FINAL

# Explanation of Significant Differences
# Southeastern (SE) Area Operable Unit (OU) 10
# AEDBR Sites LEAD-090, -091, -095, -100, -101, -128

Letterkenny Army Depot • Chambersburg, Pennsylvania

**SEPTEMBER 2009**

*Prepared For:*


**U.S. ARMY ENVIRONMENTAL COMMAND**
4118 Susquehanna Ave.
Aberdeen Proving Ground, MD 21005

**LETTERKENNY ARMY DEPOT**
1 Overcash Avenue
Chambersburg, PA 17201


*Prepared By:*


**Weston Solutions, Inc.**
1400 Weston Way • West Chester, PA 19380-1499



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**Final**

# EXPLANATION OF SIGNIFICANT DIFFERENCES
# SOUTHEASTERN (SE) AREA OPERABLE UNIT (OU) 10
# AEDBR SITES LEAD-090, -091, -095, -100, -101, -128

## LETTERKENNY ARMY DEPOT
## CHAMBERSBURG, PENNSYLVANIA

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West Chester, PA 19380

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# LIST OF ACRONYMS

| | |
|---|---|
| µg/L | micrograms per liter |
| AR | Administrative Record |
| ARAR | Applicable or Relevant and Appropriate Requirements |
| Army | United States Army |
| BCT | BRAC Cleanup Team |
| BRAC | Base Realignment and Closure |
| BTEX | benzene, toluene, ethylbenzene, and xylene |
| CCR | Codes, Covenants, and Restrictions |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| COC | contaminants of concern |
| CVBP | Cumberland Valley Business Park |
| CVOCs | chlorinated volatile organic compounds |
| EBPS | enhanced bioremediation pilot study |
| EPA | United States Environmental Protection Agency |
| ESD | Explanation of Significant Differences |
| FCGA | Franklin County General Authority |
| IAG | Interagency Agreement |
| IRACR | Interim Remedial Action Completion Report |
| IRM | interim remedial measure |
| LEAD | Letterkenny Army Depot |
| LIDA | Letterkenny Industrial Development Authority |
| LUCs | land use controls |
| LUCAP MOA | Land Use Control Memorandum of Agreement |
| MCL | Maximum Contaminant Level |
| MNA | monitored natural attenuation |
| MSC | Medium Specific Concentration |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPL | National Priorities List |
| OU | Operable Unit |
| PADEP | Pennsylvania Department of Environmental Protection |
| PDO | Property Disposal Office |
| PP | Proposed Plan |
| ppb | parts per billion |
| RAB | Restoration Advisory Board |
| RAO | Remedial Action Objective |
| RAWP | Remedial Action Work Plan |
| RI | Remedial Investigation |

## LIST OF ACRONYMS (CONTINUED)

| | |
|---|---|
| ROD | Record of Decision |
| SE | Southeastern |
| SSIA | Southern Southeast Industrial Area |
| SWQC | Surface Water Quality Criteria |
| TCE | trichloroethene (or trichloroethylene) |
| VC | vinyl chloride |
| VOCs | volatile organic compounds |
| WQC | Water Quality Criteria |

# SUMMARY OF EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)

The United States Army (Army) implemented a remedy for Southeastern (SE) Area Operable Unit (OU) 10, a groundwater OU at Letterkenny Army Depot (LEAD), as described in the *Record of Decision (ROD) for the Conococheague Drainage System, Southern Southeast Industrial Area (SSIA) SE OU 10 AEDBR Sites LEAD-090, -091, -095, -100, -101, and -128* (WESTON, 2006). The selected remedy for SE OU 10 groundwater documented in the ROD included Enhanced Biodegradation, Monitored Natural Attenuation (MNA), and Land Use Controls (LUCs) to address groundwater contamination. Sampling data from the remedial investigations of the SE OU 10 area by the Army during the 1990s showed that natural reductive dechlorination processes were actively degrading volatile organic compound (VOC) contaminants in groundwater at the Building 37 source area. As a result, in 1999 an enhanced bioremediation pilot study (EBPS) was initiated by the Army at Building 37 to evaluate whether the reductive dechlorination processes could be further stimulated by the addition of sodium lactate nutrients to promote biodegradation. Results from the EBPS showed that sodium lactate amendments to the groundwater served as an effective nutrient source for the microbes that were dechlorinating the contaminants, as concentrations of volatile organic compounds (VOCs) declined in both the Building 37 area groundwater and at the surface water discharge at Hawbaker Spring. Due to the success of the EBPS, the program was continued as an interim remedial measure (IRM) by the Army and generally accepted by the regulatory agencies and the local community during the Restoration Advisory Board (RAB) and Base Realignment and Closure (BRAC) cleanup team (BCT) meetings. The enhanced biodegradation technology was subsequently incorporated into the Focused Feasibility Study (FFS) for SE OU 10 and determined to be the primary component of the preferred remedial alternative, along with LUCs on groundwater use/exposure (Weston/Geophex, 2003). Finally, enhanced biodegradation, LUCs, and MNA were adopted as the formal components of the preferred remedial alternative for SE OU 10 and were incorporated into the final Proposed Plan (PP) (Weston, 2005b) and ROD (Weston, 2006) documents for the site. The nutrient injection component of the selected remedy was continued through April/May 2007. Since that time, enforcement of LUCs and tri-annual groundwater monitoring has continued at the site.

The Federal government designated a portion of LEAD for release (property to-be-excessed) under the BRAC program in 1995. A portion of LEAD, including the Phase I, Phase II, and Phase V BRAC parcels have been or will be released (transferred) to the Letterkenny Industrial Development Authority (LIDA) for future reuse with appropriate land-use restrictions defined by LIDA's final reuse plan (as referenced by the Memorandum of Agreement [MOA] between the Army and LIDA), and zoning restrictions imposed by the local townships (Greene and Letterkenny). SE OU 10 groundwater flows beneath the Phase I (transferred), Phase II (transferred), and Phase V (to be transferred) BRAC parcels, which are comprised of OUs located in the SE Area at LEAD. The SE OU 10 ROD documented that the groundwater restrictions for BRAC parcels within the SE OU 10 boundary could be removed after the SE OU 10 remediation was completed (WESTON, 2006). This ESD documents a significant change to the SE OU 10 remedy: lifting groundwater use restrictions from some of the on-post areas of SE OU 10. At the time of the signing of the ROD, there were multiple areas within the land use control boundaries of SE OU 10 where groundwater contamination did not exceed MCLs or risk-based levels. Some areas were upgradient or outside of the contaminant plume. In addition, the groundwater plume had been reduced in size as a result of an extended pilot study conducted prior to the date of the SE OU 10 ROD. This ESD documents the lifting of groundwater use restrictions from portions of the Phase I, II, and V BRAC Parcels since these areas are outside of the SE OU 10 VOC groundwater contaminant plume.

## 1. INTRODUCTION

LEAD originally covered 19,243 acres (prior to transferring land as a result of BRAC) in south-central Pennsylvania in Franklin County. Most of LEAD (16,614 acres) will continue to be devoted to ammunition storage. Two areas at LEAD were placed on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) National Priorities List (NPL). The SE Area was placed on the NPL in July of 1987. In February 1989, an Interagency Agreement (IAG) was entered into by the Army, the United States Environmental Protection Agency (EPA), and the Pennsylvania Department of Environmental Protection (PADEP). In March of 1989, the PDO Area was placed on the NPL. Due to the complexities of the site, the remedial actions were divided into separate response actions, which are designated as Operable

Units (OUs). "Operable unit" is defined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at 40 CFR §300.5.

## 1.1 SE OU 10

According to the SE OU 10 ROD (Weston, 2006), which was signed on 11 September 2006 by EPA Region III, SE OU 10 is defined as the VOC-contaminated groundwater located in the southeastern corner of LEAD and extending downgradient in a southeasterly direction to a series of spring discharges along the Conococheague Creek located approximately 2 miles off site. The on-post area of SE OU 10, shown on Figure 1, consists of land to be retained by the Army as well as areas that are now or will be transferred to LIDA under the BRAC program. The off-post portions of SE OU 10 extend beyond the LEAD boundary to the Conococheague Creek, and are part of Greene Township. Land use in the off-post portion of SE OU 10 is varied, consisting of farmland, residential properties and light commercial/industrial use. Detailed descriptions of the SE OU 10 site contaminant history, geology, hydrogeology and remedial investigations can be found in the following documents in the LEAD Administrative Record (AR):

- WESTON (Roy F. Weston, Inc.). 2003. *Final Focused Feasibility Study for the Southern Southeast Industrial Area Operable Unit (OU) 10, (Conococheague Drainage), Letterkenny Army Depot*. Final. August 2003. LKD-RT-237.

- WESTON (Weston Solutions, Inc.) 2005a. *Addendum Report to the Final Focused Feasibility Study for the Southern Southeastern Industrial Area (SSIA) Operable Unit (OU) 10 (Conococheague Drainage), Southeastern Area (SE) Operable Unit (OU) 8, Letterkenny Army Depot, Chambersburg, PA*. Final. May 2005. LKD-RT-266.

- WESTON 2005b. *Proposed Plan for the Conococheague Drainage System, Southern Southeastern Industrial Area (SSIA), Southeastern Area (SE) Operable Unit (OU) 10, AEDBR LEAD-128, Letterkenny Army Depot, Chambersburg, PA*. Final. May 2005. LKD-RT-264.

- WESTON 2006. *Final Record of Decision for Conococheague Drainage System Southern Southeast Industrial Area (SSIA) Southeastern Area Operable Unit 10 (SE OU 10) AEDBR Sites LEAD-090, -091, -095, -100, -101, -128 Letterkenny Army Depot, Chambersburg, PA.* February 2006. LKD-RT-274.

- WESTON 2007. *Final Remedial Action Work Plan for the Enhanced Bioremediation Program in the Southern, Southeast Industrial Area (SSIA), Southeastern (SE) Area Operable Unit (OU) 10, AEDBR Sites LEAD-090, -091, -095, -100, -101, -128*

*(Includes Hawbaker Spring, Dozens Spring, Chambers Springs and Building 12), Letterkenny Army Depot, Chambersburg, PA.* April 2007. LKD-RT-294.

