Field, the Army planned three RAs:

- Disposal Sites RA to include excavation, transportation, and disposal. Sites to be excavated included Sites 3, 10, 13, 90 and the IA 31 area of Site 64 as detailed in *Disposal Sites Remedial Design* (CH2M Hill, 2005). The Disposal Sites RA was completed in 2005 as described in *Disposal Sites Remedial Action Completion Report* (MACTEC, 2006). A map showing the locations of excavation is attached (Enclosure 1-3).
- Source Areas RA to address installation of the fluvial SVE system and loess thermal-enhanced SVE to treat subsurface soils and ZVI injections in groundwater as shown in the *Dunn Field Source Areas Remedial Design* (CH2M Hill, 2007), the *Source Areas Fluvial Soil Vapor Extraction Remedial Action Work Plan* ($e^2$M, 2007), and the *Source Areas Loess/Groundwater Remedial Action Work Plan* ($e^2$M, 2008). The Source Areas RA also included excavation of two subsurface soil areas. TA-1F was identified during the Source Areas Remedial Design Investigation as having CVOC levels above the RGs. TA-3 was discovered during construction of the fluvial SVE system when environmental contractors unearthed an area of buried, crushed drums that contained petroleum hydrocarbons. The fluvial SVE system became operational in July 2007 and the thermal-enhanced SVE in the loess operated from May to December 2008. Together these systems removed approximately 15,500 pounds of CVOCs from the soil eliminating the sources of contamination in the fluvial aquifer groundwater. Groundwater monitoring has demonstrated a reduction in total CVOC concentrations to below 1,000 µg/L, so ZVI injections will not occur. The excavations at TA-1F and TA-3, as well as operations of the fluvial SVE and thermal-enhanced SVE system, are described in the *Source Areas Interim Remedial Action Completion Report* ($e^2$M, 2009). The fluvial SVE system is anticipated to operate until 2012. Fluvial SVE system components (SVE wells, vapor monitoring points, piping, and the SVE control building) will remain in place until operations are complete. A map showing the SVE system and Source Areas RA excavation locations is attached (Enclosure 1-4).
- Off-Depot Groundwater RA to address installation of an AS-SVE system on property northwest of Dunn Field, MNA, LTM and LUCs as shown in the Off-Depot Groundwater Remedial Design (CH2M Hill, 2008) and the *Off-Depot Groundwater Remedial Action Work Plan* ($e^2$M, 2009). Construction of the AS-SVE system began in June 2009 and the system is to be operational in September 2009. It is anticipated to continue operating until 2014.

Groundwater sample results from the 2008 IRA semiannual monitoring events demonstrated that the Source Areas RA was having a significant impact in reducing CVOC concentrations in groundwater. CVOC concentrations in recovery wells and monitoring wells do not exceed 50 micrograms per liter (µg/L) for any single CVOC. Recovery wells RW-5 through RW-9 were shutdown in June 2008 and wells RW-1, RW-1A, RW-1B, RW-2, RW-3, and RW-4 were shutdown in January 2009. The BRAC Cleanup Team (BCT) concurred on permanent shutdown and abandonment of the recovery wells in June 2009.

All environmental soil and groundwater remediation activities on the Property have been completed or are in place and operating properly and successfully. The Property was not remediated to levels suitable for unrestricted use. The Deed will include the following land use restrictions:

- Prevent residential use or other child-occupied facilities (including daycare) on the Property
- Prevent installation of production and consumptive use groundwater wells or drilling groundwater wells in contaminated groundwater associated with the Property

See Dunn Field Record of Decision (CH2M Hill, 2004), *Dunn Field Record of Decision Amendment* ($e^2$M, 2009) and the *Dunn Field Notice of Land Use Restrictions* (USACE, 2009) filed with the Shelby County Register of Deeds on June 11, 2009 for additional information. A summary of the environmental remediation sites is provided in Table 2 – Notification of Hazardous Substance Storage, Release, or Disposal (Enclosure 4).

### 4.3. Storage, Release, or Disposal of Hazardous Substances

Hazardous substances were stored for one year or more and released or disposed on the Property in excess of reportable quantities specified in 40 CFR Part 373. All hazardous substance storage operations have been terminated on the Property. Hazardous substances were, or may have been as a result of burial, released in excess of the 40 CFR 373 reportable quantities at the following sites:

- Site 3 - Mixed Chemical Burial Site
- Site 4 - POL Burial Site
- Site 10 - Solid Waste Burial Site
- Site 11 - Trichloroacetic Acid Burial Site
- Site 12 - IRP 12 and 12.1/Sulfuric and Hydrochloric Acid Burial
- Site 13 - Mixed Chemical Burial
- Site 14 - Municipal Waste Burial Site B
- Site 17 - Mixed Chemical Burial Site C
- Site 64 - Bauxite Storage, CC-2 Burial Site and IA Site 31
- Site 90 - IRP 4.1/POL Burial Site
- TA-1F - Area of elevated VOCs identified during Source Areas Pre-Design Investigation and excavated as part of the Source Areas RA)
- TA-3 - Area of crushed drums containing petroleum hydrocarbons identified during construction of and excavated as part of the Source Areas RA)

The release or disposal of these hazardous substances has been remediated as part of the IRP under CERCLA. (See the *Dunn Field Disposal Sites Remedial Action Completion Report* (MACTEC, 2006) and the *Source Areas Interim Remedial Action Completion Report* ($e^2$M, 2009) for information regarding subsurface soil remedial actions at these sites.) Impacts to groundwater from subsurface soil releases are being addressed by the Source Areas and Off-Depot Groundwater RAs. (See Section 4.2, Environmental Remediation Sites, for additional information.) A summary of the buildings or areas in which hazardous substance activities occurred is provided in Table 2 – Notification of Hazardous Substance Storage, Release, or Disposal (Enclosure 4). A map showing the excavation locations is attached (Enclosure 1-3). The CERCLA 120(h)(3) Notice, Description, and Covenant (Enclosure 7) will be included in the Deed.

### 4.4. Petroleum and Petroleum Products

#### 4.4.1. Underground and Above-Ground Storage Tanks (UST/AST)

There is no evidence that petroleum products were stored in underground or above-ground storage tanks on the Property.

#### 4.4.2. Non-UST/AST Storage, Release, or Disposal of Petroleum Products

There was non-UST/AST storage of petroleum products in excess of 55 gallons for one year or more on the Property. The petroleum was used for the following types of activities: storage prior to shipment only. All non-UST/AST petroleum product storage operations have been terminated on the Property. Petroleum product release or disposal in excess of 55 gallons may have occurred at the following areas:

- Site 4 - POL Burial Site
- Site 90 - IRP 4.1/POL Burial Site
- TA-3 - Area of crushed drums containing petroleum hydrocarbons identified during construction of and excavated as part of the Source Areas RA

The release or disposal of these petroleum products was remediated as part of the IRP. (See *Disposal Sites Remedial Action Completion Report* (MACTEC, 2006) for additional information regarding remediation of releases to subsurface soil at Site 90 (IRP 4.1), and the *Dunn Field Source Areas Interim Remedial Action Completion Report* ($e^2$M, 2009) for additional information regarding remediation of releases to subsurface soil at Sites 4 and TA-3.) Impacts to groundwater from subsurface soil releases are being addressed by the Source Areas and Off-Depot Groundwater RAs.

A summary of the non-UST/AST petroleum activities is provided in Table 3 – Notification of Petroleum Products Storage, Release, or Disposal (Enclosure 5).

### 4.5. Polychlorinated Biphenyls (PCB)

There is no evidence that PCB-containing equipment is or was previously located on the Property.

### 4.6. Asbestos

There are no buildings or structures located on the Property.

### 4.7. Lead-Based Paint (LBP)

There are no buildings or structures located on the Property.

### 4.8. RADIOLOGICAL MATERIALS

There is no evidence that radioactive material or sources were stored or used on the property.

### 4.9. RADON

There were no radon surveys conducted on the property.

### 4.10. OTHER PROPERTY CONDITIONS

Other conditions also exist on the Property. Non-hazardous waste disposal sites remain on the property. These sites were evaluated during the *Dunn Field Remedial Investigation* (CH2M Hill, 2000) and the *Dunn Field Disposal Sites Pre-Design Investigation* (CH2M Hill, 2004) and were found to require no further action.

In addition, grassed areas within Subparcel 36.15 were sprayed with pesticides and herbicides, and railroad tracks within Subparcel 36.15 were sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). These areas were evaluated during the *Dunn Field Remedial Investigation* (CH2M Hill, 2000) and were found to require no further action.

To protect human health and the environment, the Deed will include the following land use restrictions:

- Prevent residential use or other child-occupied facilities (including daycare) on the Property
- Prevent installation of production/consumptive use groundwater wells or drilling groundwater wells in contaminated groundwater associated with the Property

See *Dunn Field Record of Decision* (CH2M Hill, 2004), D*unn Field Record of Decision Amendment* ($e^2$M, 2009) and the *Dunn Field Notice of Land Use Restrictions* (USACE, 2009) filed with the Shelby County Register of Deeds on June 11, 2009 for additional information.

## 5. ADJACENT PROPERTY CONDITIONS

The following other potentially hazardous conditions exist on adjacent property: groundwater contamination along the northern fence line from an off-site, upgradient source. The Tennessee Department of Environment and Conservation (TDEC), in coordination with the USEPA, conducted an investigation to identify the source. To date the source has not been located. The presence of these hazards on adjacent property does not present an unacceptable risk to human health and the environment on the property.

