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June 14, 2004

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Subject: HAFB Base Hospital UST Voluntary Corrective Measures Work Plan
Holloman AFB, New Mexico
USACE – Omaha District
Contract No. DACA45-03-D-0023, DO No. 2
Bhate Project No. 9030072.03.01

Dear Ms. Martin,

Please find enclosed four copies of the *HAFB Base Hospital UST Voluntary Corrective Measures Work Plan – Holloman AFB, New Mexico* for your review.

Bhate Environmental Associates, Inc., appreciates the opportunity to provide services to the U.S. Army Corps of Engineers, Holloman Air Force Base and the State of New Mexico. If you have any questions or need additional assistance, please feel free to contact me at (970) 216-7819 or our Birmingham office at (205) 918-4000.

Cordially,
BHATE ENVIRONMENTAL ASSOCIATES, Inc.


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VOLUNTARY CORRECTIVE MEASURES BASE HOSPITAL UST

WORK PLAN



**Holloman Air Force Base
New Mexico**

June 2004

**CONTRACT NO. DACA45-03-D-0008
DELIVERY ORDER NO. 03
Bhate Project No. 9030072.03**



**Headquarters, Air Combat Command
Langley Air Force Base, Virginia**



**49 CES/CEV
Holloman Air Force Base, New Mexico**

**VOLUNTARY CORRECTIVE MEASURES WORK
PLAN**

**BASE HOSPITAL UST
HOLLOMAN AFB, NEW MEXICO**

Prepared for:

**49CES/CEV
Holloman Air Force Base
New Mexico**

Under Contract To:

**U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska
Contract No. DACA45-03-D-0008
Delivery Order No. 0003**

June 2004

Prepared by:

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Bhate Project No. 9030072.03

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**VOLUNTARY CORRECTIVE MEASURES WORK PLAN
BASE HOSPITAL UST
HOLLOMAN AFB, NEW MEXICO**

REVIEW SHEET

This report has been reviewed and approved by:

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**VOLUNTARY CORRECTIVE MEASURES WORK PLAN
BASE HOSPITAL UST
HOLLOMAN AFB, NEW MEXICO
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- Appendix B UFGS Section 02111 *Excavation and Handling of Contaminated Material*, September 2003
- Appendix C Base Civil Engineer Work Request Air Force Form 332
- Appendix D EPA Innovative Technology Verification Report: *Field Measurement Technologies for Total Petroleum Hydrocarbons in Soil*, September 2001
- Appendix E *NMED TPH Screening Guidelines*, June 24, 2003
- Appendix F Komatsu Hydraulic Plate Compactor Specifications
- Appendix G *ASTM Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods*
- Appendix H UFGS Section 02770A *Concrete Sidewalks and Curbs and Gutters*, March 2004
- Appendix I UFGS Section 04200 *Masonry*, September 2003
- Appendix J UFGS Section 02741N *Bituminous Concrete Pavement*, September 1999
- Appendix K State of New Mexico Department of Transportation Specifications, Section 416, *Minor Paving*
- Appendix L Associated Laboratories, USACE Laboratory Validation Approval, US Department of Army, September 26, 2003
- Appendix M NMED Soil Screening Levels, Revision 2.0, February 2004
- Appendix N Site-Specific Addendum to the Basewide Health and Safety Plan
- Appendix O Site-Specific Addendum to the Basewide Quality Assurance Project Plan

ACRONYMS AND ABBREVIATIONS

AAF	Army Air Field
AFB	Air Force Base
AFCESA	Air Force Civil Engineer Support Agency
AF Fm	Air Force Form
amsl	Above mean sea level
ANSI	American National Standards Institute
AOC	Area of concern
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CDW	Construction-Derived Waste
CES/CEV	Civil Engineering Squadron/Combat Engineer Vehicle
COC	Chain-of-custody
CRZ	Contamination Reduction Zone
cu yds	Cubic yards
DRO	Diesel range organics
DQO	Data Quality Objective
ERPIMS	Environmental Restoration Program Information Management System
EZ	Exclusion Zone
°F	Degrees Fahrenheit
FID	Flame ionization detector
ft	Feet
GC	Gas chromatogram
GRO	Gasoline range organics
HAFB	Holloman Air Force Base
HASP	Health and Safety Plan
hrs	Hours
HUST	Hospital underground storage tank
HVAC	Heating, ventilation, and air conditioning
IRP	Installation Restoration Program
ln ft	Linear feet
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mL	Milliliter
MS	Matrix spike
MSD	Matrix spike duplicate
NAVFAC	Naval Facilities Engineering Command
NFA	No further action
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
ORO	Oil range organics

OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
PAH	Ploynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCS	Petroleum-contaminated soils
PID	Photo ionization detector
PIV	Post Indicating Valve
POL	Petroleum, Oil, and Lubricants
PPE	Personal protective equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
SSHO	Site Safety and Health Officer
SSL	Soil Screening Level
SOP	Standard Operating Procedure
SVOC	Semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
SZ	Support Zone
TSD	Treatment, storage, and disposal
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
UFGS	Unified Facilities Guide Specifications
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
UVF	Ultra violet flourometer
VCM	Voluntary Corrective Measures
VOC	Volatile organic compounds
WRCC	Western Regional Climate Center
WSMR	White Sands Missile Range
WWTF	Waste Water Treatment Facility