- WESTON 2009. *Final Interim-Remedial Action Completion Report for the Enhanced Bioremediation Program in the Southern Southeast Industrial Area (SSIA), Southeastern (SE) Area Operable Unit (OU) 10, AEDBR Sites LEAD-090, -091, -095, -100, -101, -128 (Includes Hawbaker Spring, Dozens Spring, Chambers Springs and Building 12), Letterkenny Army Depot, Chambersburg, PA.* February 2009. LKD.RT-319.

## 1.2 STATEMENT OF PURPOSE

The purpose of this ESD is to document a significant change to the SE OU 10 ROD: removing groundwater use restrictions from portions of the Phase I, Phase II, and Phase V BRAC Parcels that are outside of the SE OU 10 VOC groundwater contaminant plume.

The lead agency for a CERCLA site, in consultation with the support agencies, may determine that a significant change to the selected remedy, as described in a ROD, is necessary after the ROD has been issued. The Army is the lead agency for the LEAD SE Area CERCLA site. The EPA is the lead regulatory agency and PADEP is the support regulatory agency. The EPA guidance categorizes post-ROD changes as *nonsignificant or minor changes, significant changes to a component of the remedy, or fundamental changes to the overall remedy* (EPA, 1999). The Army together with EPA, and in consultation with PADEP, has determined that a *significant change* but not a fundamental change to a component of the remedy (groundwater use restrictions) needs to be made. A significant change involves a change to a component of the remedy that does not fundamentally alter the overall cleanup approach. A significant change to the ROD must be documented in accordance with CERCLA §117(c) and the NCP §300.435(c)(2)(i) and §300.825(a)(2). As set forth in NCP §300.435(c)(2)(i), the Army, as the lead agency, must publish an ESD to document this change. The Army is also required to publish a notice of availability and a brief description of the ESD in a major local newspaper.

In accordance with §300.435(c)(2)(i) and §300.825(a)(2) of the NCP, this ESD will be placed in the LEAD Administrative Record (http://leadenv.org/default.aspx) and in the LEAD information repository, available from 9 a.m. to 4 p.m. Monday through Friday located at the following address:

Letterkenny Army Depot, DAIM-ODB-LE, Building 14
1 Overcash Avenue
Chambersburg, PA 17201-4150

# 2. SITE BACKGROUND

## 2.1 SITE HISTORY

As described in Section 1.1, SE OU 10 consists of the groundwater beneath the SSIA that had been contaminated with chlorinated solvents leaking from the IWWS serving Building 37. VOC-contaminated groundwater from SE OU 10 discharges to three downgradient surface springs, located up to 1.6 miles off-post. In 2002, off-post groundwater contamination south of Gate 6 (formerly part of SE OU 6) was incorporated into SE OU 10, with off-post groundwater contamination north of Gate 6 remaining as SE OU 6. The Army is addressing the contaminated soils within the SSIA under SE OU 8 as part of the BRAC process and under SE OU 2.

Prior to the 1970s, industrial wastewater and solvents from facility activities were discharged to nearby storm water sewers. In the 1970s, the existing industrial wastewater sewer (IWWS) was extended to Building 37 to dispose of industrial wastes. Drain lines from solvent-use stations inside the building were connected to a collection loop extending around all but the northern perimeter of the building. The collection line was, in turn, connected to a pipeline that conveyed the wastewater under pressure (referred to as a "force main") extending to the industrial wastewater treatment plant (IWTP). However, by the early 1990s, the condition of the IWWS lines had deteriorated. Solvent-laden wastewater leaked through breaks in the pipes into near-surface soils or directly into the underlying bedrock aquifer.

In the early 1980s the Army discovered that the on- and off-post groundwater was contaminated with chlorinated solvents. From the early 1980s through 1992, the Army installed alternate potable water supplies to a number of off-post residences where LEAD/SE OU 10 site-related VOC contamination had reached domestic supply wells in the Sunset Pike area at concentrations exceeding the Maximum Contaminant Levels (MCLs) published by the EPA for drinking water. These residences remain connected to the public water supply.

In 1993, the Army issued a report entitled "Remedial Investigation of the Southeastern Area at LEAD, Final Report" (ESE, 1993). The report summarized remedial investigations (RIs) and source abatement in the vicinity of Buildings 37 and 47. The Army identified the leaking IWWS lines in the Building 37 area as the primary source of VOC groundwater contamination in the southern portion of the SE Area (ESE, 1993).

The 1993 RI report identified the groundwater system underlying the Building 37 area as a limestone bedrock aquifer that is fractured, and where groundwater can flow in large amounts through channeled areas and cavities formed when portions of the limestone rock dissolved over time (referred to as "karstic"). The top of the groundwater surface (referred to as "potentiometric surface") was mapped as sloping toward the east-southeast. In 1994, two monitor wells were installed downgradient of Building 37. Both were contaminated with chlorinated solvents. Further investigations were conducted to determine the nature and extent of contamination associated with the Building 37 groundwater/SE OU 10, as discussed in the SE OU 10 ROD. The contaminants of concern (COCs) in the SE OU 10 groundwater include TCA, TCE, 1,1-DCA, 1,1-DCE, 1,2-DCE, vinyl chloride, and benzene.

In order to clarify the sequence of events that led from the RI activities through to the Final ROD for SE OU 10, the following historical summary is provided:

- Data from a series of remedial investigations of the SE area by the Army during the late 1980s and 1990s showed that reductive dechlorination processes were actively degrading contaminants in the Building 37 source area within SE OU 10. As a result, an EBPS was initiated in SE OU 10 by the Army in 1999.

- Due to the success of the EBPS, the program was continued as an IRM by the Army and generally accepted by the regulatory agencies and the local community during RAB and BCT meetings.

- The enhanced biodegradation technology was subsequently incorporated into the FFS for SE OU 10 and found to be the primary component of the preferred remedial alternative, along with LUCs on groundwater use/exposure (WESTON/Geophex, 2003).

- Enhanced biodegradation, LUCs, and monitored natural attenuation were adopted as the formal components of the preferred remedial alternative for SE OU 10 and were incorporated into the final PP (WESTON, 2005), ROD (WESTON, 2006), and Remedial Action Work Plan (RAWP) (WESTON, 2007) documents for the site.

The primary COCs addressed by the enhanced biodegradation program include CVOCs such as trichloroethene (TCE) and vinyl chloride (VC), which have been shown to undergo biologically enhanced reductive dechlorination through the addition of a sodium lactate nutrient solution. The non-chlorinated VOCs include petroleum derivatives such as benzene, naphthalene and trimethylbenzenes, which are aerobically degraded in the subsurface environment.

Since the start-up of the enhanced biodegradation program in 1999, contaminants in groundwater in several areas within the SE OU 10 land use control boundary (primarily west and north of Building 37), have been below MCLs and risk-based levels. In addition, groundwater sampling results in the vicinity of Building 37, where contaminants have historically exceeded MCLs, have shown a significant decline in both the size and concentration of the CVOC plume. The plume map provided as Figure 2a shows the maximum TCE concentrations detected in the SE OU 10 groundwater between 1996 and 1999, prior to the start-up of the biodegradation program. The concentration gradients shown on Figure 2a were estimated based on the validated data from the 1996-1999 timeframe. Historically, TCE was the primary chlorinated solvent used at the Building 37 site, and has also been the major parent compound historically detected in the site groundwater. Figure 2b is an updated version of the SE OU 10 plume map showing the maximum TCE/vinyl chloride concentrations detected in groundwater during the tri-annual sampling conducted in 2009. By comparison of Figures 2a and 2b, it is evident that the size of the contaminant plume containing CVOCs in excess of State or Federal MCLs (primarily the area in the vicinity of Building 37) has been greatly reduced since the implementation of the biodegradation program.

At the time the SE OU 10 ROD was signed, the majority of SE OU 10 did not contain groundwater contaminants that exceeded EPA Region III MCLs or risk based concentrations (RBCs). Contaminants exceeded MCLs only in the vicinity of Building 37 and a short distance downgradient from Building 37, as shown in Figure 2a. Groundwater restrictions were placed on the entire SE OU 10 site for administrative simplicity and to ensure the protection of human health and the environment while the remedial action was conducted. Site-related COCs that have been detected in the groundwater above state or federal Maximum Contaminant Levels (MCLs) are summarized in the table below, which shows the maximum concentrations for each COC after the last nutrient injection was completed in April/May 2007 and the concentrations of

these COCs in the same wells during the most recent sampling round in April 2009. Additionally, the complete groundwater results from December 2008 and April 2009 are provided in Table 1. A brief summary of the groundwater results are provided below:

| Compound | EPA MCL [µg/L]) | Well | Sampling Round | Maximum Concentration (µg/L) | Sampling Round | Concentration (µg/L) |
|---|---|---|---|---|---|---|
| Trichloroethene | 5 | 97-37-23 | 4/2008 | 9.7 | 4/2009 | 6.5 |
| Vinyl Chloride | 2 | 97-37-23 | 4/2008 | 8.4 | 4/2009 | 1.7 |
| 1,1-dichloroethane | 27 | UST-3 | 12/2007 | 67 | 4/2009 | 40 |
| Benzene | 5 | UST-3 | 8/2007 | 78 | 4/2009 | 48 |
| Trimethylbenzenes | 16 | UST-3 | 8/2008 | 1500 | 4/2009 | 550 |
| Naphthalene | N/A* | UST-3 | 8/2008 | 900 | 4/2009 | 340 |

µg/L = micrograms per liter (parts per billion [ppb])
**Note:** The 4 compounds persisting in the localized area of well UST-3 are not present above MCLs in any other wells at the site. This is attributed to the anaerobic conditions present in the footprint of the former diesel release on the SE corner of Building 37.

## 2.2 SUMMARY OF ROD AND REMEDIAL ACTIONS

### 2.2.1 Phase I BRAC Parcels

The Phase I BRAC Parcels were the first parcels the Army transferred to LIDA. The Phase I parcel transfer occurred in November 1998. A list of the Phase I BRAC Parcels is provided in Table 2.

The selected remedy for the Phase I BRAC Parcels was Institutional Controls (now referred to as LUCs), which included the following components:

Restrictions Related to Soil:

- Restricting the property for commercial and industrial use only.

Restrictions Related to Groundwater:

- Not permitting soil excavation activities below a depth of 3 feet above the water table without prior approval of the Army.
- Not permitting construction of any subsurface structure for human occupation without the prior approval of the Army, PADEP, and the EPA.

- Restricting access to or use of the groundwater underlying the property without the prior written approval of the Army, PADEP, and the EPA.