## 6. ENVIRONMENTAL REMEDIATION AGREEMENTS

The following environmental orders/agreements are applicable to the property: *Federal Facilities Agreement between United States Environmental Protection Agency Region IV, Tennessee Department of Environment and Conservation, and United States Defense Logistics Agency at the Defense Distribution Depot Memphis* (effective March 6, 1995); *Record of Decision for Interim Remedial Action for Groundwater at Dunn Field* (DDMT, 1996); *Dunn Field Record of Decision* (CH2M Hill, 2004); and *Dunn Field Record of Decision Amendment* ($e^2$M, 2009).

All remediation activities on the Property, required by such agreement or order, are completed or in place and operating properly and successfully (See Section 4.2 Environmental Remediation Sites). The Deed will include a provision reserving the Government's right to conduct remediation activities (Enclosure 7).

## 7. Regulatory/Public Coordination

The USEPA, TDEC, and the public were notified of the initiation of this FOST. DLA advertised the availability of the FOST for review and provided a public comment period from March 22 through April 20, 2010. No regulatory or public comments were received.

## 8. National Environmental Policy Act (NEPA) Compliance

The environmental impacts associated with the proposed transfer of the Property have been analyzed in accordance with the National Environmental Policy Act (NEPA). The results of the initial analysis are documented in the *Final Environmental Assessment for BRAC 95 Disposal and Reuse for Defense Distribution Depot Memphis, Tennessee* (Tetra Tech, Inc., 1998). The analysis was reviewed to note the current status of remediation, verify continuing consistency with the 1998 EA, and determine whether additional NEPA analysis was warranted. The Finding of No Significant Impact was found to remain valid with respect to this proposed transfer as documented in *Record of Environmental Consideration, Final Transfer of Property, Defense Distribution Depot Memphis, Tennessee* (HDR|e$^2$M, 2010b).

There were no encumbrances or condition identified in the NEPA analysis as necessary to protect human health or the environmental.

## 9. Finding of Suitability to Transfer

Based on the above information, I conclude that all removal or remedial actions necessary to protect human health and the environment have been taken and the Property is transferable under CERCLA section 120(h)(3). In addition, all Department of Defense requirements to reach a finding of suitability to transfer have been met, subject to the terms and conditions set forth in the attached Environmental Protection Provisions that shall be included in the Deed for the Property. The Deed will also include the CERCLA 120(h)(3) Notice, Covenant, and Access Provisions and Other Deed Provisions. Finally, the hazardous substance notification (Table 2) shall be included in the Deed as required under the CERCLA Section 120(h) and DOD FOST Guidance.

Addison D. Davis, IV
Deputy Assistant Secretary of the Army
Environment, Safety, and Occupational Health

10 Enclosures

Encl 1 - Site Maps of Property

1-1. Site Map of Property
1-2. Environment Condition of Property, Dunn Field
1-3. CWM and Disposal Sites RA Excavation Locations
1-4. Source Areas Subsurface Soil Remedy

Encl 2 - Environmental Documentation

Encl 3 - Table 1. Description of Property
Encl 4 - Table 2. Notification of Hazardous Substance Storage, Release, or Disposal
Encl 5 - Table 3. Notification of Petroleum Product Storage, Release, or Disposal
Encl 6 - Table 4. Notification of Munitions and Explosives of Concern
Encl 7 - CERCLA Notice, Covenant, and Access Provisions and Other Deed Provisions
Encl 8 - Environmental Protection Provisions
Encl 9 - Statement of Clearance

# ENCLOSURE 1

# SITE MAPS OF PROPERTY


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W E
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**Figure 1-1**

**SITE MAP OF PROPERTY**

FINDING OF SUITABILITY TO TRANSFER #5

DUNN FIELD
DEFENSE DEPOT
MEMPHIS TENNESSEE

**Projection:** NAD 1927 StatePlane Tennessee
**Units:** Feet

**Aerial Photo Date:** 2006

0 100 200 400
Feet

Installation Location
**Memphis, Tennessee**

**Date:** June 2009
**Edition:** Rev. 0

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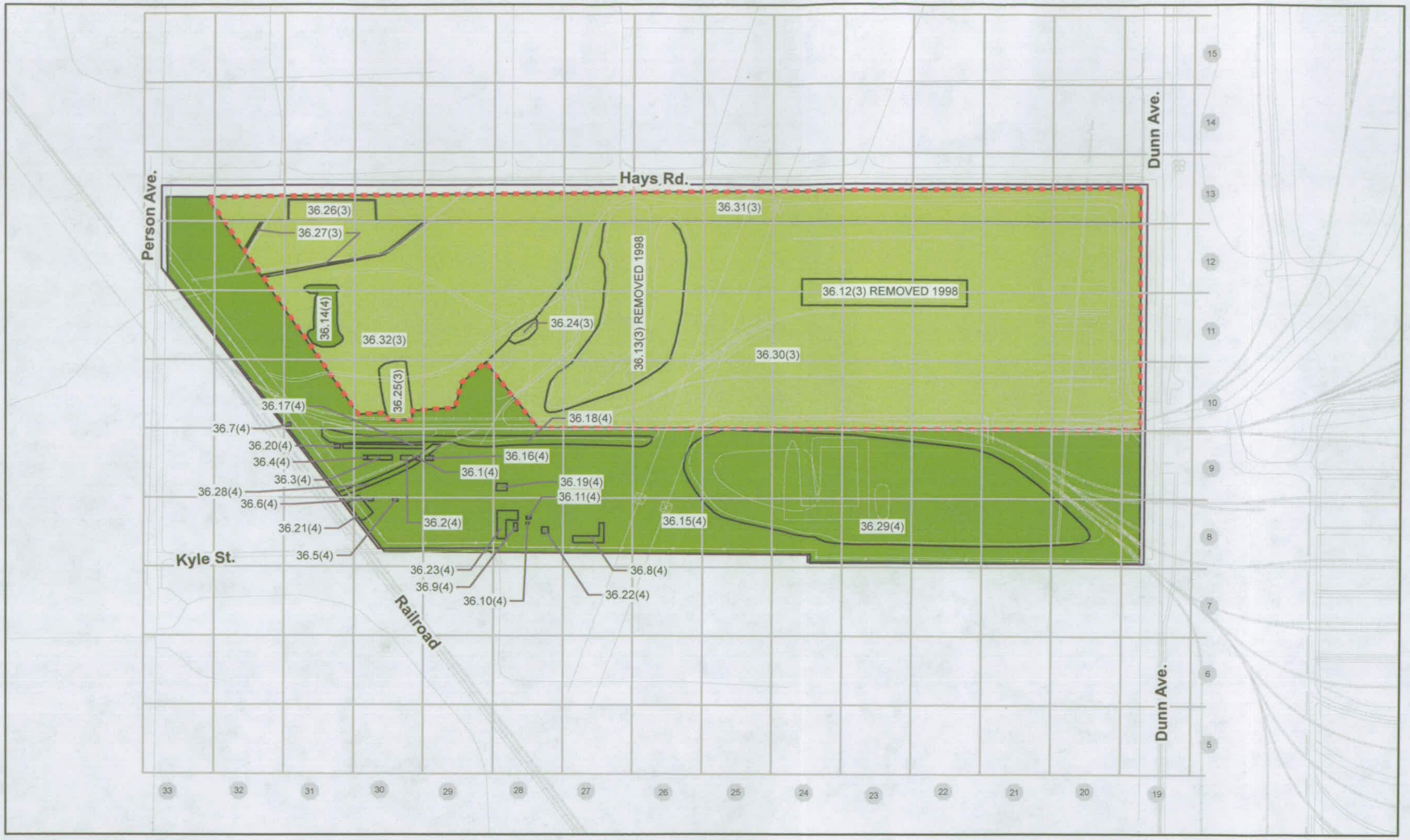



**Figure 1-2**

**ENVIRONMENTAL CONDITION OF PROPERTY MAP, DUNN FIELD**

FINDING OF SUITABILITY TO TRANSFER #5

DUNN FIELD
DEFENSE DEPOT
MEMPHIS TENNESSEE

**Projection: NAD 1927 StatePlane Tennessee**
**Units: Feet**

0 100 200 400

Scale in Feet

Installation Location
**Memphis, Tennessee**

**Date:** June 2009
**Edition:** Rev 0

BRAC PARCEL LABEL DEFINITIONS

30.1(2)PS/HS

- CONTAMINATION DESCRIPTION
  - PS PETROLEUM STORAGE
  - PR PETROLEUM RELEASE OR DISPOSAL
  - HS HAZARDOUS SUBSTANCE STORAGE
  - HR HAZARDOUS SUBSTANCE RELEASE OR DISPOSAL
  - (P) POSSIBLE (UNVERIFIED)
- CATEGORY NUMBER
- PARCEL NUMBER (NUMBER BEFORE THE DECIMAL POINT IS MORA PARCEL NUMBER)

NON-CERCLA ISSUE (QUALIFIED) LABEL DEFINITIONS

33.1-753Q-A/L(P)

- QUALIFIERS
  - A ASBESTOS-CONTAINING MATERIAL
  - L LEAD-BASED PAINT
  - P PCB
  - R RADON
  - X UXO AND/OR ORDNANCE FRAGMENTS
  - RD RADIONUCLIDES
- QUALIFIED
  - (P) POSSIBLE (UNVERIFIED)
- FACILITY NUMBER (IF APPLICABLE)
- PARCEL NUMBER (NUMBER BEFORE THE DECIMAL POINT IS MORA PARCEL NUMBER)

**Legend**

FOST 4 *(Transfer of this area complete. FOST 4 signed March 4, 2005. Deed signed on October 27, 2007.)*

