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U.S. ARMY FORT MONMOUTH

Addendum 1 ECP Report – Unregulated Heating Oil Tank Investigation Report

c o r e v a l u e s

RESTORATION ADVISORY BOARD
OCTOBER 2, 2014 MEETING



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Presentation Overview

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Introduction

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- Addendum 1 ECP - UHOT Investigation Report is an addendum to Section 5.4 Petroleum and Petroleum Products of the January 2007 U.S. Army BRAC 2005, ECP Report, Fort Monmouth, Monmouth County, New Jersey.
- Information contained in the Addendum 1 ECP Report - UHOT Investigation Report is the additional data that became available after the completion of the January 2007 ECP Report and 2008 Site Investigation (SI) Report.
- In 2008 New Jersey Department of Environmental Protection (NJDEP) issued comments requiring Fort Monmouth (FTMM) to further investigate USTs (later determined to be UHOTs) on ECP Parcels 14, 28, 51, 76, and 79.

Objectives of Addendum 1 – UHOT Investigation Report

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- Present a summary of existing information related to UHOTs at FTMM.
- Identify potential locations and quantities of UHOTs that potentially exist at FTMM.

Definition of UHOT and UST

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- **"Underground storage tank"** means any one or combination of tanks as set forth in N.J.A.C. 7:14B-1.4, including appurtenant pipes, lines, fixtures, and other related equipment, used to contain an accumulation of hazardous substances, the volume of which, including the volume of the appurtenant pipes, lines, fixtures and other related equipment, is 10 percent or more beneath the surface of the ground.
- **"Unregulated heating oil tank system"** as defined by the NJDEP means any one or combination of tanks, including appurtenant pipes, lines, fixtures, and other related equipment, used to contain an accumulation of heating oil for on-site consumption in a residential building, or those tanks with a capacity of 2,000 gallons or less used to store heating oil for on-site consumption in nonresidential building, the volume of which, including the volume of the appurtenant pipes, lines, fixtures and other related equipment, is 10 percent or more below the ground.
- The Army began using the term UHOTs to refer to the installations USTs used for heating purposes, after the completion of the SI in 2008.

Background/Timeline of Events

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■ Pre-1990:

- Primary fuels used throughout history of FTMM have been coal, fuel oil, diesel, and gasoline. Until the early 1990s, the primary method of heating at FTMM had been through the use of heating oil.
- The majority of structures at FTMM were heated by furnaces that were fired by fuel oil stored in UHOTs for that individual building.
- From the 1940s through the 1980s, FTMM utilized UHOTs and aboveground storage tanks (ASTs) as the primary fuel storage method for heating oil.
- Fuels were brought in by rail and staged in two large ASTs prior to being transported to the individual UHOTs.

Background/Timeline of Events (cont'd)

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■ 1990 to present:

- In early 1990's FTMM developed a program for managing approximately 474 active USTs throughout the FTMM installation (Main Post [MP] and Charles Wood Area [CWA]). The tank program included UHOTs, USTs and ASTs.
- UHOTs were removed when buildings were being converted to natural gas.
- Closure reports were prepared when UHOTs were removed. Closure reports were submitted to NJDEP if evidence of a release was observed.
- Between 2003 and 2005, Enviroscan performed geophysical surveys for the Department of Public Works (DPW) to detect and delineate possible UHOTs and construction debris at the 200, 400, 700, and 800 Areas.
- A Phase I ECP was conducted between 2006 and 2007 at FTMM and results were documented in the January 2007 Final ECP Report.

Background/Timeline of Events (cont'd)

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- By 2007, 371 UHOTs were removed and three UHOTs were abandoned in place.
- SI activities conducted by Shaw in late 2007 were performed to address recommendations made as part of the Phase I ECP. SI geophysical surveys (performed by Enviroscan) were carried out to identify the absence/presence of UHOTs at ECP Parcels 13, 14, 15, 27, 28, 51, 76, and 79. The geophysical results along with other SI sampling activities were documented in the July 2008 Final SI Report prepared by Shaw.
- A Microsoft Access database was developed by the DPW in April 2008; and was the synthesis of the real property cards for existing and demolished structures, available maps and diagrams. The following terminology was developed for the database:
 - Suspected UHOTs – objects that may be a UHOT based on field observations.
 - Potential UHOTs – are objects based on review of maps, real property records and aerial photographs that show a strong degree of being a UHOT at a given location.

Background/Timeline of Events (cont'd)

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- In October 2008, the NJDEP issued comments on the SI Report and required further investigations for suspected UHOTs identified during the geophysical survey at the ECP parcels.
- In an April 28, 2009 letter to the NJDEP, FTMM indicated that further assessment and delineation of the UHOT discrepancies were required for the parcels identified in the ECP.
- Between 2008 and 2010, prior geophysical data for ECP Parcels 13, 14, 15, 27, 28, 51, 76, and 79 and in the 200, 400, 700 and 800 areas (2003 through 2005) was re-analyzed using updated software indicating that several previously detected electromagnetic (EM) anomalies had sufficient characteristics to be UHOTs. Following reprocessing the data, additional geophysical survey field activities were performed in various locations between 2007 and 2010 and concluded that these EM anomalies were suspected UHOTs.