These restrictions were instituted through amendments of LEAD's Master Plan for the Phase I Parcels to reflect these controls until the date of transfer. At the time the property was transferred, the restrictions were implemented through the use of deed restrictions recorded at the time of transfer. In addition, upon transfer of the property, the Army, in consultation with EPA and PADEP, established periodic inspection procedures to ensure adherence to the institutional controls. Table 3 provides a list of the Phase I parcels and the existing restrictions at each parcel.

### 2.2.2 Phase II BRAC Parcels

The Phase II BRAC Parcels were included in the second phase of parcels the Army transferred to LIDA. The Phase II parcel transfer occurred in May 2002. A list of the Phase II BRAC Parcels is provided in Table 2.

The selected remedy for the Phase II BRAC Parcels was Institutional Controls (now referred to as LUCs), which included the following components:

Restrictions Related to Soil:

- Restrict the Gate 1 Guardhouse (parcel 2R-80 on Figures 3 and 4) and Building 511 areas to commercial/industrial use (e.g., no residential or daycare use allowed).

Restrictions Related to Groundwater:

- Prohibit soil excavation, digging, drilling, or other disturbance of soil activities below a depth of 3 ft above the water table (a.k.a. 3-ft buffer zone) without the prior approval of the Army.
- Prohibit access to or use of the groundwater underlying the property without the prior approval of the Army, PADEP, and EPA.
- Prohibit construction of any subsurface structure for human occupation without the prior approval of the Army, PADEP, and EPA.

These restrictions were instituted through amendments of LEAD's Master Plan for the Phase II parcels to reflect these controls until the date of transfer. At the time the property was transferred, the restrictions were implemented through the use of deed restrictions recorded at the time of transfer. In addition, upon transfer of the property, the Army, in consultation with EPA

and PADEP, established periodic inspection procedures as described in the Land Use Control Assurance Plan Memorandum of Agreement (LUCAP MOA) (LEAD, 2002) and the Land Use Control Implementation Plan (LEAD, 2002—Appendix A) to ensure adherence to the LUCs. Table 3 provides a list of the Phase II parcels and the existing restrictions at each parcel.

By means of the Land Use Control Assurance Plan (which is a Memorandum of Agreement with EPA and PADEP), LEAD, on behalf of the Department of the Army, agreed to implement Depot-wide, certain periodic site inspection, condition certification, and agency notification procedures designed to ensure the maintenance by Army personnel (or other approved designee) of any site specific land use controls deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of the agreement was that, through the Army's substantial good-faith compliance with the procedures called for therein, reasonable assurances would be provided to EPA and PADEP as to the permanency of those remedies that included the use of specific land use controls. The Army, with EPA and PADEP approval, may arrange with other entities such as LIDA to maintain land use controls.

### 2.2.3 SE OU 10

The development of remedial action objectives (RAOs) was focused on protection of human health and the environment through the treatment of the on-post VOC source area, reducing the concentrations of VOCs in groundwater discharging to off-post springs and through the application of land use controls. The RAOs identified for lands associated with SE OU 10, as specified in the PP and ROD, were as follows:

- Protect human health and the environment.
- Restore the aquifer to Federal and State drinking water standards within a reasonable timeframe.
- Comply with all Federal and State environmental laws and Applicable or Relevant and Appropriate Requirements (ARARs). ARARs for SE OU 10 groundwater as defined in the ROD were defined as the EPA Maximum Contaminant Levels [MCLs] and Pennsylvania Medium Specific Concentrations [MSCs] and Chapter 16 Water Quality Criteria [WQCs]).
- Reduce or eliminate further contamination of groundwater.

- Reduce or eliminate the migration of VOC-contaminated groundwater off-post and the discharge of VOC-contaminated groundwater to surface waters at off-post springs.

- Provide a suitable remedial alternative so that land can be transferred for beneficial use with minimal limitations.

- Prevent human exposure to contaminants associated with VOC-contaminated groundwater and springs at concentration in excess of the remediation goals.

The remediation goals for the SE OU 10 groundwater are summarized below:

- Attain Clean Water Act EPA MCLs and the Pennsylvania Statewide Health Standards, Residential Medium-Specific Concentrations (MSCs) in groundwater throughout SE OU 10.

- For known or suspected carcinogens, reduce concentrations of hazardous substances, pollutants and contaminants in groundwater throughout SE OU 10 to acceptable exposure levels, which, as defined by the NCP in 40 CFR 300.430 (e)(2)(i), are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10-4 and 10-6.

- For systemic toxins, reduce concentrations of hazardous substances, pollutants and contaminants in groundwater throughout SE OU 10 to levels to which the human population may be exposed without adverse effect during a lifetime or part of a lifetime, incorporating an adequate margin of safety.

- In surface water at Hawbaker Spring, attain the Pennsylvania Surface Water Quality Criteria (SWQC) for Toxic Substances.

The primary component of the remedy selected in the SE OU 10 ROD, Enhanced Biodegradation with Monitored Natural Attenuation and Land Use Controls, was injection of a nutrient (sodium lactate) on the western edge of Building 37. The effectiveness of the treatment was gauged by periodic sampling of on- and off-post wells and Hawbaker Spring for contaminants and natural attenuation parameters. The objectives of the nutrient injections were to reduce the concentrations of VOCs in on-site and off-site groundwater to Federal MCLs and off-post surface water to State MSCs and Pennsylvania SWQCs, and to prevent migration of contaminated groundwater off-post. LUCs were implemented for the entire on-post (Army Retained and BRAC property) portion of SE OU 10 to reduce risks to human health by preventing contact with contaminated groundwater, prohibiting digging or drilling or otherwise disturbing soil below the water table in on-post areas, prohibiting the building of subsurface structures designed for human occupation in on-post areas, and maintaining the integrity of any

current or future remedial or monitoring system associated with SE OU 10 remedial actions, such as monitoring wells.

As cited previously in Section 1.2 of this report, a significant decline in both the size and concentration of the VOC plume in SE OU 10 has occurred since the start-up of the biodegradation program in 1999. In addition, the groundwater VOC levels in many areas within the SE OU 10 land use control boundary (i.e., upgradient and west of Building 37), were historically non-detect and/or below MCLs or risk-based levels. Currently, the only area within SE OU 10 where VOCs exceed MCLs and risk-based levels is in the vicinity of Building 37 and a short distance downgradient, as shown in Figure 2. Once RAOs are achieved for VOCs in the SE OU 10 groundwater, a secondary objective of the Building 37 biodegradation program will be to monitor the natural attenuation of the remaining BTEX (benzene, toluene, ethylbenzene, and xylene) compounds in the site groundwater (primarily benzene, trimethylbenzenes and naphthalene). These BTEX compounds are present in the site groundwater only in a small, localized area under the southeast corner of Building 37 where a diesel release occurred in the 1990s. Because BTEX compounds degrade more readily under aerobic conditions, significant natural attenuation of these remaining compounds is not expected to occur until aerobic conditions return to this localized area of the site, which is currently characterized by reducing anaerobic conditions. It should also be noted that sampling results indicate that BTEX concentrations in groundwater are sub-MCL or non-detectable only a short distance downgradient from Building 37 in well 97-37-23 (see Table 1). This is attributed to the aquifer geochemistry which transitions rapidly to aerobic conditions once outside the footprint of the former diesel release.

During the remedial investigation of the Building 37 area, analytical results of groundwater samples showed bioindicators and the presence of breakdown daughter products of the VOCs which suggested that natural degradation was occurring. Within the footprint of the diesel release on the southeast corner of Building 37, anaerobic conditions in the aquifer were prevalent and VOC concentrations were significantly lower within this footprint than in the surrounding groundwater. This was an indication that the diesel fuel was providing carbon as an energy source for naturally occurring microbes that have the ability to reductively dechlorinate the chlorinated VOCs (Geophex, 1999). In 1999, Geophex initiated a pilot study to increase both the

area and the rate at which the microbes beneath Building 37 de-chlorinate the chlorinated VOCs. A nutrient, sodium lactate, was introduced into the groundwater to serve as a carbon energy source for the natural microbial population. Results from the Geophex pilot study showed that sodium lactate served as an effective nutrient for the microbes that dechlorinate the chlorinated VOCs (Geophex, 1999). As a result of the initial pilot study, concentrations of VOCs were reduced in both the Building 37 groundwater and at the surface discharge at Hawbaker Spring. Recognizing the benefits of this in situ technology, the Army, as part of the Focused Feasibility Study (FFS) for SE OU 10, decided to continue with the EBPS, while also evaluating other technologies for remediating the site groundwater. The findings from the SE OU 10 FFS concluded that enhanced biodegradation with sodium lactate was the preferred remedial technology for the site groundwater, based on the nine CERCLA criteria in 40 C.F.R. § 300.430(e)(9)(iii); therefore this remedy was selected in the SE OU 10 ROD to treat groundwater at SE OU 10.

The interim remedial actions, which included the EBPS described above and LUCs outlined in the LEAD Master Plan, were completed from 1999 through the signing of the 2006 ROD. Due to the effectiveness of the EBPS, the treatment program continued through the signing of the SE OU 10 ROD in September 2006 and until its completion in August 2008. The scope of work was implemented in accordance with the Final Remedial Action Work Plan (RAWP) and the LEAD Master Plan.

The scope of the remedial actions performed during this time period included the following:

- Enforcement of LUCs that restrict use of groundwater both on-post and off-post, specifically in those areas impacted by elevated VOCs, which are currently in the on-post area of SE OU 10. There have been no MCL, MSC, or SWQC exceedances for site-related VOCs at any off-post wells or springs since 2003 (Weston, 2005a). The LUCs were enforced in areas that did not exceed ARARs to ensure protection from migration during the time of remediation and for ease of administration. All potable water supplied to the industrial area at LEAD since 1957 has come from the Letterkenny Reservoir, located over 14 miles off-post in Roxbury, PA. Groundwater use was restricted via the LEAD Master Plan prior to the ROD but was not officially enforced until the ROD was signed.

- A total of three separate, month-long nutrient introductions were performed at the site to enhance the biodegradation of the remaining VOCs within the bedrock aquifer

source area at Building 37. The month-long nutrient introductions were performed in August/September 2004, May/July 2005, and April/May 2007.

A total of eight (8) groundwater and surface water sampling events were completed at eight (8) indicator sampling locations during each event. The rationale for each of the sampling locations and EPA-approved analyte list is detailed in the RAWP (Weston, 2007).