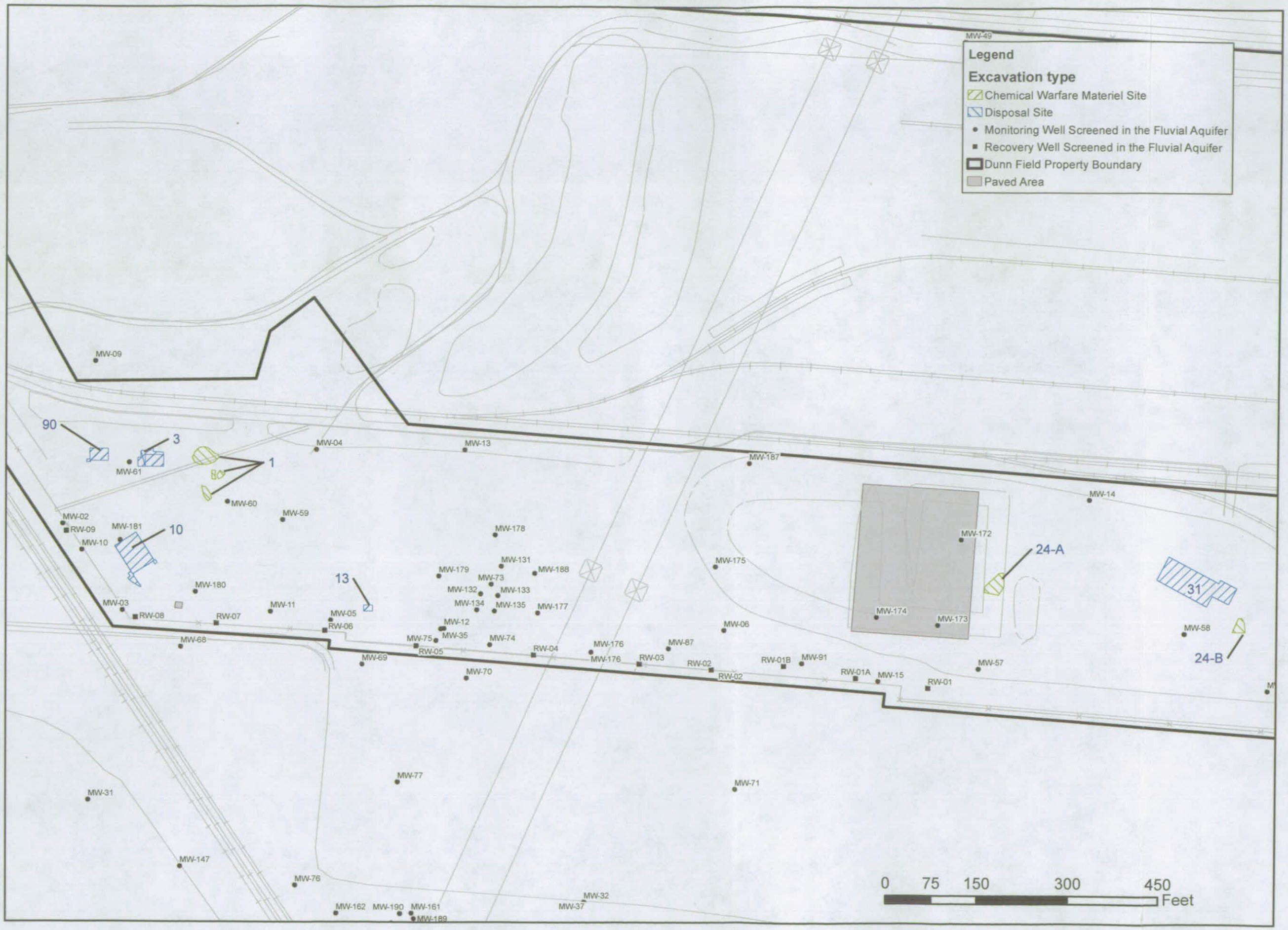
**Category**

1 Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas) [white]