Background/Timeline of Events (cont'd)

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- Concurrently as the data was being reprocessed, the FTMM DPW:
 - Compiled and geo-referenced historic information (e.g., real property records, aerial photographs and historical site maps) concerning the location of fuel oil tanks on FTMM and compared it to the results of Enviroscan's surveys which revealed the need to further refine the geophysical methods;
 - Conducted field verification activities between 2008 and 2011 at locations where suspected UHOTs were identified based on the geophysical survey activities;
 - Under the direction of the FM Garrison, removed three previously abandoned UHOTs; and
 - 25 UHOTs were identified during FTMM field verification activities and subsequently removed.
- Closure reports for these UHOTs were submitted to NJDEP in March 2012, and requests for No Further Action (NFA) determinations were requested where appropriate.
- Preparation of the Addendum 1 ECP Report - UHOT Investigation Report in 2013.

Technical Approach to Determine Amount of UHOTs Potentially Present at FTMM

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- Review existing UHOT data to determine how many UHOTs were removed from MP and CWA. Existing data included:
 - Real property records for existing and demolished buildings;
 - UST Closure Reports prepared by FTMM between 1990 and 2012;
 - Review NJDEP NFA letters in FTMM files to determine how many UHOT removals were granted NFA approval from NJDEP;
 - Review prior geophysical survey reports prepared by Enviroscan to quantify the amount of electromagnetic anomalies on ECP Parcels 13, 14, 15, 27, 28, 51, 76 and 79 plus the 200, 400, 700, and 800 Areas that could potentially correspond to the locations of UHOTs; and
 - Results of field verification activities performed by FTMM in Parcels 14, 28, 51, 76, and 79.

- Table 1 of the Addendum 1 ECP Report - UHOT Investigation Report summarizes data referenced above.

Technical Approach to Determine Amount of UHOTs Potentially Present at FTMM (cont'd)

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- Used UHOT probability and geophysical data provided to Parsons by FTMM to estimate how many UHOTs may remain at FTMM.
 - Probability determinations are based on data obtained from real property records for existing and demolished buildings, and UST Closure Reports.
 - Real property records for existing and demolished structures indicate the heating system type (i.e., no heat, coal, oil, gas) and identification numbers and removal dates of known UHOTs.
 - Closure reports and NFA letters indicate tank identification numbers and tank construction material (steel or fiberglass).
 - The estimated amount of UHOTs that remain at FTMM is equivalent to the sum of high and low probability determinations (refer to Figures 2 and 3).

UHOT Probability Rankings Developed by FTMM

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UHOT Probabilities

▪ High Probability Sites:

- If a fiberglass tank was pulled and the building heat type was oil heat, no oil heat, or unknown.
- If the building heating type was oil heat and no UHOTs were pulled.
- If a fiberglass tank was pulled and the building heating type was oil heat, no oil heat, unknown, or converted from electric/coal to oil then a potential steel UHOT may be present.

▪ Low Probability Sites:

- If a steel tank was pulled and the building heat type was no oil heat or unknown.
- If the building heating type was no oil heat or unknown.

▪ No Further Action Sites/Tanks are Unlikely to be Present:

- If a steel tank and fiberglass tank were pulled and the building heat type was oil heat, no oil heat, or unknown
- The site of a potential UHOT was assessed/excavated and a UHOT was found and removed.

Summary of Findings

■ Previously Removed UHOTs Prior to 2012:

Area	# UHOTs Removed	# Closure Reports Submitted to NJDEP	# NJDEP Closure Approvals / NFAs	# Removals not Requiring Closure Reports
MP	320	221	158	99
CWA	79	41	37	38
Total	399	262	195	137

■ Potential UHOTs Remaining:

- 376 existing and demolished building locations at MP and CWA that have a low or high probability of having an associated unresolved UHOT.
- One UHOT previously discovered by FTMM DPW on 1-3 Allen Avenue (Parcel 76, 200 Area) was not removed due to structural concerns of a nearby building.
- Geophysical activities identified 73 electromagnetic anomalies on ECP Parcels 13, 14, 15, 27, 28, 51, 76, and 79 plus the 200, 400, 700, and 800 Areas. Although Enviroscan characterized 61 of these anomalies as possible UHOTs and 12 anomalies as suspected UHOTs none of these anomalies were verified to confirm these categories.

Closing

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- UHOT ECP Report Addendum 1 was submitted to NJDEP for review in July 2014.