Long-term monitoring has continued at SE OU 10 since the completion of the remedial action. Groundwater results from December 2008 and April 2009 are provided in Table 1.

### 2.2.4 Phase V BRAC Parcels

The Phase V BRAC Parcels will be included in the fifth phase of parcels the Army will transfer to LIDA. A list of the Phase V BRAC Parcels is provided in Table 2. A ROD has not yet been signed for the Phase V BRAC parcels; however, it is anticipated that the remedy will consist of LUCs to restrict the land use of the Phase V BRAC parcels, which were evaluated based on a future commercial/industrial use. The LEAD Master Plan has already been amended to implement the commercial/industrial restrictions for the Phase V BRAC parcels that require them under CERCLA. There have been no identified releases of CERCLA hazardous substances at parcels 5-111 to 5-113 and parcels 5-117 to 5-120 (see Figures 3 and 4). These parcels were therefore not investigated as potentially contaminated BRAC waste sites and will be transferred without land or groundwater use restrictions.

## 3. BASIS FOR THIS ESD

The ROD for SE OU 10 selected the remedy for groundwater contamination, which consists of enhanced biodegradation with LUCs and monitored natural attenuation. The LUCs, in the form of groundwater restrictions, were implemented for the entire SE OU 10 site, as shown in Figure 3. As discussed in Section 2.1, groundwater restrictions were originally placed on areas upgradient/outside of the groundwater contaminant plume, and the SE OU 10 groundwater plume has diminished significantly since 1996. Figures 2a and 2b show the decline in contaminant concentrations resulting from the implementation of the enhanced biodegradation program during this time period. The most recent groundwater results, as shown in Figure 2b,

indicate that the only portion of SE OU 10 which still contains VOC contaminants in groundwater exceeding MCLs is a narrow area in the vicinity of Building 37 and a short distance downgradient. In addition, an Interim Remedial Action Completion Report (IRACR) was completed in February 2009 to document that the SE OU 10 remedy was operating properly and successfully (WESTON, 2009 LKD.RT-319). Therefore, groundwater restrictions within the SE OU 10 land use control boundary are no longer required for groundwater underlying the Phase I, Phase II, and Phase V BRAC parcels that are outside the extent of the SE OU 10 groundwater contaminant plume.

## 4. DESCRIPTION OF SIGNIFICANT DIFFERENCES

This ESD documents the removal of the following on-post groundwater restrictions from portions of the Phase I, Phase II, and Phase V BRAC Parcels that are outside of the SE OU 10 VOC groundwater contaminant plume:

- Restrict soil excavation, digging, drilling, or other disturbance of soil activities below the water table without the prior approval of the Army.
- Restrict access to or use of the groundwater underlying the property without the prior approval of the Army, PADEP, and EPA.
- Restrict construction of any subsurface structure for human occupation without the prior approval of the Army, PADEP, and EPA.

Figure 3 shows the existing land and groundwater use restrictions in place at SE OU 10 and the Phase I, Phase II, and Phase V parcels (Note: all previously transferred BRAC parcels within the SE OU 10 boundary currently have groundwater restrictions). Figure 4 shows the changes to existing groundwater use restrictions that will be implemented for each parcel in its entirety following issuance of this ESD. The proposed changes to existing LUCs are also shown on Table 3.

In addition to lifting groundwater use restrictions, the Army would continue monitoring groundwater outside the extent of the SE OU 10 groundwater plume. In accordance with the Cumberland Valley Business Park's (CVBP's) Codes, Covenants, and Restrictions (CCRs), one of the prohibited uses of the property is drilling for water. Installation and pumping of any new wells upgradient or downgradient of the SE OU 10 groundwater plume could potentially result in

migration of the plume; the CVBP's CCRs would prohibit installation of any new groundwater wells upgradient of the SE OU 10 groundwater plume. Monitoring results and the CVBP's CCRs would be evaluated during the CERCLA 5-year review process.

Additionally, the Greene Township code (*Code of the Township of Greene Pennsylvania, Part II General Legislation, V3 Updated through 12-15-2002, including amendments up to August 2009, Chapter 85, Subdivision and Land Development, and Chapter 101, Water)* applies to SE OU 10 which is located entirely within Greene Township. The Greene township code requires any new land development within 500 feet of an existing public water system be hooked into the public supply (§ 85-52). On-post public water is supplied by the Franklin County General Authority (FCGA) from the Letterkenny Reservoir located in Roxbury, PA. In addition, if an existing individual or semipublic water supply becomes nonfunctional, does not provide a minimum flow rate of two gallons per minute, or does not meet the minimum water quality requirements of Greene Township Code § 101-8, and the structure serviced by the water supply is within 150 feet of a public water system, the property must be connected to the public water supply (Greene Township Code § 101-9). Greene Township Code § 101-8 provides that additional analysis of a water supply may be required if the Township has reason to suspect that harmful substances are present in amounts that are significantly adverse to human health and safety.

This ESD documents the modification to the SE OU 10 ROD that significantly changes, but does not fundamentally alter, the selected remedy for SE OU 10 groundwater. The only significant difference between the selected remedy and the modified remedy is the lifting of groundwater restrictions at parcels outside the extent of the SE OU 10 groundwater plume, shown on Figures 3 and 4. Following implementation of the ESD, the SE OU 10 ROD will remain protective and will continue to meet ARARs (NCP §§300.430(f)(1)(ii)(B)(1) and (2)).

## 5. SUPPORT AGENCY COMMENTS

EPA Region III and PADEP have been regularly updated on the status of the remedial actions at SE OU 10 through meetings with the Army. A consensus was reached that an ESD would need to be created for SE OU 10 in order to lift groundwater restrictions already in place for the Phase

I, Phase II, and Phase V BRAC parcels. EPA and PADEP have provided input for this ESD and their comments have been incorporated into the document.

## 6. AFFIRMATION OF THE STATUTORY DETERMINATIONS

After implementation of the proposed changes (i.e., lifting of groundwater restrictions) to the SE OU 10 remedy, as described in the 2006 ROD, the remedy will continue to satisfy all statutory requirements of CERCLA. The altered remedy remains protective of human health and the environment, complies with all Federal and State ARARs, and remains cost effective.

## 7. PUBLIC PARTICIPATION COMPLIANCE

As set forth in NCP §300.435(c)(2)(i), the Army, as lead agency, is required to publish a notice of availability and a brief description of the ESD in a major local newspaper. This notice will be published in the Chambersburg *Public Opinion*, the *Shippensburg News Chronicle*, and the Waynesboro *Record Herald* newspapers following issuance of this ESD. The ESD will be available to the public in the LEAD Administrative Record Document Library, which is accessible via the web at http://leadenv.org/default.aspx.

## 8. AUTHORIZING SIGNATURES

The issuance of this Explanation of Significant Differences for the SE OU 10 ROD is concurred with and recommended for immediate implementation.

Thomas E. Lederle
Branch Chief
Army BRAC Division

17 Sep 2009
Date

K. Hodgkiss

9/22/09
Date

Kathryn A. Hodgkiss, Acting Director
Hazardous Site Cleanup Division
EPA, Region III

# ATTACHMENT 1

# REFERENCES

## Administrative Record References

The following LEAD documents relevant to SE OU 10 are available in the LEAD Administrative Record. The Administrative Record reference number for each document is included at the end of each reference (i.e., LKD-RT-xxx). These documents are also available online at: http://leadenv.org/default.aspx


ESE, 1993a. *Remedial Investigation of the Southeastern Area at Letterkenny Army Depot*. Final Report. June 1993. LKD.RT-086.

LEAD, 2002. *Land Use Control Assurance Plan Memorandum of Agreement for the Letterkenny Army Depot BRAC Phase I and II Parcels*. Final. August 2002. LKD.RT-257.

WESTON 2009. *Final Interim-Remedial Action Completion Report for the Enhanced Bioremediation Program in the Southern Southeast Industrial Area (SSIA), Southeastern (SE) Area Operable Unit (OU) 10, AEDBR Sites LEAD-090, -091, -095, -100, -101, -128 (Includes Hawbaker Spring, Dozens Spring, Chambers Springs and Building 12), Letterkenny Army Depot, Chambersburg, PA.* February 2009. LKD.RT-319.

WESTON 2007. *Final Remedial Action Work Plan for the Enhanced Bioremediation Program in the Southern, Southeast Industrial Area (SSIA), Southeastern (SE) Area Operable Unit (OU) 10, AEDBR Sites LEAD-090, -091, -095, -100, -101, -128 (Includes Hawbaker Spring, Dozens Spring, Chambers Springs and Building 12), Letterkenny Army Depot, Chambersburg, PA.* April 2007. LKD-RT-294.

WESTON 2006. *Final Record of Decision for Conococheague Drainage System Southern Southeast Industrial Area (SSIA) Southeastern Area Operable Unit 10 (SE OU 10) AEDBR Sites LEAD-090, -091, -095, -100, -101, -128 Letterkenny Army Depot, Chambersburg, PA*. February 2006. LKD-RT-274.

WESTON (Weston Solutions, Inc.) 2005a. *Addendum Report to the Final Focused Feasibility Study for the Southern Southeastern Industrial Area (SSIA) Operable Unit (OU) 10 (Conococheague Drainage), Southeastern Area (SE) Operable Unit (OU) 8, Letterkenny Army Depot, Chambersburg, PA*. Final. May 2005. LKD-RT-266.