3 Areas where release, disposal- and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action [light green]

4 Areas where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken [dark green]

G:\32021016\FOST 5\Fig 1-A.mxd




G:\3202\016\FOST 5\Fig 1-3.mxd

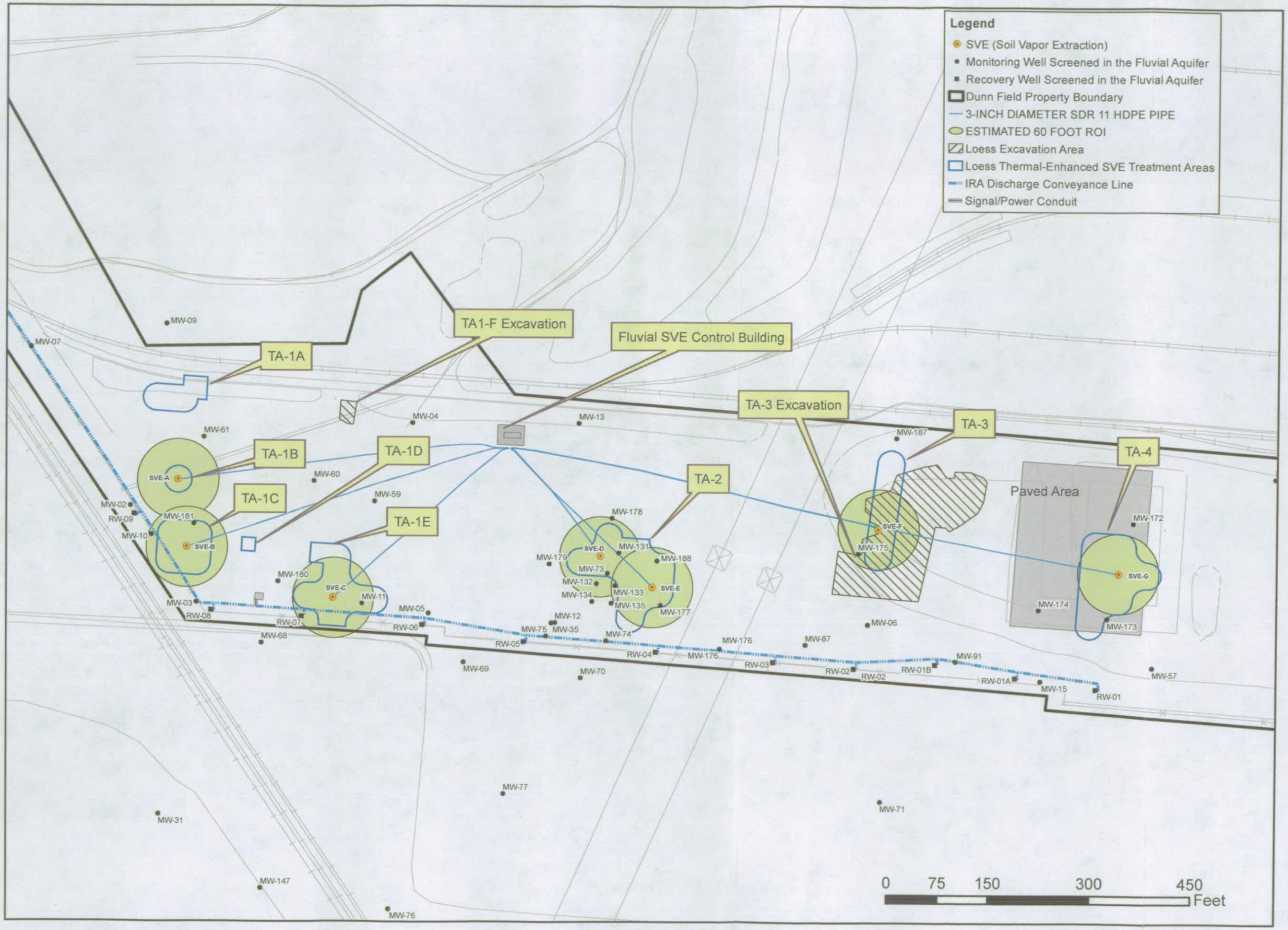
**Figure 1-3**

**CHEMICAL WARFARE MATERIEL AND DISPOSAL SITES REMEDIAL ACTION EXCAVATION LOCATIONS**

FINDING OF SUITABILITY TO TRANSFER #5

DUNN FIELD
DEFENSE DEPOT
MEMPHIS TENNESSEE

**Projection: NAD 1927 StatePlane Tennessee**
**Datum : WGS 84**
**Units: Feet**




G:\32020016\FOST 5\Fig 1-C.mxd

**Figure 1-4**

**SOURCE AREAS SUBSURFACE SOIL REMEDY LOCATIONS**

FINDING OF SUITABILITY TO TRANSFER #5

DUNN FIELD
DEFENSE DEPOT
MEMPHIS TENNESSEE

**Projection: NAD 1927 StatePlane Tennessee**
**Datum : WGS 84**
**Units: Feet**

## ENCLOSURE 2

## ENVIRONMENTAL DOCUMENTATION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## ENCLOSURE 3

## TABLE 1 – DESCRIPTION OF PROPERTY

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| Site 2 - Ammonia Hydroxide and Acetic Acid Burial Site. Where a 7-pound jug of ammonia hydroxide and a 1-gallon bottle of acetic acid were buried in 1955. | 36.1 | 4 | Per DF ROD effective April 12, 2004 and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 3 - Mixed Chemical Burial Site. Where 3,000 quarts of unknown chemicals and 5 cubic feet of ortho-tolidine dihydrochloride were buried in 1955. | 36.2 | 4 | Per DF ROD effective April 12, 2004 and DF Disposal Sites RD, excavation, transportation, and disposal as well as LUCs required at this site.<br>Excavation began in 2005, but was delayed due to discovery of intact glass vials filled with clear liquid, identified by analysis to be ortho-tolidine.<br>Excavation was completed in 2006. Approximately 234 cubic yards (CY) of hazardous material associated with removal of the glass vials from Site 3 was excavated and disposed; 150 CY of non-hazardous materials were excavated and disposed. USEPA approved the Disposal Sites RACR on August 25, 2006.<br>Other than LUCs, no further action required at this site. |
| Site 4 - POL Burial Site. Where 13, 55-gallon drums of oil, grease, and paint were buried.<br>Site 90 - IRP 4.1/ POL Burial Site. Where 32, 55-gallon drums of oil, grease, and thinner were buried.<br>Materials were buried in two adjacent trenches. | 36.3 | 4 | Per DF ROD, effective April 12, 2004, and DF Disposal Sites RD, excavation, transportation, and disposal as well as LUCs required at Site 90 (IRP 4.1).<br>Excavation was completed in 2005. Approximately 255 CY of non-hazardous material was excavated and disposed of from Site 90 (IRP 4.1). USEPA approved the Disposal Sites RACR on August 25, 2006.<br>Per DF ROD Amendment, effective March 2009, SVE, thermal-SVE, ZVI and AS-SVE will address impacts to groundwater from Sites 4 and 90 (IRP 4.1). Fluvial SVE RA began operations in July 2007 has cut off contaminant flux to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| | | | most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. Fluvial SVE system expected to continue operating until 2012. AS-SVE to begin operations in October 2009. |
| Site 5 - Methyl Bromide Burial Site. Where three cubic feet of methyl bromide were buried in 1955. | 36.4 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 7 - Nitric Acid Burial Site. Where 1,700 quart bottles of nitric acid were buried in 1954. | 36.5 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 8 - Methyl Bromide Burial Site. Where 3,768 one-gallon cans of methyl bromide were buried to a depth of 7 feet in 1954. | 36.6 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 11 (Trichloroacetic Acid Burial Site). Where 1,433 one-ounce bottles of trichloroacetic acid were buried at a depth of 6 feet in 1965. | 36.7 | 4 | Per DF ROD Amendment effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs required at this site.<br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. Fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009. |
| Site 12 - IRP 12 and 12.1.Sulfuric and Hydrochloric Acid Burial. Where 30 pallets of discarded acid containers were buried at a depth of 8 feet in 1967. | 36.8 | 4 | Per DF ROD Amendment effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs also required at these sites.<br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| | | | achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. The fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009. |
| Site 13 - Mixed Chemical Burial. Where 32 cubic yards of mixed chemicals and acids and 8,100 pounds of unnamed solids were buried at a depth of 8 feet. | 36.9 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD excavation, transportation, and disposal as well as LUCs are required at this site.<br>Excavation completed in April 2005. Approximately 55 CY of non-hazardous material was excavated and disposed of from Site 13. USEPA approved the Disposal Sites RACR on August 25, 2006.<br>Other than LUCs, no further action required at this site. |
| Site 16 - Unknown Acid Burial Site.<br>Site 93 - IRP/16.1 Unknown Acid Burial Sites.<br>Where unknown amounts of unnamed acid were buried in 1969. | 36.10 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 17 - Mixed Chemical Burial Site C. Where an unknown amount of chemicals and medical supplies were buried in 1969. | 36.11 | 4 | Per DF ROD Amendment effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs required at this site.<br>Fluvial SVE RA began operations in July 2007 and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. The fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009. |
| Open land area | 36.15 | 4 | Per DF ROD effective April 12, 2004, and DF |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| surrounding the disposal pits, excluding existing subparcels. Boundary extends along the northern fence line to Hays Road, on the east by Subparcels 36.30 and 36.32, on the south by the southern edge of the asphalt pad (intersected by but excluding Subparcel 36.29), and on the west by the fence line.<br>Site 18 - Plane Crash Residue.<br>Site 22 - Hardware Burial Site, nuts and bolts. | | | Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 1 - Mustard and Lewsite Training Sets Burial Site (CAIS). Where nine sets of Chemical Agent Identification Sets were reportedly buried in 1955. | 36.16 | 4 | A munitions response (CWM removal action) was completed in 2001. Approximately 80 CY of soil containing glass shards and 24 jars labeled "HS" – Sulfur Mustard – were recovered from Site 1, but sample analysis proved the soil and jars to be free of CWM and DMM. Approximately 180 CY non-hazardous materials and soil were excavated and disposed of.<br>Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 9 - Ashes and Metal Burial Site. Where burning pit refuse was reportedly buried in 1955. | 36.17 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 86 - Food Supplies. Where food items with expired shelf life were buried – two separate disposal locations.<br>TA-1F. Area of elevated volatile organic compounds identified during Source Areas Pre-Design Investigation and | 36.18 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at site 86.<br>Per DF ROD Amendment effective March 19, 2009, excavation, transportation, and disposal required at TA-1F, which is located on the eastern edge of Subparcel 36.18. The excavation at TA-1F was performed due to RG exceedance for chloroform. During the initial excavation in December 2007, it was |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| excavated as part of the Source Areas RA | | | determined the exceedance was due to chloroform in a layer of white powdery material at a depth of approximately 9 feet. Additional excavation was performed in February 2009; all the white material was removed and confirmation samples were below RGs. Approximately 210 CY of non-hazardous waste material and soils were disposed from TA-1F. |
| Site 86 - Food Supplies. Where food items with expired shelf life were buried – two separate disposal locations. | 36.19 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 6. Where 40,037 units of eye ointment were buried here in 1955. | 36.20 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 10 - Solid Waste. A burial site near MW10 of metal, glass, trash, etc. | 36.21 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD excavation, transportation, and disposal as well as LUCs required at this site.<br>Excavation began in March 2005 and was completed in 2006. Approximately 735 CY of non-hazardous waste was excavated and disposed from Site 10. USEPA approved the Disposal Sites RACR on August 25, 2006. |
| Site 14 - Municipal Waste Burial Site B. This site is located near MW12 where food, and paper products were buried. | 36.22 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 15 - Sodium Burial Sites.<br>Site 91 - (IRP 15.1). Sodium Phosphate Burial.<br>Site 92 - (IRP Site 15.2/14) Burial Pits: Sodium Phosphate, Sodium, Acid, Medical Supplies, and Chlorinated Lime.<br>Records indicate that one pallet each of sodium and sodium phosphate | 36.23 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| containers, and an unknown quantity of sodium, sodium phosphate, acid, chlorinated lime, and medical supplies were buried here in 1968. | | | |
| Site 61 - Buried Drain Pipe Northwestern Quadrant. This is a concrete drain pipe installed in mid-1950s that collects storm water runoff from surrounding areas. | 36.28 | 4 | Per DF ROD effective April 12, 2004, and DF Disposal Sites RD, other than LUCs, no further action required at this site. |
| Site 23 - Construction Debris and Food Burial Site.<br>Site 24 - Bomb Casings Used to Transport Mustard Agent Burial Site and Neutralization Pit. There are two separate excavation locations: 24-A, burial site for 29 bomb casings used to transport sulfur mustard, and 24-B, neutralization pit where contents from the 29 casings were drained prior to burial in 1946.<br>Site 63 - Fluorspar Storage Southwestern Quadrant.<br>Site 64 - Bauxite Storage. Where a bauxite pile was located from 1942 to 1972. In April 2004, DDC consolidated the following two sites with Site 64: CC-2 Impregnite Burial Site (86,000 | 36.29 | 4 | A removal action for chemical munitions at Site 24 completed in May 2001.<br>From Site 24-A, all 29 bomb casings and 5.5 pounds of TNT from 2 suspected live burster tubes were excavated and disposed; approximately 260 CY of non-hazardous soil was excavated and disposed; approximately 60 CY of hazardous soil was excavated and disposed; and approximately 900 CY of hazardous soil contaminated with mustard degradation by products was excavated and disposed.<br>From Site 24-B, approximately 548 CY of non-hazardous materials and soil were excavated and disposed; and approximately 33 CY of hazardous soil contaminated with mustard and mustard degradation by-products were excavated and disposed.<br>Per DF ROD effective April 12, 2004, and DF Disposal Sites RD excavation, transportation, and disposal and LUCS required for IA Site 31.<br>Other than LUCs, no further action required at Sites 23, 24, 63, 64 or the CC-2 site.<br>Excavation of IA Site 31 completed in April 2005. Approximately 1,315 CY of non-hazardous soil was excavated and disposed of from IA Site 31. USEPA approved the Disposal Sites RACR on August 25, 2006.<br>Per the DF ROD Amendment effective March 2009, |

| Property Description | EBS Parcel Designation | Condition Category | Remedial Actions |
|---|---|---|---|
| pounds buried in 1947 per the Archive Search Report) and IA Site 31 (1981 Installation Assessment Report reported this area used for burning/disposal of smoke pots, chloroacetophenone [CN] canisters, fuses, smokes, and souvenir munitions).<br>Site 64 covered both the CC-2 site and IA Site 31 until the bauxite was removed by DNSP in 1973.<br>TA-3. This is an area of crushed drums containing petroleum hydrocarbons identified during construction of and excavated as part of the Source Areas Remedial Action. | | | excavation, transportation, and disposal was required at TA-3 to remove crushed buried drums containing petroleum hydrocarbons identified during installation of the Source Areas RA.<br>During test pit excavation in the northwest section of TA-3, a few small cylindrical glass vials (2 inches long and 0.25inch diameter) containing a white powder were observed. $e^2M$ contacted the U.S. Army Engineering and Support Center, Huntsville (CEHNC) and sent vials to the Edgewood Chemical Biological Center at Aberdeen Proving Ground who reported that no CWM or other agents of concern was present in the vials.<br>During Source Areas RA excavation activities at TA-3, environmental contractors unearthed two possible ordnance casings. Work was halted and the site secured. Personnel from the U.S. Army 22nd Chemical Battalion in Gadsden, AL, responded and determined the casings were inert and the area was safe for continued excavation. The Memphis Police Department Bomb Squad removed one casing for disposal and the other was disposed as scrap metal with other excavated debris. Excavation was completed in June 2009. No additional munitions or munitions debris were encountered.<br>Approximately 7,200 cubic yards of drums, other debris, and soil were excavated at TA-3 and disposed of as non-hazardous waste at a CERCLA-approved landfill. |