1 INTRODUCTION

Bhate Environmental Associates, Inc. (Bhate) has been retained by the U.S. Army Corps of Engineers (USACE), under contract DACA45-03-D-0008, Delivery Order No. 3, to conduct Voluntary Corrective Measures (VCMs) at several of the Areas of Concern (AOC) at Holloman Air Force Base (HAFB), New Mexico. The VCMs include multiple tasks as outlined in the USACE Scope of Services dated February 24, 2003. This document is to provide a work plan that will serve as the primary working document for the excavation activities at Building 15, Base Hospital underground storage tank (UST), HAFB within AOC 2. This plan provides the relevant site specific information and requirements as outlined in the respective Scope of Work for remedial activities at the Hospital UST (HUST). The primary objective of this VCM is to remove, through excavation, and properly dispose of petroleum-contaminated soils (PCS). During this process, required data will be collected to support the closure of the site based on guidance from the New Mexico Environment Department (NMED). The ultimate objective is to achieve approval for site closure from NMED.

The document has been written to provide relevant information on the geologic, hydrologic, and other environmental conditions for HAFB and at the site and the procedures by which the VCM will be completed. Information is provided for the entire Base and its surrounding environ as well as the Hospital UST, specifically. This VCM calls for the removal of all PCS at the site through excavation with verification of complete removal via confirmation sampling from the excavation.

1.1 Base and Site Description

1.1.1 HAFB

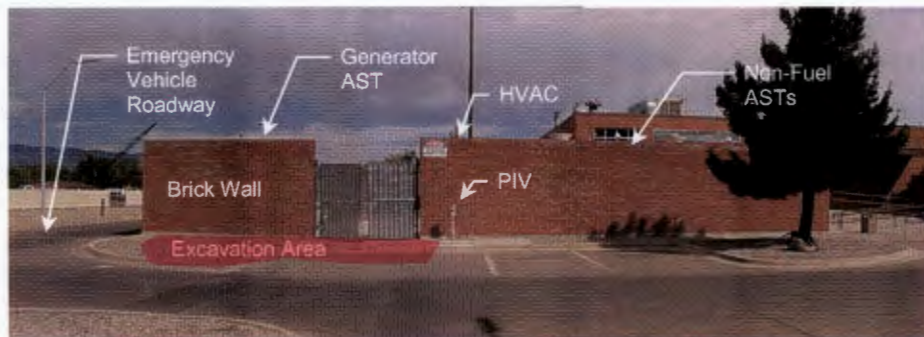
HAFB is located in southeastern New Mexico in Otero County, New Mexico, approximately 100 miles north-northeast of El Paso, Texas, and 6 miles west of Alamogordo, New Mexico (Figure 1). The following Base information has been taken from: the *Characterization Summary and No Further Action (NFA) Documentation for Installation Restoration Program (IRP) Sites SS-2/5 POL Yard (AOC T), SD-47 POL Washrack Area (SWMU 133), and SS-60 Building 828 (SWMU 230)* by Foster Wheeler (March, 1998) and the *2001 Long-Term Groundwater Monitoring Report, Holloman Air Force Base, New Mexico*, by Foster Wheeler (July 2002). Although neither document pertains directly to the HUST site, they do contain descriptive information regarding the Base and general area.

HAFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942 through 1945, Alamogordo AAF served as the training grounds for over 20 different flight groups, flying primarily B-17s, B-24s, and B-29s. After World War II, most operations had ceased at the base. In 1947, Air Material Command announced the air field would be its primary site for the testing and development of un-manned aircraft, guided missiles, and other research programs. On January 13, 1948, the Alamogordo installation was renamed Holloman Air Force Base, in honor of the late Col. George V. Holloman; a pioneer in guided missile research. In 1968, the 49th

Tactical Fighter Wing arrived at HAFB and has remained since. Today, HAFB also serves as the training center for the German Air Force's Tactical Training Center.

1.1.2 Hospital Site

Building 15, the Hospital, is located on the main base at Holloman at the corner of 1st Street and Arnold Avenue (Figure 2). The site is located on the north end of the hospital, adjacent to the west parking lot and the ambulance driveway. Viewing from the front parking area, photograph 1, there is a brick and concrete block privacy wall which surrounds the hospital utility and mechanical equipment. Photograph 2 provides detail for the interior of the walled area. Within this area there is the existing diesel fuel aboveground storage tank (AST) for the back-up generator, two medium size heating, ventilation, and air conditioning (HVAC) units, and two additional large ASTs to the right (south) with the contents unknown. To the immediate north, or left in photograph 1, is the emergency roadway for the hospital emergency vehicles. In front of the privacy wall, and where the PCS is located, exists a concrete sidewalk.



Photograph 1. Front view of Base Hospital UST Area



Photograph 2. Inside View of Hospital AST Area