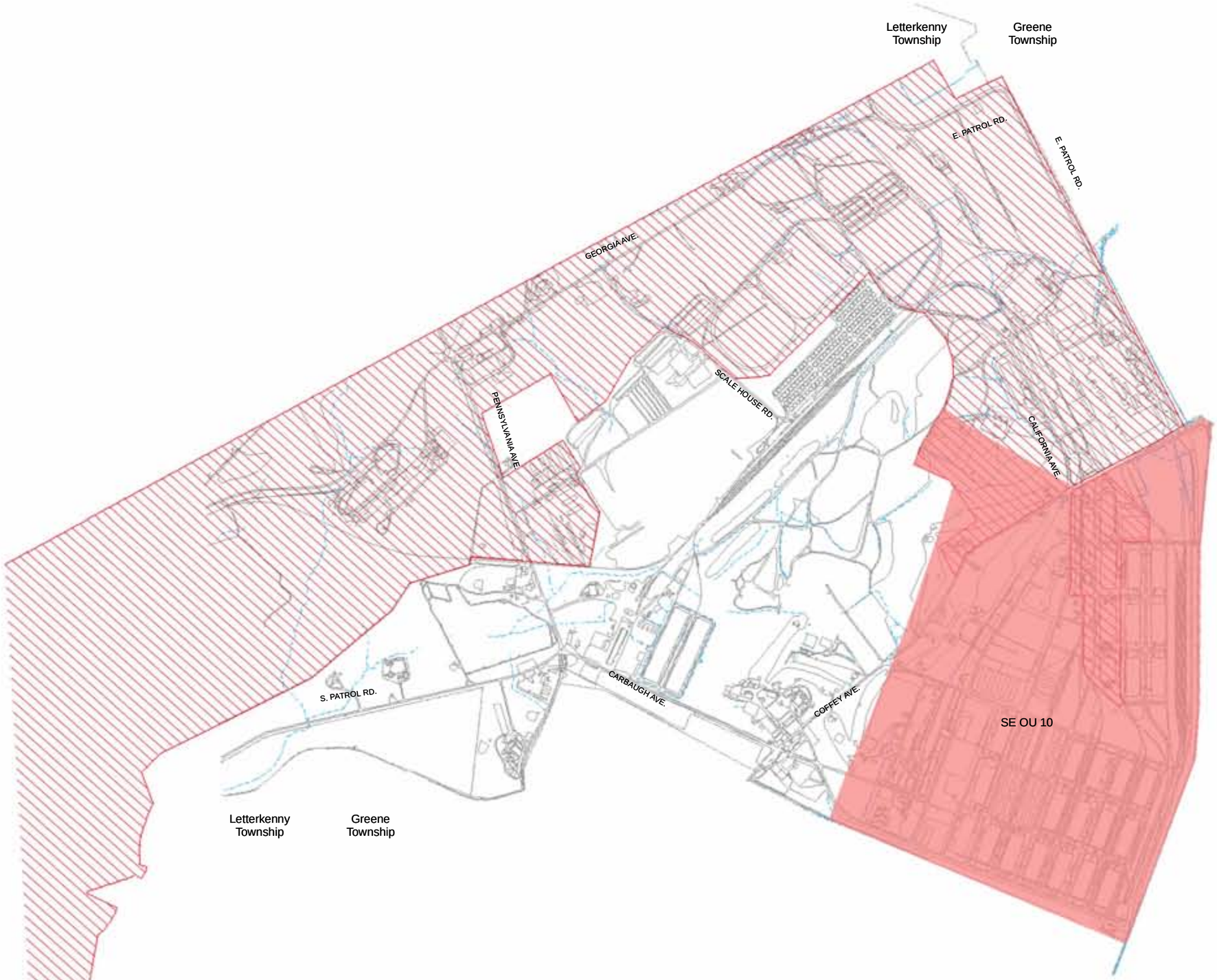
WESTON 2005b. *Proposed Plan for the Conococheague Drainage System, Southern Southeastern Industrial Area (SSIA), Southeastern Area (SE) Operable Unit (OU) 10, AEDBR LEAD-128, Letterkenny Army Depot, Chambersburg, PA*. Final. May 2005. LKD-RT-264.

WESTON (Roy F. Weston, Inc.). 2003. *Final Focused Feasibility Study for the Southern Southeast Industrial Area Operable Unit (OU) 10, (Conococheague Drainage), Letterkenny Army Depot.* Final. August 2003. LKD-RT-237.


## Other References


EPA, 1999. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents.* EPA 540-R-98-031, OSWER 9200.1-23P, PB98-963241. Final. July 1999.

# FIGURES




Legend:

- Buildings
- Army Retained Area
- Roads
- SE/PDO Divide Major
- SE/PDO Divide Sub-division
- Drainage
- Township Line (Approximate)
- SE OU 10

1,350 675 0 1,350 Feet

Letterkenny Army Depot
Chambersburg, PA

**Figure 1**
**On-Post Area of**
**SE OU 10 at**
**Letterkenny Army Depot**

U.S. Army Corps of Engineers
Baltimore District

Date:
06/23/09

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Figure 2-1A - Maximum Groundwater Concentrations from 1996-1999

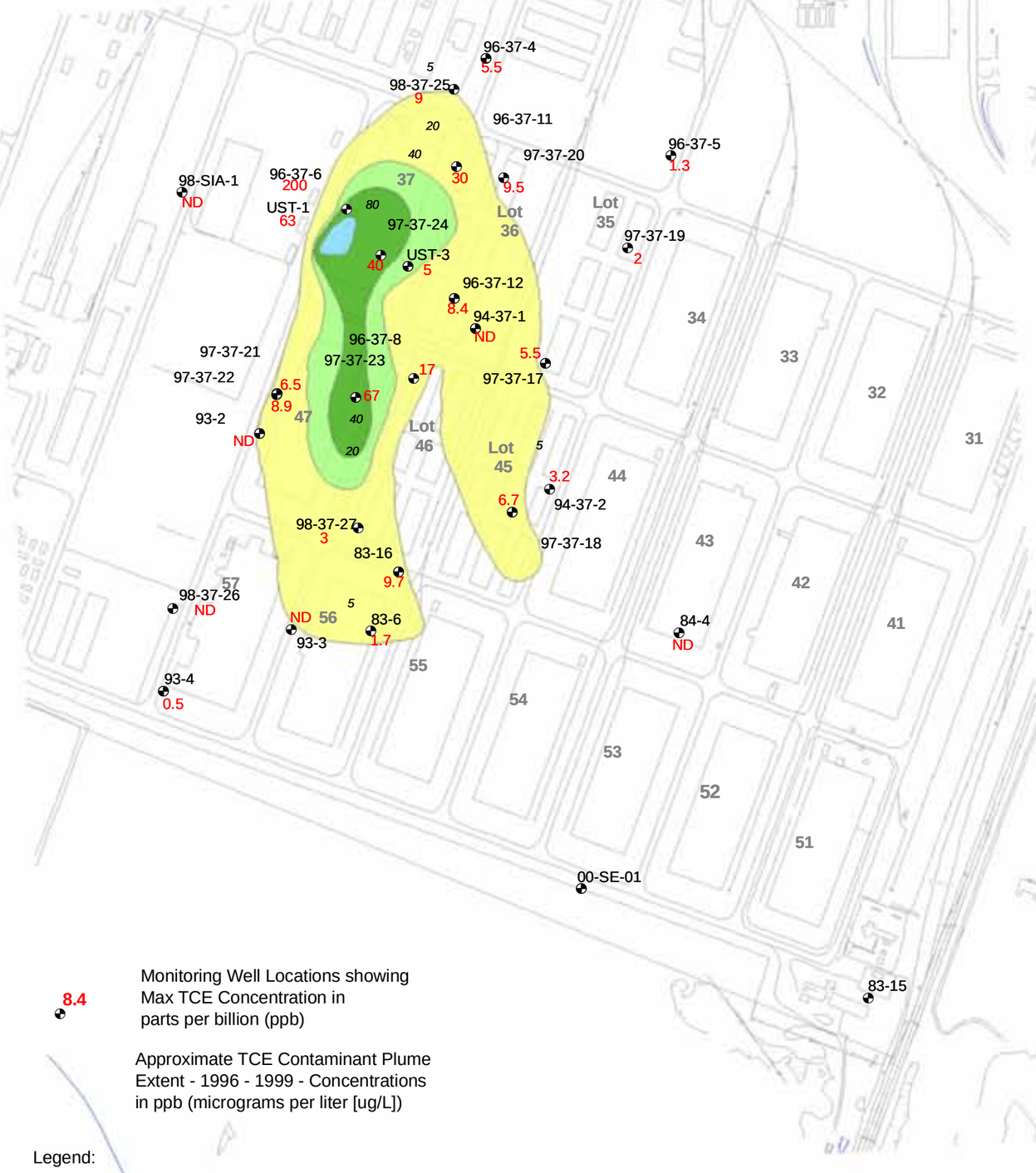
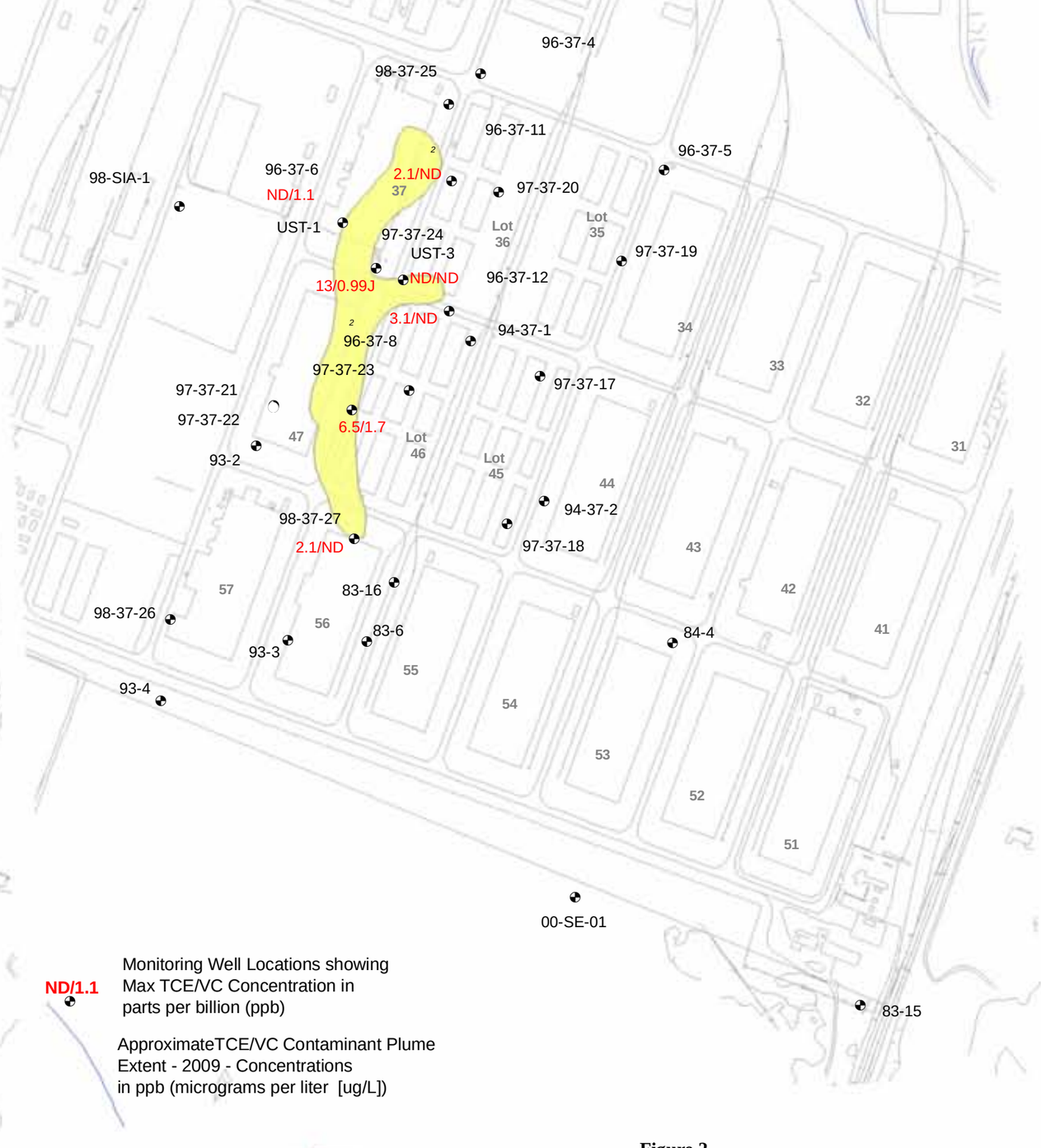