Category 4: Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal and remedial actions to protect human health and the environment have been taken.

| | | | |
|---|---|---|---|
| AS-SVE: | Air Sparging-Soil Vapor Extraction | OPS: | Operating Properly and Successfully |
| BCT: | BRAC Cleanup Team | POL: | Petroleum/Oil/Lubricant |
| CVOCs: | Chlorinated Volatile Organic Compounds | RA: | Remedial Action |
| CY: | Cubic Yards | RACR: | Remedial Action Completion Report |
| CWM: | Chemical Warfare Materiel | RD: | Remedial Design |
| DF: | Dunn Field | RG: | Remedial Goal |
| DNSP: | Defense National Stock Pile | ROD: | Record of Decision |
| IRACR: | Interim Remedial Action Completion Report | SVE: | Soil Vapor Extraction |

IRP: Installation Restoration Program
LUCs: Land Use Controls
USEPA: U.S. Environmental Protection Agency
ZVI: Zero Valent Iron

## ENCLOSURE 4

## TABLE 2 – NOTIFICATION OF HAZARDOUS SUBSTANCE STORAGE, RELEASE OR DISPOSAL

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| 36.2/Site 3 | Unknown chemicals and Ortho-tolidine dihydrochloride | 1955 | Mixed Chemical Burial Site where 3,000 quarts of unknown chemicals and five cubic feet of ortho-tolidine dihydrochloride were buried in 1955. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per the DF ROD, which was effective April 12, 2004, and DF Disposal Sites RD, excavation, transportation, and disposal as well as LUCs were required at this site.<br><br>Excavation began in 2005, but was delayed due to discovery of intact glass vials filled with clear liquid, identified by analysis to be ortho-tolidine.<br><br>Excavation was completed in 2006. Approximately 234 cubic yards (CY) of hazardous material associated with removal of the glass vials from Site 3 was excavated and disposed; 150 CY of non-hazardous materials were excavated and disposed. USEPA approved the Disposal Sites RACR on August 25, 2006.<br><br>Other than LUCs, no further action was required at this site.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.3/Site 4 and Site 90 (IRP 4.1) | Paint and Paint Thinner | Unknown | POL Burial Site where 13, 55-gallon drums of oil, grease, and paint were buried. POL Burial Site where 32, 55-gallon drums of oil, grease, and thinner were buried in two adjacent trenches. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per DF ROD, which was effective April 12, 2004, and DF Disposal Sites RD, excavation, transportation, and disposal were required at Site 90 |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | (IRP 4.1).<br><br>Per DF ROD Amendment, which was effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from Sites 4 and 90 (IRP 4.1).<br><br>LUCs were required at both sites.<br><br>Excavation at Site 90 (IRP 4.1) completed in 2005. Approximately 255 CY of non-hazardous material was excavated and disposed of. USEPA approved the Disposal Sites RACR on August 25, 2006.<br><br>Fluvial SVE RA began operations in July 2007 and has cut off contaminant flux from the soil to the underlying groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. Fluvial SVE system expected to continue operating until 2012. AS-SVE to begin operations in October 2009.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.7/Site 11 | Trichloroacetic Acid (76028) | 1965 | Trichloroacetic Acid Burial Site where 1,433 one-ounce bottles of trichloroacetic acid were buried at a depth of 6 feet.<br><br>Per DF ROD Amendment, which was effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs were required at this site.<br><br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. Fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.8/Site 12 (IRP 12 and 12.1 | Sulfuric Acid (7664939/ 8014957) and Hydrochloric Acid (7647010) | 1967 | Sulfuric and Hydrochloric Acid Burial where 30 pallets of discarded acid containers were buried at a depth of 8 feet in 1967. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per DF ROD Amendment, which was effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs were also required at these sites.<br><br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. The fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.9/Site 13 | Mixed Chemicals, Acids, Unnamed Solids | Unknown | Mixed Chemical Burial where 32 cubic yards of mixed chemicals and acids and 8,100 pounds of unnamed solids were buried at a depth of 8 feet. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per DF ROD, which was effective April 12, 2004, |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | and DF Disposal Sites RD, excavation, transportation, and disposal as well as LUCs are required at this site.<br><br>Excavation completed in April 2005. Approximately 55 CY of non-hazardous material was excavated and disposed from Site 13. USEPA approved the Disposal Sites RACR on August 25, 2006.<br><br>Other than LUCs, no further actions were required at this site.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.11/Site 17 | Unknown Chemicals and Medical Supplies | 1969 | Mixed Chemical Burial Site where an unknown amount of chemicals and medical supplies were buried. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per DF ROD Amendment, which was effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from these sites. LUCs were required at this site.<br><br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. The fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.18/TA-1F | Chloroform (67663) | Unknown | Per DF ROD Amendment, which was effective March 19, 2009, excavation, transportation, and disposal were required at TA-1F due to RG |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | exceedance for chloroform identified during Source Areas Pre-Design Investigation.<br><br>During the initial excavation in November and December 2007, it was determined the exceedance was due to chloroform in a layer of white powdery material at a depth of approximately 9 feet. Additional excavation was performed in February 2009; all the white material was removed and confirmation samples were below RGs. Approximately 210 CY of non-hazardous waste material and soils were disposed from TA-1F.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.21/Site 10 | Solid Waste | Unknown | Solid Waste Burial Site reportedly containing metal, glass, trash, etc. that was discovered during the installation of monitoring well 10. Charred debris was encountered. Unknown if disposal exceeded 40 CFR 373 reportable quantities.<br><br>Per DF ROD, which was effective April 12, 2004, and DF Disposal Sites RD, excavation, transportation, and disposal as well as LUCs were required at this site.<br><br>Excavation began in March 2005 and was completed in 2006. Approximately 735 CY of non-hazardous waste was excavated and disposed of from Site 10. USEPA approved the Disposal Sites RACR on August 25, 2006.<br><br>Other than LUCs, no further actions were required at this site.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.29/ Site 64 (IA Site 31) and TA-3 | Unknown chemicals | Unknown | In April 2004, DDC consolidated IA Site 31 (reportedly used for burning/disposal of smoke pots, chloroacetophenone [CN] canisters, fuses, smokes and souvenir ordnance) with Site 64. Site 64 |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | (Bauxite Storage) covered the site until the bauxite was removed by DNSP in 1973.<br><br>Per DF ROD, which was effective April 12, 2004 and DF Disposal Sites RD, excavation, transportation, and disposal and LUCS were required for IA Site 31.<br><br>Excavation was completed in 2005. Approximately 1,315 CY of non-hazardous soil was excavated and disposed of from IA Site 31. USEPA approved the Disposal Sites RACR on August 25, 2006.<br><br>Per the DF ROD Amendment, which was effective March 2009, excavation, transportation, and disposal was required at TA-3 to remove crushed buried drums containing petroleum hydrocarbons identified during installation of the Source Areas RA.<br><br>During test pit excavation in the northwest section of TA-3, a few small cylindrical glass vials (2 inches long and 0.25inch diameter) containing a white powder were observed. $e^2M$ contacted the U.S. Army Engineering and Support Center, Huntsville (CEHNC) and sent vials to the Edgewood Chemical Biological Center at Aberdeen Proving Ground who reported that no CWM or other agents of concern were present in the vials.<br><br>During Source Areas RA excavation activities at TA-3, environmental contractors unearthed two possible ordnance casings. Work was halted and the site secured. Personnel from the U.S. Army 22nd Chemical Battalion in Gadsden, AL, responded and determined the casings were inert and the area was safe for continued excavation. The Memphis Police Department Bomb Squad removed one casing for disposal and the other was disposed as scrap metal with other excavated debris. Excavation was completed in June 2009. No additional munitions or munitions debris were encountered.<br><br>Approximately 7,200 cubic yards of drums, other debris and soil were excavated at TA-3 and disposed of as non-hazardous waste at a CERCLA-approved landfill.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed |

| Subparcel/ Site Number | Name of Hazardous Substance(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | Restrictions will not pose an unacceptable risk to human health. |

* The information contained in this notice is required under the authority of regulations promulgated under section 120(h) of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA or 'Superfund') 42 U.S.C. §9620(h). This table provides information on the storage of hazardous substances for one year or more in quantities greater than or equal to 1,000 kilograms or the hazardous substance's CERCLA reportable quantity (whichever is greater). In addition, it provides information on the known release of hazardous substances in quantities greater than or equal to the substances CERCLA reportable quantity. See 40 CFR Part 373.

AS-SVE: Air Sparging-Soil Vapor Extraction
BCT: BRAC Cleanup Team
CVOCs: Chlorinated Volatile Organic Compounds
CY: Cubic Yards
CWM: Chemical Warfare Materiel
DF: Dunn Field
DNSP: Defense National Stock Pile
IRACR: Interim Remedial Action Completion Report
IRP: Installation Restoration Program
LUCs: Land Use Controls
OPS: Operating Properly and Successfully
POL: Petroleum/Oil/Lubricant
RA: Remedial Action
RACR: Remedial Action Completion Report
RD: Remedial Design
RG: Remedial Goal
ROD: Record of Decision
SVE: Soil Vapor Extraction
USEPA: U.S. Environmental Protection Agency
ZVI: Zero Valent Iron

## ENCLOSURE 5

## TABLE 3 – NOTIFICATION OF PETROLEUM PRODUCT STORAGE, RELEASE, OR DISPOSAL

| Subparcel/Site Number | Name of Petroleum Product(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| 36.3 - Site 4 and Site 90 (IRP 4.1) | Oil and Grease | Unknown | POL Burial Sites (two adjacent trenches) where thirteen 55-gallon drums of oil, grease, and paint and thirty-two 55-gallon drums of oil, grease, and thinner were buried.<br>Per DF ROD, which was effective 12, 2004 and DF Disposal Sites RD, excavation, transportation, and disposal were required for Site 90 (IRP 4.1).<br>Excavation at Site 90 (IRP 4.1) completed in 2005. USEPA approved the Disposal Sites RACR on August 25, 2006. Approximately 255 CY of non-hazardous material was excavated and disposed of from Site 90 (IRP 4.1).<br>Per DF ROD Amendment, which was effective March 19, 2009, SVE, thermal-SVE, ZVI, and AS-SVE will address impacts to groundwater from Sites 4 and 90. LUCs were also required at both sites.<br>Fluvial SVE RA began operations in July 2007and has cut off contaminant flux from soil to groundwater. Thermal-SVE RA operations began in May 2008 and achieved soil RGs in December 2008 removing the primary source of CVOC contaminant mass. SVE and thermal-SVE RAs have reduced CVOC concentrations in groundwater at most sample locations to the treatment objective of 50 µg/l. Based on groundwater sample results, no ZVI injections will occur. The fluvial SVE system is scheduled to operate until 2012. AS-SVE to begin operations in October 2009.<br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.29 – TA-3 | Petroleum Hydrocarbons | Unknown | Per the DF ROD Amendment, which was effective March 2009, excavation, transportation, and disposal was required at TA-3 to remove crushed buried drums |

| Subparcel/Site Number | Name of Petroleum Product(s) | Date of Storage, Release, or Disposal | Remedial Actions |
|---|---|---|---|
| | | | containing petroleum hydrocarbons identified during installation of the Source Areas RA.<br><br>Approximately 7,200 cubic yards of drums, other debris, and soil were excavated at TA-3 and disposed of as non-hazardous waste at a CERCLA-approved landfill.<br><br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health. |

AS-SVE: Air Sparging-Soil Vapor Extraction
BCT: BRAC Cleanup Team
CVOCs: Chlorinated Volatile Organic Compounds
CY: Cubic Yards
CWM: Chemical Warfare Materiel
DF: Dunn Field
DNSP: Defense National Stock Pile
IRACR: Interim Remedial Action Completion Report
IRP: Installation Restoration Program
LUCs: Land Use Controls
OPS: Operating Properly and Successfully
POL: Petroleum/Oil/Lubricant
RA: Remedial Action
RACR: Remedial Action Completion Report
RD: Remedial Design
RG: Remedial Goal
ROD: Record of Decision
SVE: Soil Vapor Extraction
USEPA: U.S. Environmental Protection Agency
ZVI: Zero Valent Iron

## ENCLOSURE 6

## TABLE 4 – NOTIFICATION OF MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)*

| Subparcel/ Site | Type of MEC | Date of MEC Activity | Munitions Response Actions |
|---|---|---|---|
| 36.10/Site 1 | Mustard and Lewsite Training Sets Burial Site | 1955 | Mustard and Lewsite Training Sets Burial Site where nine sets of Chemical Agent Identification Sets (CAIS) were reportedly buried in 1955.<br>In 1998, sampling of surface soil, subsurface soil, and groundwater around this site indicated no migration of chemical warfare materiel (CWM). To reduce potential risk from CWM, the Army determined that it must be removed.<br>CWM removal action completed in 2001. Approximately 80 CY of soil containing glass shards and 24 jars labeled "HS" – Sulfur Mustard – were recovered from Site 1, but sample analysis proved the soil and jars to be free of CWM and DMM. Approximately 180 CY non-hazardous materials and soil were excavated and disposed.<br>Per DF ROD, which was effective April 12, 2004 and DF Disposal Sites RD, other than LUCs, no further action was required at this site.<br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health.<br>(See Final Report Chemical Warfare Materiel Investigation/Removal Action report dated December 2001 and the Statement of Clearance Statement dated August 25, 2003). |
| 36.29/TA-3 | Ordnance Casings | | Per the DF ROD Amendment, which was effective March 2009, excavation, transportation, and disposal was required at TA-3 to remove crushed buried drums containing petroleum hydrocarbons identified during installation of the Source Areas RA.<br>During test pit excavation in the northwest section of TA-3, a few small cylindrical glass vials (2 inches long and 0.25inch diameter) containing a white powder were observed. $e^2M$ contacted the U.S. Army Engineering and Support Center, Huntsville (CEHNC) and sent vials |

| | | | |
|---|---|---|---|
| | | | to the Edgewood Chemical Biological Center at Aberdeen Proving Ground who reported that no CWM or other agents of concern were present in the vials.<br>During Source Areas RA excavation activities at TA-3, environmental contractors unearthed two possible ordnance casings. Work was halted and the site secured. Personnel from the U.S. Army 22nd Chemical Battalion in Gadsden, AL, responded and determined the casings were inert and the area was safe for continued excavation. The Memphis Police Department Bomb Squad removed one casing for disposal and the other was disposed as scrap metal with other excavated debris. Excavation was completed in June 2009. No additional munitions or munitions debris were encountered.<br>Approximately 7,200 cubic yards of drums, other debris, and soil were excavated at TA-3 and disposed of as non-hazardous waste at a CERCLA-approved landfill.<br>The performance of industrial and/or commercial operations at this site per the Deed Restrictions will not pose an unacceptable risk to human health. |
| 36.29/Site 64 (Site 24) | Bomb casings containing mustard agent | 1946 | In 1946, railcars carrying captured German bomb casings containing sulfur mustard in route to Pine Bluff Arsenal, AR from Mobile, AL began leaking mustard. Upon examination of the cars, 29 bomb casings were identified as leaking.<br>These casings were taken to one pit at Dunn Field and drained into and neutralized by a chlorinated lime (super tropical bleach) slurry. The drained casings were placed in the pit and destroyed by dynamite in case a burster remained intact.<br>In 1998, sampling of surface soil, subsurface soil, and groundwater around this site indicated no migration of CWM. To reduce potential risk from CWM, the Army determined the CWM must be removed.<br>In 2000, a DMM and CWM investigation identified two separate disposal pits associated with Site 24, referred to as 24-A and 24-B.<br>CWM removal action at Site 24 completed in 2001. From Site 24-A, all 29 bomb casings and 5.5 pounds of TNT from 2 suspected live burster tubes were excavated and disposed of; approximately 260 CY of non-hazardous soil was excavated and disposed of; |

| | | | |
|---|---|---|---|
| | | | approximately 60 CY of hazardous soil was excavated and disposed of; and approximately 900 CY of hazardous soil contaminated with mustard degradation by products was excavated and disposed of. From Site 24-B, approximately 548 CY of non-hazardous materials and soil were excavated and disposed of; and approximately 33 CY of hazardous soil contaminated with mustard and mustard degradation by-products were excavated and disposed of.<br>Per DF ROD, which was effective April 12, 2004 and DF Disposal Sites RD, other than LUCs, no further actions were required.<br>The performance of industrial and/or commercial operations at this site in accordance with the Deed Restrictions will not pose an unacceptable risk to human health.<br>(See Final Report Chemical Warfare Materiel Investigation/Removal Action report dated December 2001 and the Statement of Clearance Statement dated August 25, 2003). |
| *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 §101(e)(5); (B) Discarded military munitions (DMM), as defined in 10 U.S.C. §2710(e)(2); or (C) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard. | | | |

| | | | |
|---|---|---|---|
| AS-SVE: | Air Sparging-Soil Vapor Extraction | OPS: | Operating Properly and Successfully |
| BCT: | BRAC Cleanup Team | POL: | Petroleum/Oil/Lubricant |
| CVOCs: | Chlorinated Volatile Organic Compounds | RA: | Remedial Action |
| CY: | Cubic Yards | RACR: | Remedial Action Completion Report |
| CWM: | Chemical Warfare Materiel | RD: | Remedial Design |
| DF: | Dunn Field | RG: | Remedial Goal |
| DNSP: | Defense National Stock Pile | ROD: | Record of Decision |
| IRACR: | Interim Remedial Action Completion Report | SVE: | Soil Vapor Extraction |
| IRP: | Installation Restoration Program | USEPA: | U.S. Environmental Protection Agency |
| LUCs: | Land Use Controls | ZVI: | Zero Valent Iron |

## ENCLOSURE 7

## CERCLA NOTICE, COVENANT, AND ACCESS PROVISIONS AND OTHER DEED PROVISIONS

The following CERCLA Notice, Covenant, and Access Provisions, along with the Other Deed Provisions, will be placed in the Deed in a substantially similar form to ensure protection of human health and the environment and to preclude any interference with ongoing or completed remediation activities.

### 1. CERCLA NOTICE

For the Property, the Grantor provides the following notice, description, and covenant:

A. Pursuant to section 120(h)(3)(A)(i)(I) and (II) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §9620(h)(3)(A)(i)(I) and (II)), available information regarding the type, quantity, and location of hazardous substances and the time at which such substances were stored, released, or disposed of, as defined in section 120(h), is provided in Exhibit _ (FOST Enclosure 4-Table 2, Notification of Hazardous Substance, Storage, Release or Disposal), attached hereto and made a part hereof. Additional information regarding the storage, release, and disposal of hazardous substances on the Property has been provided to the Grantee, receipt of which the Grantee hereby acknowledges. Such additional information includes, but is not limited to, the following documents: *Environmental Baseline Survey* (Woodward-Clyde, 1996), *BRAC Cleanup Plan Version 12* ($e^2$M, 2008), and *Finding of Suitability to Transfer #5* ($e^2$M, 2009).