Figure 2-1B - Maximum Groundwater Concentrations 2009




8.4 Monitoring Well Locations showing Max TCE Concentration in parts per billion (ppb)

Approximate TCE Contaminant Plume Extent - 1996 - 1999 - Concentrations in ppb (micrograms per liter [ug/L])

ND/1.1 Monitoring Well Locations showing Max TCE/VC Concentration in parts per billion (ppb)

ApproximateTCE/VC Contaminant Plume Extent - 2009 - Concentrations in ppb (micrograms per liter [ug/L])

Legend:

Buildings

Roads

Drainage

Groundwater Flow Direction

0 175 350 700 Feet

N W E S

Letterkenny Army Depot
Chambersburg, PA
U.S. Army Corps of Engineers
Baltimore District

**Figure 2**
**Maximum Concentrations**
**Detected in SE OU 10 Groundwater**
**Monitoring Wells 1996 - 1999 and 2009**
**Letterkenny Army Depot**

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2-77
1
2
5-120
2R-80 Coffey
2-47
2-35
2-48
5-121
2R-81 Michigan (Technology)
5-119
2-49
5-113
2-38
7
2-50
5-118
26
5-114
25
6
2-39
2-40
2R-82 California (Advantage)
5-115
2-51
2-52
5-116
5-117
5
8
2R-85 Oregon (Opportunity)
2-41
5-100
2-58
2-59
9
4
2-36
5-112
3
5-105
5-102
2-65
5-111
2-55
5-103
2-60
5-110
10
22
5-101
11
2R-86 Carbaugh
2-56
2-57
2-61
2-63
16
2R-83 Overcash/Ohio
5-104
31
2-42
2-62
2-43
2-66
2-44
12
13
23
17
2-64
18
2R-84L-3
(Texas)
5-106
2-67
2-45
2-46
2R-84 Texas/Washington (Innovation)
2-68
5-109
19
20
21
5-108
2-69
2-37
5-107

Note:For road parcels 2R-80 to 2R-85, please refer to Table 2.

Legend:

- Buildings
- Roads
- Contours
- Drainage
- Road Parcel
- LUC's Land Use Controls
- Approximate Boundaries of SE OU 10
- Phase I, II, and V BRAC Parcels
- LUC's with GW Restrictions
- ApproximateTCE/VC Contaminant Plume Extent

0 375 750 Feet

N W E S

Figure 3
Existing LUCs in SE OU 10

Letterkenny Army Depot
Chambersburg, PA

U.S. Army Corps of Engineers
Baltimore District

Date:
07/02/09

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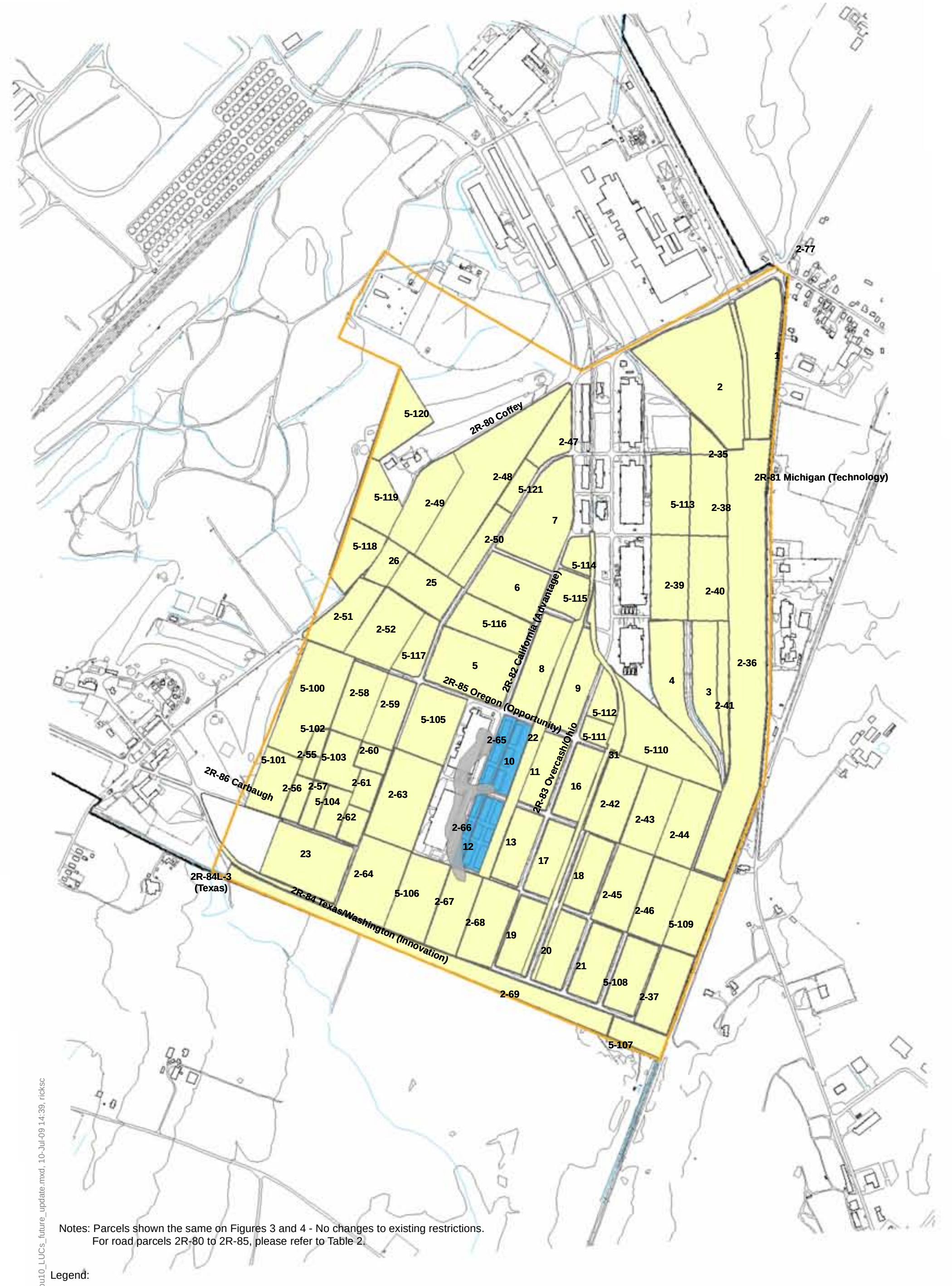


Notes: Parcels shown the same on Figures 3 and 4 - No changes to existing restrictions.
For road parcels 2R-80 to 2R-85, please refer to Table 2.

Legend:

| | | |
|---|---|---|
| | Buildings | Approximate Boundaries of SE OU 10 |
| | Roads | Phase I, II, and V BRAC Parcels LUC's with GW Restrictions |
| | Contours | |
| | Drainage | Phase I, II, and V BRAC Parcels LUC's with GW Restrictions Lifted |
| | Road Parcel | ApproximateTCE/VC Contaminant Plume Extent |
| LUC's | Land Use Controls | |

Feet

0 375 750

Letterkenny Army Depot
Chambersburg, PA

U.S. Army Corps of Engineers
Baltimore District

# Figure 4
# Changes to Existing LUCs in SE OU 10

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07/02/09

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# TABLES

**Table 1**
**SE OU 10 Groundwater and Surface Water Sampling Results - December 2008 and April 2009**
**Letterkenny Army Depot - Chambersburg, PA**