B. Pursuant to section 120(h)(3)(A)(i)(III) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §9620(h)(3)(A)(i)(III)), a description of the remedial action taken, if any, on the Property is provided in Exhibit _ (FOST Enclosure 4-Table 2, Notification of Hazardous Substance, Storage, Release or Disposal), attached hereto and made a part hereof. Additional information regarding the remedial action taken, if any, has been provided to the Grantee, receipt of which the Grantee hereby acknowledges. Such additional information includes, but is not limited to, the following documents: *Dunn Field Record of Decision* (CH2M Hill, 2004); *Dunn Field Disposal Sites Remedial Design* (CH2M Hill, 2004); *Dunn Field Disposal Sites Remedial Action Completion Report* (MACTEC, 2006); *Dunn Field Source Areas Remedial Design* (CH2M Hill, 2008); *Dunn Field Record of Decision Amendment* ($e^2$M, 2009); *Dunn Field Source Areas Interim Remedial Action Completion Report* ($e^2$M, 2009); and the *Dunn Field Notice of Land Use Restrictions* (USACE, 2009) filed with the Shelby County Register of Deeds on June 11, 2009.

### 2. CERCLA COVENANT

Pursuant to section 120(h)(3)(A)(ii) and (B) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §9620(h)(3)(A)(ii) and (B)), the United States warrants that:

A. All remedial action necessary to protect human health and the environment with respect to any hazardous substance identified pursuant to section 120(h)(3)(A)(i)(I) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 remaining on the Property has been taken before the date of this Deed, and

B. Any additional remedial action found to be necessary after the date of this Deed shall be conducted by the United States.

**3. RIGHT OF ACCESS**

A. Pursuant to section [120(h)(3)(A)(iii)] of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §[9620(h)(3)(A)(iii)]), the United States retains and reserves a perpetual and assignable easement and right of access on, over, and through the Property, to enter upon the Property in any case in which an environmental response action or corrective action is found to be necessary on the part of the United States, without regard to whether such environmental response action or corrective action is on the Property or on adjoining or nearby lands. Such easement and right of access includes, without limitation, the right to perform any environmental investigation, survey, monitoring, sampling, testing, drilling, boring, coring, test-pitting, installing monitoring or pumping wells or other treatment facilities, response action, corrective action, or any other action necessary for the United States to meet its responsibilities under applicable laws and as provided for in this instrument. Such easement and right of access shall be binding on the Grantee, its successors and assigns, and shall run with the land.

B. In exercising such easement and right of access, the United States shall provide the Grantee or its successors or assigns, as the case may be, with reasonable notice of its intent to enter upon the Property and exercise its rights under this covenant, which notice may be severely curtailed or even eliminated in emergency situations. The United States shall use reasonable means, but without significant additional costs to the United States, to avoid and to minimize interference with the Grantee's and the Grantee's successors' and assigns' quiet enjoyment of the Property. Such easement and right of access includes the right to obtain and use utility services, including water, gas, electricity, sewer, and communications services available on the Property at a reasonable charge to the United States. Excluding the reasonable charges for such utility services, no fee, charge, or compensation will be due the Grantee nor its successors and assigns, for the exercise of the easement and right of access hereby retained and reserved by the United States.

C. In exercising such easement and right of access, neither the Grantee nor its successors and assigns, as the case may be, shall have any claim at law or equity against the United States or any officer, employee, agent, contractor of any tier, or servant of the United States based on actions taken by the United States or its officers, employees, agents, contractors of any tier, or servants pursuant to and in accordance with this covenant. In addition, the Grantee, its successors and assigns, shall not interfere with any response action or corrective action conducted by the Grantor on the Property.

**4. "AS IS"**

A. The Grantee acknowledges that it has inspected or has had the opportunity to inspect the Property and accepts the condition and state of repair of the subject Property. The Grantee understands and agrees that the Property and any part thereof is offered "AS IS" without any representation, warranty, or guaranty by the Grantor as to quantity, quality, title, character, condition, size, or kind, or that the same is in condition or fit to be used for the purposes intended by the Grantee, and no claim for allowance or deduction upon such grounds will be considered.

B. No warranties, either express or implied, are given with regard to the condition of the Property, including, without limitation, whether the Property does or does not contain asbestos or lead-based paint. The Grantee shall be deemed to have relied solely on its own judgment in assessing the overall condition of all or any portion of the Property, including, without limitation, any asbestos, lead-based paint, or other conditions on the Property. The failure of the Grantee to inspect or to exercise due diligence to be fully informed as to the condition of all or any portion of the Property offered, will not constitute grounds for any claim or demand against the United States.

C. Nothing in this "As Is" provision will be construed to modify or negate the Grantor's obligation under the CERCLA Covenant or any other statutory obligations.

**5. HOLD HARMLESS**

A. To the extent authorized by law, the Grantee, its successors and assigns, covenant and agree to indemnify and hold harmless the Grantor, its officers, agents, and employees from: (1) any and all claims, damages, judgments, losses, and costs, including fines and penalties, arising out of the violation of the NOTICES, USE RESTRICTIONS, AND RESTRICTIVE COVENANTS in this Deed by the Grantee, its successors and assigns; and (2) any and all any and all claims, damages, and judgments arising out of, or in any manner predicated upon, exposure to asbestos, lead-based paint, or other condition on any portion of the Property after the date of conveyance.

B. The Grantee, its successors and assigns, covenant and agree that the Grantor shall not be responsible for any costs associated with modification or termination of the NOTICES, USE RESTRICTIONS, AND RESTRICTIVE COVENANTS in this Deed, including without limitation, any costs associated with additional investigation or remediation of asbestos, lead-based paint, or other condition on any portion of the Property.

C. Nothing in this Hold Harmless provision will be construed to modify or negate the Grantor's obligation under the CERCLA Covenant or any other statutory obligations.

**6. POST-TRANSFER DISCOVERY OF CONTAMINATION**

A. If an actual or threatened release of a hazardous substance or petroleum product is discovered on the Property after the date of conveyance, Grantee, its successors or assigns, shall be responsible for such release or newly discovered substance if it is determined that the substance was not present at the time of transfer of the Property. If the Grantee, it successors or assigns believe the discovered hazardous substance was present at the time of transfer of the Property, Grantee will immediately secure the site and notify the Grantor of the existence of the hazardous substances, and Grantee will not further disturb such hazardous substances without the written permission of the Grantor.

B. Grantee, its successors and assigns, as consideration for the conveyance of the Property, agree to release Grantor from any liability or responsibility for any claims arising solely out of the release of any hazardous substance or petroleum product on the Property occurring after the date of the delivery and acceptance of this Deed, where such substance or product was placed on the Property by the Grantee, or its successors, assigns, employees, invitees, agents, or contractors, after the conveyance. This paragraph shall not affect the Grantor's responsibilities to conduct response actions or corrective actions that are required by applicable laws, rules and regulations, or the Grantor's indemnification obligations under applicable laws.

**7. ENVIRONMENTAL PROTECTION PROVISIONS**

The Environmental Protection Provisions are at Exhibit _ (FOST Enclosure 8), which is attached hereto and made a part hereof. The Grantee shall neither transfer the Property, lease the Property, nor grant any interest, privilege, or license whatsoever in connection with the Property without the inclusion of the Environmental Protection Provisions contained herein, and shall require the inclusion of the Environmental Protection Provisions in all further Deeds, easements, transfers, leases, or grant of any interest, privilege, or license.

## ENCLOSURE 8

## ENVIRONMENTAL PROTECTION PROVISIONS

The following conditions, restrictions, and notifications will be attached, in a substantially similar form, as an exhibit to the Deed and be incorporated therein by reference to ensure protection of human health and the environment.

### 1. FEDERAL FACILITIES AGREEMENT

The Grantor acknowledges that the Defense Depot Memphis, Tennessee has been identified as a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. The Grantee acknowledges that the Grantor has provided it with a copy of the Defense Depot Memphis, Tennessee Federal Facility Agreement (FFA) dated March 13, 1995. For so long as the Property remains subject to the FFA, the Grantee, its successors and assigns, agree that they will not interfere with United States Department of the Army activities required by the FFA. In addition, should any conflict arise between the FFA and any amendment thereto and the Deed provisions, the FFA provisions will take precedence. The Grantor assumes no liability to the Grantee, its successors and assigns, should implementation of the FFA interfere with their use of the Property.

### 2. LAND USE RESTRICTIONS

A. The United States Department of the Army has undertaken careful environmental study of the Property and concluded that the land use restrictions set forth below are required to ensure protection of human health and the environment. The Grantee, its successors or assigns, shall not undertake nor allow any activity on or use of the Property that would violate the land use restrictions contained herein.

**(1) Residential Use Restriction.** The Grantee, its successors and assigns, shall use the Property solely for commercial or industrial activities and not for residential purposes. For purposes of this provision, residential use includes, but is not limited to: single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

**(2) Groundwater Restriction.** Grantee is hereby informed and acknowledges that the groundwater under Property has chlorinated volatile organic compounds that exceed the Safe Drinking Water Act maximum contaminant levels. The Grantee, its successors and assigns, shall not access or use ground water underlying the Property for any purpose without the prior written approval of United States Department of the Army, the U.S. Environmental Protection Agency, the Tennessee Department of Environment and Conservation, and the Memphis/Shelby County Health Department – Water Quality Branch. For the purpose of this restriction, "groundwater" shall have the same meaning as in section 101(12) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

**B. Modifying Restrictions.** Nothing contained herein shall preclude the Grantee, its successors or assigns, from undertaking, in accordance with applicable laws and regulations and without any cost to the Grantor, such additional action necessary to allow for other less restrictive

use of the Property. Prior to such use of the Property, Grantee shall consult with and obtain the approval of the Grantor, and, as appropriate, the State or Federal regulators, or the local authorities. Upon the Grantee's obtaining the approval of the Grantor and, as appropriate, State or Federal regulators, or local authorities, the Grantor agrees to record an amendment hereto. This recordation shall be the responsibility of the Grantee and at no additional cost to the Grantor.

**C. Submissions.** The Grantee, its successors and assigns, shall submit any requests to modifications to the above restrictions to the Grantor, U.S. Environmental Protection Agency, Tennessee Department of Environment and Conservation, and Memphis/Shelby County Health Department – Water Quality Branch, by first class mail, postage prepaid, addressed as follows:

(1) Department of Army
600 Army Pentagon
Washington, DC 20310-0600

(2) U.S. Environmental Protection Agency, Region 4
Federal Facilities Branch
Attn: Tennessee Branch Coordinator
61 Forsyth Street SW
Atlanta, GA 30303

(3) Tennessee Department of Environment and Conservation
Division of Superfund
Attn: Jamie Woods
2510 Mt. Moriah Road, Suite E645
Memphis, TN 38115-1520

(4) Memphis/Shelby County Health Department
Water Quality Branch
814 Jefferson Avenue
Memphis, TN 38105

## 3. NOTICE OF THE POTENTIAL PRESENCE OF MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) AND CHEMICAL AGENT IDENTIFICATION SETS (CAIS)

A. The Grantee is hereby notified that, due to the former use of the Property as a military installation, the Property may contain:

(1) Munitions and explosives of concern (MEC). The term MEC means specific categories of military munitions that may pose unique explosives safety risks and includes: (1) Unexploded Ordnance (UXO), as defined in 10 U.S.C. §101(e)(5); (2) Discarded military munitions (DMM), as defined in 10 U.S.C. §2710(e)(2); or (3) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard.)

(2) Most Chemical Agent Identification Sets (CAIS) consist of small quantities of various dilute chemical agents in glass ampoules, vials or bottles that were packed in metal shipping containers or wooden boxes. The glass vials and bottles can be found packed in their original storage and shipping containers, or they may be loose. With the exception of CAIS XXX, CAIS are considered as Hazardous, Toxic, Radiological Waste, and may be destroyed at a permitted Treatment, Storage, Disposal Facility.

B. The Property was previously used for disposal of 29 captured German bomb casings containing sulfur mustard, CAIS, and souvenir munitions (World War II and Korean War era) that could result in the presence of MEC or CAIS on the Property. In 2001, a munitions response was conducted. A summary of the munition response sites (MRS) on the Property is as follows:

- Site 1 - Mustard and Lewsite Training Sets Burial Site (CAIS Burial Site)
- Site 24 - Bomb Casings Used to Transport Mustard Agent Burial Site and Neutralization Pit
- TA-3 - Area of crushed drums containing petroleum hydrocarbons identified during construction of and excavated as part of the Source Areas RA)

In 2000, USACE completed a munitions response investigation that identified two separate disposal pits associated with Site 24. Following completion of an engineering evaluation and cost analysis (EE/CA), USACE conducted a non-time critical removal action (NTCRA) to reduce or eliminate the potential risk posed by DMM, CAIS and any chemical agent contamination at MRSs 1, 24-A, and 24-B. During the removal, USACE recovered 29 captured German bomb casings. USACE evaluated these and determined them to be inert (not pose an explosive hazard). USACE also recovered 5.5 pounds of TNT from 2 suspected live burster tubes. The removal action was completed in May 2001.

In August 2003, USACE provided a Statement of Clearance for the completed munitions response. The USACE concluded:

- All MEC reasonably possible to detect had been removed from the Property
- The Property should be made.available for any purpose for which the land was suited.
- Any residual risk should be managed through a deed notice.

In December 2007, during excavation activities for the Dunn Field Source Areas RA at TA-3, environmental contractors unearthed two possible munitions casings. Excavation activities were halted and the site secured. Personnel from the U.S. Army 22nd Chemical Battalion in Gadsden, Alabama, responded and determined the casings were inert. The Memphis Police Department Bomb Squad removed one casing for disposal and the other was disposed as scrap metal with other excavated debris.

A summary of MEC discovered on the Property is provided in Exhibit _ (FOST Enclosure 6-Table 4, Notification of Munitions and Explosives of Concern). A map depicting the location of munitions response sites (referred to as Chemical Warfare Materiel site) is provided at Deed Exhibit _ (FOST Enclosure 1-3).

C. The Grantor represents that, to the best of its knowledge, no MEC or CAIS are currently present on the Property. Notwithstanding the Grantor's determination, the parties acknowledge that there is a possibility, although remote, that MEC or CAIS may exist on the Property. If the Grantee, any subsequent owner, or any other person should find any MEC or glass ampoules, vials or bottles on the Property, they shall immediately stop any intrusive or ground-disturbing work in the area or in any adjacent areas and shall not attempt to disturb, remove or destroy it, but shall immediately notify the Local Police Department so that appropriate explosive ordnance disposal personnel can be dispatched to address such MEC or CAIS as required under applicable law and regulations.

D. Easement and Access Rights.

(1) The Grantor reserves a perpetual and assignable right of access on, over, and through the Property, to access and enter upon the Property, in any case in which a munitions response action is found to be necessary, or such access and entrance is necessary to carry out a munitions response action on adjoining property. Such easement and right of access includes, without limitation, the right to perform any additional munitions response (e.g., investigation, sampling, testing, test-pitting, surface and/or subsurface removal) action necessary for the United States to meet its responsibilities under applicable laws and as provided for in this Deed. This right of access shall be binding on the Grantee, its successors and assigns, and shall run with the land.

(2) In exercising this easement and right of access, the Grantor shall give the Grantee or the then record owner, reasonable notice of the intent to enter on the Property, except in emergency situations. Grantor shall use reasonable means, without significant additional cost to the Grantor, to avoid and/or minimize interference with the Grantee's and the Grantee's successors' and assigns' quiet enjoyment of the Property. Such easement and right of access includes the right to obtain and use utility services, including water, gas, electricity, sewer, and communications services available on the Property at a reasonable charge to the United States. Excluding the reasonable charges for such utility services, no fee, charge, or compensation will be due the grantee nor its successors and assigns, for the exercise of the easement and right of access hereby retained and reserved by the United States.

(3) In exercising this easement and right of access, neither the Grantee nor its successors and assigns, as the case may be, shall have any claim at law or equity against the United States or any officer, employee, agent, contractor of any tier, or servant of the United States based on actions taken by the United States or its officers, employees, agents, contractors of any tier, or servants pursuant to and in accordance with this Paragraph. In addition, the Grantee, its successors and assigns, shall not interfere with any munitions response action conducted by the Grantor on the Property.

E. The Grantee acknowledges receipt of the *Final Report Chemical Warfare Materiel Investigation/Removal Action* (UXB, 2001) and the Statement of Clearance dated August 25, 2003.

# ENCLOSURE 9

# STATEMENT OF CLEARANCE

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**Statement of Clearance**
**Chemical Warfare Materiel (CWM)**
**Dunn Field, Former Defense Depot**
**Memphis, Tennessee**

Dunn Field, located within the boundary of Former Defense Depot, Memphis, Tennessee, has been carefully researched, and a field search was conducted using the best available technology. Dunn Field has been cleared of all CWM and explosive ordnance reasonably possible to detect. Two live bursters (ordnance items) were found and destroyed. Activities are described in the Final Removal Report for Chemical Warfare Materiel Investigation/Removal Action, performed by UXB under contract to the Engineering and Support Center, Huntsville, Alabama (Contract No. DACA87-97-D-0006, DO 0006).

It is recommended that:

Dunn Field may be used for any purpose for which the land is suited.

This action has been conducted in accordance with Army Regulation 385-61 (The Army Chemical Agent Safety Program), Army Regulation 384-64 (Ammunition and Explosives Safety Standards), AR 405-90 (Disposal of Real Estate), and the DDESB approved Explosives Safety Submission.

SIGNED BY:

24 August 2003

John D. Rivenburgh — Date
COL, EN
Commander, Engineering and Support Center,
Huntsville

APPROVED BY:

26 September 2003

Dennis J. Lillo — Date
Division Chief, Environmental Quality
Defense Logistics Agency

File: 541.460.000(9)
J.D. 757

DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P O BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-CW

25 August 2003

MEMORANDUM FOR DOD BRAC Environmental Coordinator, ATTN: DDSP-D (Mr. John P. De Back), Former Defense Depot, 2163 Airways Boulevard, Bldg 144, Memphis, Tennessee 38114

SUBJECT: Statement of Clearance for the Dunn Field, Former Defense Depot, Memphis, Tennessee

1. Enclosed for your use is the Statement of Clearance related to Ordnance and Explosives (OE) and Chemical Warfare Materiel (CWM) Investigation and Removal Action completed on the subject property. The U.S. Army Engineering and Support Center, Huntsville has reviewed the Final Removal Report and concurs with its findings. The report discusses the action taken and the items recovered from the property.

2. Based upon the actions taken, as documented in the Final Removal Report, it is recommended that Dunn Field be made available for any purpose for which the land is suited. Any residual risk remaining as a result of this removal action will be managed through a deed notice provided by the U.S. Army Corps of Engineers, Mobile District. This deed notice will provide information on notification requirements in the event an OE item is encountered.

3. If you have any questions or comments regarding this submittal, please contact me at (256) 895-1300 or Mr. David Douthat, OE Director at (256) 895-1510.

Encl

JOHN D. RIVENBURGH
Colonel, U.S. Army
Commanding

# FINAL PAGE

# ADMINISTRATIVE RECORD

# FINAL PAGE