| Well Number | | | | UST-3 | UST-3 | 96-37-6 | 96-37-6 | 96-37-6 | 96-37-11 | 96-37-11 | 97-37-23 | 97-37-23 | 97-37-23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date Sampled | | | | 12/16/2008 | 4/8/2009 | 12/15/2008 | 4/6/2009 | 4/6/2009 | 12/15/2008 | 4/6/2009 | 12/16/2008 | 12/16/2008 | 4/6/2009 |
| Sample Type | | EPA | PADEP | | | | | Duplicate | | | | Duplicate | |
| Compound | UNITS | MCL | MSC | On-Post Locations | | | | | | | | | |
| 1,1,1-TRICHLOROETHANE | µg/L | 200 | 200 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | **1.4** | **1.2** |
| 1,1,2,2-TETRACHLOROETHANE | µg/L | NA | 0.3 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | µg/L | NA | 83000 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-TRICHLOROETHANE | µg/L | 5 | 5 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-DICHLOROETHANE | µg/L | NA | 27 | **1.2** | **40** | **2.6** | **2.8** | **2.9** | **1.4** | **1.6** | **13** | **12** | **12** |
| 1,1-DICHLOROETHENE | µg/L | 7 | 7 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | **0.3 J** | **0.32 J** |
| 1,2,4-TRICHLOROBENZENE | µg/L | 70 | 70 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-TRIMETHYLBENZENE | µg/L | NA | 16 | **13** | **420** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | µg/L | 0.2 | 0.2 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-DIBROMOETHANE | µg/L | NA | 0.05 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-DICHLOROBENZENE | µg/L | NA | 600 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-DICHLOROETHANE | µg/L | 5 | 5 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-DICHLOROPROPANE | µg/L | 5 | 5 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-TRIMETHYLBENZENE | µg/L | NA | 16 | **3.9** | **130** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-DICHLOROBENZENE | µg/L | NA | 600 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-DICHLOROBENZENE | µg/L | NA | 75 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-DIOXANE* | µg/L | 6.1* | 5.6 | Not Analyzed | **4.2** | Not Analyzed | 1.9 U | 1.9 U | Not Analyzed | Not Analyzed | Not Analyzed | Not Analyzed | **4.4** |
| 2-BUTANONE | µg/L | NA | NA | 5 U | 62 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 2-HEXANONE | µg/L | NA | NA | 5 U | 62 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 4-METHYL-2-PENTANONE | µg/L | NA | NA | 5 U | 62 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| ACETONE | µg/L | NA | 3700 | 5 U | **34 J** | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| BENZENE | µg/L | 5 | 5 | **1.5** | **48** | 1 U | 1 U | 1 U | 1 U | 1 U | **0.59 J** | **0.59 J** | **0.73 J** |
| BROMOCHLOROMETHANE | µg/L | NA | 90 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| BROMODICHLOROMETHANE | µg/L | NA | 100 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| BROMOFORM | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| BROMOMETHANE | µg/L | NA | 10 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CARBON DISULFIDE | µg/L | NA | 1900 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CARBON TETRACHLORIDE | µg/L | 5 | 5 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CHLOROBENZENE | µg/L | 100 | 100 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CHLOROETHANE | µg/L | NA | 230 | 1 U | **43** | **0.74 J** | **2.9** | **2.7** | 1 U | 1 U | 1 U | 1 U | 1 U |
| CHLOROFORM | µg/L | NA | 100 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CHLOROMETHANE | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CIS-1,2-DICHLOROETHENE | µg/L | 70 | 70 | 1 U | 12 U | **3** | **0.75 J** | **0.67 J** | **0.51 J** | **0.64 J** | **26** | **27** | **20** |
| CIS-1,3-DICHLOROPROPENE | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| CYCLOHEXANE | µg/L | NA | NA | **0.42 J** | **6.5 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| DIBROMOCHLOROMETHANE | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| DICHLORODIFLUOROMETHANE | µg/L | NA | 1000 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| ETHYLBENZENE | µg/L | 700 | 700 | **0.71 J** | **25** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| ISOPROPYLBENZENE | µg/L | NA | NA | **0.33 J** | **11 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| METHYL ACETATE | µg/L | NA | 37000 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| METHYL TERT-BUTYL ETHER (MTBE) | µg/L | NA | 20 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| METHYLCYCLOHEXANE | µg/L | NA | NA | **0.45 J** | **11 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| METHYLENE CHLORIDE | µg/L | NA | NA | 1 U | **6.1 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| NAPHTHALENE | µg/L | NA | 100 | **12** | **340** | 1 U | 1 U | 1 U | 1 U | 1 U | **0.77 J** | 1 U | 1 U |
| STYRENE | µg/L | 100 | 100 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| TETRACHLOROETHENE (PCE) | µg/L | NA | 5 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | **0.43 J** |
| TOLUENE | µg/L | 1000 | 1000 | **0.54 J** | **14** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| TRANS-1,2-DICHLOROETHENE | µg/L | 100 | 100 | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| TRANS-1,3-DICHLOROPROPENE | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| TRICHLOROETHENE (TCE) | µg/L | 5 | 5 | 1 U | 12 U | **0.5 J** | 1 U | 1 U | **2.1** | 2.1 | **9.4** | **9.6** | **6.5** |
| TRICHLOROFLUOROMETHANE | µg/L | NA | NA | 1 U | 12 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| VINYL CHLORIDE | µg/L | 2 | 2 | 1 U | 12 U | **3.1** | **1** | **1.1** | 1 U | 1 U | **3.1** | **3.5** | **1.7** |
| XYLENES (TOTAL) | µg/L | 10000 | 10000 | **10** | **280** | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U |

**Notes:** **Bolded** values indicate compound was detected.
Shaded values indicate compound was detected at or above its MCL, MSC, or SWQC.
NS - Not Sampled.
MCL - Maximum Contaminant Levels published by the U.S. Environmental Protection Agency (EPA) for drinking water.
MSC - Medium Specific Concentration published by the Pennsylvania Dept. of Environmental Protection (PADEP) for drinking water.
NA - Not available; MCL/MSC/SWQC is not listed for this compound.
*Tap Water Regional Screening Level (RSL) based on Target Risk of 1E-06

**Table 1**
**SE OU 10 Groundwater and Surface Water Sampling Results - December 2008 and April 2009**
**Letterkenny Army Depot - Chambersburg, PA**

| Well Number | | | | 97-37-24 | 97-37-24 | 96-37-12 | 96-37-12 | 98-37-27 | 98-37-27 | Hawbaker Spring | Hawbaker Spring | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date Sampled | | | | 12/16/2008 | 4/8/2009 | 12/16/2008 | 4/6/2009 | 12/15/2008 | 4/7/2009 | 12/16/2008 | 4/6/2009 | |
| Sample Type | | EPA | PADEP | | | | | | | | | PADEP |
| Compound | UNITS | MCL | MSC | On-Post Locations | | | | | | Off-Post Locations | | SWQC |
| 1,1,1-TRICHLOROETHANE | µg/L | 200 | 200 | 1 U | **0.58 J** | **1.4** | **1.7** | **1.4** | **2.2** | 1 U | **0.52 J** | NA |
| 1,1,2,2-TETRACHLOROETHANE | µg/L | NA | 0.3 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.17 |
| 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | µg/L | NA | 83000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,1,2-TRICHLOROETHANE | µg/L | 5 | 5 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.6 |
| 1,1-DICHLOROETHANE | µg/L | NA | 27 | **1.1** | **0.49 J** | **1.3** | **3.4** | **0.3 J** | **0.55 J** | 1 U | 1 U | NA |
| 1,1-DICHLOROETHENE | µg/L | 7 | 7 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.057 |
| 1,2,4-TRICHLOROBENZENE | µg/L | 70 | 70 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 330 |
| 1,2,4-TRIMETHYLBENZENE | µg/L | NA | 16 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,2-DIBROMO-3-CHLOROPROPANE | µg/L | 0.2 | 0.2 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,2-DIBROMOETHANE | µg/L | NA | 0.05 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,2-DICHLOROBENZENE | µg/L | NA | 600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2700 |
| 1,2-DICHLOROETHANE | µg/L | 5 | 5 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.38 |
| 1,2-DICHLOROPROPANE | µg/L | 5 | 5 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,3,5-TRIMETHYLBENZENE | µg/L | NA | 16 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| 1,3-DICHLOROBENZENE | µg/L | NA | 600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2700 |
| 1,4-DICHLOROBENZENE | µg/L | NA | 75 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2700 |
| 1,4-DIOXANE* | µg/L | 6.1* | 5.6 | Not Analyzed | Not Analyzed | Not Analyzed | Not Analyzed | Not Analyzed | Not Analyzed | Not Analyzed | 2 U | |
| 2-BUTANONE | µg/L | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 21000 |
| 2-HEXANONE | µg/L | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | NA |
| 4-METHYL-2-PENTANONE | µg/L | NA | NA | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | NA |
| ACETONE | µg/L | NA | 3700 | **7.6 B** | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 3500 |
| BENZENE | µg/L | 5 | 5 | **1.2** | **0.28 J** | **0.29 J** | 2.1 | 1 U | 1 U | 1 U | 1 U | 1.2 |
| BROMOCHLOROMETHANE | µg/L | NA | 90 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| BROMODICHLOROMETHANE | µg/L | NA | 100 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.56 |
| BROMOFORM | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 4.3 |
| BROMOMETHANE | µg/L | NA | 10 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 48 |
| CARBON DISULFIDE | µg/L | NA | 1900 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| CARBON TETRACHLORIDE | µg/L | 5 | 5 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.25 |
| CHLOROBENZENE | µg/L | 100 | 100 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 680 |
| CHLOROETHANE | µg/L | NA | 230 | **1.4** | 1 U | **0.93 J** | **5.6** | 1 U | 1 U | 1 U | 1 U | NA |
| CHLOROFORM | µg/L | NA | 100 | 1 U | 1 U | 1 U | 1 U | **0.86 J** | **1.5** | **0.28 J** | **0.29 J** | 5.7 |
| CHLOROMETHANE | µg/L | NA | NA | **1 U** | **1 U** | **1 U** | **1 U** | **1 U** | **1 U** | **1 U** | **1 U** | NA |
| CIS-1,2-DICHLOROETHENE | µg/L | 70 | 70 | **0.94 J** | **3.5** | **0.46 J** | **0.62 J** | 1 U | **0.42 J** | 1 U | 1 U | NA |
| CIS-1,3-DICHLOROPROPENE | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| CYCLOHEXANE | µg/L | NA | NA | **0.74 J** | **0.44 J** | 1 U | **1.6** | 1 U | 1 U | 1 U | 1 U | NA |
| DIBROMOCHLOROMETHANE | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.41 |
| DICHLORODIFLUOROMETHANE | µg/L | NA | 1000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| ETHYLBENZENE | µg/L | 700 | 700 | **0.24 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 3100 |
| ISOPROPYLBENZENE | µg/L | NA | NA | **5.7** | **2.1** | 1 U | **0.55 J** | 1 U | 1 U | 1 U | 1 U | NA |
| METHYL ACETATE | µg/L | NA | 37000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| METHYL TERT-BUTYL ETHER (MTBE) | µg/L | NA | 20 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| METHYLCYCLOHEXANE | µg/L | NA | NA | **2** | **1.4** | 1 U | **0.90 J** | 1 U | 1 U | 1 U | 1 U | NA |
| METHYLENE CHLORIDE | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 4.7 |
| NAPHTHALENE | µg/L | NA | 100 | **11** | **6.2** | **0.27 J** | **0.60 J** | 1 U | 1 U | 1 U | 1 U | NA |
| STYRENE | µg/L | 100 | 100 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| TETRACHLOROETHENE (PCE) | µg/L | NA | 5 | 1 U | **2** | **1.1** | **1.2** | 1 U | **0.38 J** | 1 U | 1 U | 0.8 |
| TOLUENE | µg/L | 1000 | 1000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 6800 |
| TRANS-1,2-DICHLOROETHENE | µg/L | 100 | 100 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 700 |
| TRANS-1,3-DICHLOROPROPENE | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| TRICHLOROETHENE (TCE) | µg/L | 5 | 5 | **1.1** | **13** | **2.7** | **3.1** | **0.92 J** | **2.1** | 1 U | 1 U | 2.7 |
| TRICHLOROFLUOROMETHANE | µg/L | NA | NA | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | NA |
| VINYL CHLORIDE | µg/L | 2 | 2 | **3.7** | **0.99 J** | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2 |
| XYLENES (TOTAL) | µg/L | 10000 | 10000 | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 70000 |

**Notes:** **Bolded** values indicate compound was detec
Shaded values indicate compound was detec
NS - Not Sampled.
MCL - Maximum Contaminant Levels publish
MSC - Medium Specific Concentration publis
NA - Not available; MCL/MSC/SWQC is not l
*Tap Water Regional Screening Level (RSL)

**Table 2**
**List of Phase I, II, and V BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase I BRAC Parcels | |
|---|---|
| **Parcel Number** | **Parcel Description** |
| 1 | Open Space |
| 2 | Open Space |
| 3 | Building 9 |
| 4 | Building 6 |
| 5 | Open Space |
| 6 | Open Space |
| 7 | Building 238 |
| 8 | Open Space |
| 9 | Open Space |
| 10 | Dock 36 |
| 11 | Dock 35 |
| 12 | Dock 46 |
| 13 | Dock 45 |
| 16 | Building 34 |
| 17 | Building 44 |
| 18 | Building 43 |
| 19 | Building 54 |
| 20 | Building 53 |
| 21 | Building 52 |
| 22 | Railroad |
| 23 | Buildings 412, 416 |
| 24 | Building 500 |
| 25 | Building 19 |
| 26 | Building 528 |
| 27 | Backwash Discharge |
| 28 | Building 524 |
| 31 | Railroad |

**Table 2**
**List of Phase I, II, and V BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase II BRAC Parcels | |
|---|---|
| **Parcel Number** | **Parcel Description** |
| 2-35 | Open Space |
| 2-36 | Railroad |
| 2-37 | Allegheny Power |
| 2-38 | Building 7 |
| 2-39 | Building 5 |
| 2-40 | Building 8 |
| 2-41 | Railroad |
| 2-42 | Building 33 |
| 2-43 | Building 32 |
| 2-44 | Building 31 |
| 2-45 | Building 42 |
| 2-46 | Building 41 |
| 2-47 | Building 247 |
| 2-48 | Golf Course |
| 2-49 | Quarters 503 |
| 2-50 | Building 18 |
| 2-51 | Golf Course |
| 2-52 | Golf Course |
| 2-53 | Golf Course |
| 2-54 | Golf Course |
| 2-55 | Building 436 |
| 2-56 | Building 426 |
| 2-57 | Building 424 |
| 2-58 | Golf Course |
| 2-59 | Open Space |
| 2-60 | Building 441 |
| 2-61 | Building 431 |
| 2-62 | Building 421 |
| 2-63 | Open Space |
| 2-64 | Open Space |
| 2-65 | Dock 36 |
| 2-66 | Dock 46 |
| 2-67 | Building 56 |
| 2-68 | Building 55 |
| 2-69 | Open Space |
| 2-70 | Fire Department |
| 2-77 | Railroad |
| 2R-80 | Coffey Avenue |
| 2R-81 | Michigan Avenue |
| 2R-82 | California Avenue |
| 2R-83 | Overcash Avenue |
| 2R-84 | Texas/Washington Avenue |
| 2R-85 | Oregon Avenue |

**Table 2**
**List of Phase I, II, and V BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase V BRAC Parcels | |
|---|---|
| **Parcel Number** | **Parcel Description** |
| 5-100 | Golf Course |
| 5-101 | Buildings 438, S-440, 442, 444 |
| 5-102 | Building 437 |
| 5-103 | Building 433 |
| 5-104 | Building 422 |
| 5-105 | Lot 48 |
| 5-106 | Building 57 |
| 5-107 | Building 98 |
| 5-108 | Building 51 |
| 5-109 | Soil Stockpile Area |
| 5-110 | TOSA |
| 5-111 | Open Space |
| 5-112 | Open Space |
| 5-113 | Building 4 |
| 5-114 | Former Building T-228 |
| 5-115 | Former Buildings 16, 17 |
| 5-116 | Lot 29 |
| 5-117 | Building 450 |
| 5-118 | Golf Course |
| 5-119 | Golf Course |
| 5-120 | Golf Course |
| 5-121 | Former S38-1/S38-2 |

**Table 3**
**Changes to Existing LUCs at BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase I BRAC Parcels | | | | |
|---|---|---|---|---|
| **Parcel Number** | **Parcel Description** | **Existing LUCs GW** | **Soil (C/I)** | **GW LUCs Lifted?** |
| 1 | Open Space | X | X | **Y** |
| 2 | Open Space | X | X | **Y** |
| 3 | Building 9 | X | X | **Y** |
| 4 | Building 6 | X | X | **Y** |
| 5 | Open Space | X | | **Y** |
| 6 | Open Space | X | | **Y** |
| 7 | Building 238 | X | | **Y** |
| 8 | Open Space | X | X | **Y** |
| 9 | Open Space | X | X | **Y** |
| 10 | Dock 36 | X | X | N |
| 11 | Dock 35 | X | X | **Y** |
| 12 | Dock 46 | X | X | N |
| 13 | Dock 45 | X | X | **Y** |
| 16 | Building 34 | X | | **Y** |
| 17 | Building 44 | X | | **Y** |
| 18 | Building 43 | X | | **Y** |
| 19 | Building 54 | X | | **Y** |
| 20 | Building 53 | X | | **Y** |
| 21 | Building 52 | X | | **Y** |
| 22 | Railroad | X | X | **Y** |
| 23 | Buildings 412, 416 | X | | **Y** |
| 24 | Building 500 | X | X | **Y** |
| 25 | Building 19 | X | | **Y** |
| 26 | Building 528 | X | | **Y** |
| 28 | Building 524 | X | | **Y** |
| 31 | Railroad | X | X | **Y** |

GW = Groundwater Restriction

Soil = Commercial/industrial Land Use Restriction

N = No

Y = Yes

**Table 3**
**Changes to Existing LUCs at BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase II BRAC Parcels | | | | |
|---|---|---|---|---|
| Parcel Number | Parcel Description | Existing LUCs GW | Existing LUCs Soil (C/I) | GW LUCs Lifted? |
| 2-35 | Open Space | X | | Y |
| 2-36 | Railroad | X | X | Y |
| 2-37 | Allegheny Power | X | | Y |
| 2-38 | Building 7 | X | | Y |
| 2-39 | Building 5 | X | | Y |
| 2-40 | Building 8 | X | | Y |
| 2-41 | Railroad | X | X | Y |
| 2-42 | Building 33 | X | | Y |
| 2-43 | Building 32 | X | | Y |
| 2-44 | Building 31 | X | | Y |
| 2-45 | Building 42 | X | | Y |
| 2-46 | Building 41 | X | | Y |
| 2-47 | Building 247 | X | | Y |
| 2-48 | Golf Course | X | | Y |
| 2-49 | Quarters 503 | X | | Y |
| 2-50 | Building 18 | X | | Y |
| 2-51 | Golf Course | X | | Y |
| 2-52 | Golf Course | X | | Y |
| 2-53 | Golf Course | X | | Y |
| 2-54 | Golf Course | X | | Y |
| 2-55 | Building 436 | X | | Y |
| 2-56 | Building 426 | X | | Y |
| 2-57 | Building 424 | X | | Y |
| 2-58 | Golf Course | X | | Y |
| 2-59 | Open Space | X | | Y |
| 2-60 | Building 441 | X | | Y |
| 2-61 | Building 431 | X | | Y |
| 2-62 | Building 421 | X | | Y |
| 2-63 | Open Space | X | | Y |
| 2-64 | Open Space | X | | Y |
| 2-65 | Dock 36 | X | | N |
| 2-66 | Dock 46 | X | | N |
| 2-67 | Building 56 | X | | Y |
| 2-68 | Building 55 | X | | Y |
| 2-69 | Open Space | X | | Y |
| 2-70 | Fire Department | X | | Y |
| 2-77 | Railroad | X | X | Y |
| 2R-80 | Coffey Avenue | X | X | Y |
| 2R-81 | Michigan Avenue | X | | Y |
| 2R-82 | California Avenue | X | | N |
| 2R-83 | Overcash Avenue | X | | Y |
| 2R-84 | Texas/Washington Avenue | X | | Y |
| 2R-85 | Oregon Avenue | X | | Y |

GW = Groundwater Restriction
Soil = Commercial/industrial Land Use Restriction
N = No
Y = Yes

**Table 3**
**Changes to Existing LUCs at BRAC Parcels Within SE OU 10**
**Letterkenny Army Depot**
**Chambersburg, PA**

| Phase V BRAC Parcels | | | | |
|---|---|---|---|---|
| | | Existing LUCs | | |
| Parcel Number | Parcel Description | GW | Soil (C/I) | GW LUCs Lifted? |
| 5-100 | Golf Course | X | X | **Y** |
| 5-101 | Buildings 438, S-440, 442, 444 | X | X | **Y** |
| 5-102 | Building 437 | X | X | **Y** |
| 5-103 | Building 433 | X | X | **Y** |
| 5-104 | Building 422 | X | X | **Y** |
| 5-105 | Lot 48 | X | X | **Y** |
| 5-106 | Building 57 | X | X | **Y** |
| 5-107 | Building 98 | X | X | **Y** |
| 5-108 | Building 51 | X | | **Y** |
| 5-109 | Soil Stockpile Area | X | X | **Y** |
| 5-110 | TOSA | X | X | **Y** |
| 5-111 | Open Space | X | | **Y** |
| 5-112 | Open Space | X | | **Y** |
| 5-113 | Building 4 | X | | **Y** |
| 5-114 | Former Building T-228 | X | X | **Y** |
| 5-115 | Former Buildings 16, 17 | X | X | **Y** |
| 5-116 | Lot 29 | X | X | **Y** |
| 5-117 | Building 450 | X | | **Y** |
| 5-118 | Golf Course | X | | **Y** |
| 5-119 | Golf Course | X | | **Y** |
| 5-120 | Golf Course | X | | **Y** |
| 5-121 | Former S38-1/S38-2 | X | X | **Y** |

GW = Groundwater Restriction

Soil = Commercial/industrial Land Use Restriction

N = No

Y = Yes