HAFB 2003

BHATE
Environmental Engineers and Scientists
1608 13th Avenue South, Suite 300
Birmingham ■ Alabama ■ 35205
(205) 918-4000
(205) 918-4050 (FAX)

December 23, 2003

Ms. Sandra Martin
NMED/Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe, New Mexico 87505-6303

Subject: Preliminary Assessment/Site Inspection Work Plan – AOC 2
Holloman AFB, New Mexico
USACE – Omaha District
Contract No. DACA45-03-D-0012, DO No. 5
Bhate Project No. 9030024.01

Dear Ms. Martin,

Please find enclosed four copies of the final *Preliminary Assessment/Site Inspection Work Plan – AOC 2 for 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 us at (205) 918-4000.

Cordially,
BHATE ENVIRONMENTAL ASSOCIATES, Inc.

Frank Gardner, P.G.
Program Manager

cc w/ enclosures: Cornelius Amindyas (NMED/HWB)
Steve Jetter (NMED/HWB)
James Harris (USEPA/Region 6)

PRELIMINARY ASSESSMENT/SITE INSPECTION

WORK PLAN

AOC-2

Holloman Air Force Base
New Mexico

December 2003

Contract No. DACA45-02-D-0012
Delivery Order No. 005, WAD 1
BHATE Project No. 9030024.01

Headquarters, Air Combat Command
Langley Air Force Base, Virginia

49 CES/CEV
Holloman Air Force Base, New Mexico

PRELIMINARY ASSESSMENT/SITE INSPECTION WORK PLAN
SITE AOC-2
HOLLOMAN AFB, NEW MEXICO

Prepared For

U.S. Army Corp of Engineers

Omaha, NE

CONTRACT NO. DACA45-02-D-0012
DELIVERY ORDER NO. 5
Delivery Order No. 05, WAD 1

Prepared By

Bhate Environmental Associates, Inc.
1608 13th Avenue South
Suite 300
Birmingham, Alabama

Bhate Project Number: 9030024 01.01

December 2003

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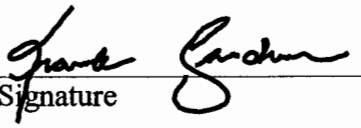
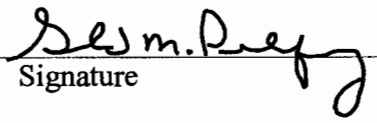
PRELIMINARY ASSESSMENT/SITE INSPECTION WORK PLAN SITE AOC-2 HOLLOMAN AFB, NEW MEXICO REVIEW SHEET

COMMITMENT TO IMPLEMENT THIS WORK PLAN

Frank Gardner		11/26/03
Program Manager	Signature	Date
Jerry Pelfrey		11/26/03
Site Manager	Signature	Date

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PRELIMINARY ASSESSMENT/SITE INSPECTION WORK PLAN

SITE AOC-2
HOLLOMAN AFB, NEW MEXICO

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ACRONYMS AND ABBREVIATIONS

AAF	Army Air Field
AOC	Area of Concern
AFB	Air Force Base
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
COC	Chain-of-custody
CRZ	Contaminant Reduction Zone
DoD	Department of Defense
DPT	Direct Push Technology
EPA	U.S. Environmental Protection Agency
EZ	Exclusion Zone
HAFB	Holloman Air Force Base
HASP	Health and Safety Plan
IDW	Investigation derived waste
IRP	Installation Restoration Program
kg	Kilogram
L	Liter
mg	Milligram
mL	Milliliter
NFA	No Further Action
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
PA/SI	Preliminary Assessment/Site Inspection
POL	Petroleum, oil and lubricants
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedure
SVOC	Semi-volatile organic compounds
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compounds

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1 INTRODUCTION

Bhate Environmental Associates, Inc. (Bhate) has been retained by the U.S. Army Corps of Engineers (USACE), under contract DACA45-02-D-0012, Delivery Order No. 5, to conduct a Preliminary Assessment/Site Inspection (PA/SI) at Areas of Concern (AOC) -2 at Holloman Air Force Base (AFB), New Mexico. The PA/SI includes the field investigative tasks as outlined in the USACE Scope of Services: site literature search, PA/SI investigative summary report, soil sampling, groundwater sampling and risk assessment. This document is to provide a work plan that will serve as the primary working document for the site assessment and inspection activities at site AOC-2, Holloman AFB and provides the relevant site specific information as it pertains to the requirements as outlined in the Scope of Work for investigation activities at Site AOC-2. The primary objective of this PA/SI is to review available information and to collect soil and ground water data for the area as to complete a limited assessment of the site. Data will be collected during this PA/SI will ultimately be in support for the closure of the site based on guidance from the New Mexico Environmental Department (NMED). The ultimate objective is to achieve approval for site closure from NMED.

The document has been constructed to provide relevant information on the geologic, hydrologic and other environmental conditions for HAFB and at the site. Information is provided for the entire Base and its surrounding environ as well as AOC-2, specifically. Likewise, the procedures encompassing the assessment/investigation, sampling and waste management are presented.

The Preliminary Assessment/Site Inspection (PA/SI) is the initial step in the CERCLA process of identifying a site's presence of contamination and at what levels. Normally, the site's PA will be completed initially with a decision being rendered as to the requirement for further action. If the PA recommends further investigation, an SI is performed. For this site, the Site Inspection shall be completed concurrently with the PA. The PA investigation collects readily available information about a site through records search and site document reviews of the site and its surrounding area. The PA is a limited-scope investigation designed to distinguish between sites that pose little or no threat to human health and the environment and sites that require further investigation. The SI involves the collection of environmental samples to determine if contaminants are present at a site. It determines if these contaminants are being released to the environment and assesses if they have reached nearby receptors.

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 AOC-2 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, HAAF also serves as the training center for the German Air Force's Tactical Training Center.

1.1.2 Site AOC-2

This will be the first investigative study of the site so there is no previous information relating to the environmental status of the site. AOC-2 is located on the western part of main base, across taxiway G (Figure 2). The site is approximately 900 feet northeast of the air traffic control tower, Building 864. IRP site SS-26 lies about 1,000 feet to the southwest and site SD-27 is about 950 feet to the southeast. The area of concern is approximately 110 feet in diameter with primarily salt cedars comprising the vegetation. On-site signage indicates the area to be a former sewage disposal area. There is a wire fence surrounding the area with signs prohibiting vehicular traffic. It is inferred that disposal activities were terminated prior to 1984 although no documentation of disposal records are presently available to corroborate this assertion.

1.2 Physiography

HAFB is located within the Sacramento Mountains Physiographic Province on the western edge of the Sacramento Mountains (Figure 1-3). The region is characterized by high tablelands with rolling summit plains; cuesta-formed mountains dipping eastward and of west-facing escarpments with the wide bracketed basin forming the basin and range complex. HAFB is approximately 59,600 acres in area, and is located at a mean elevation of 4,093 feet above sea level. The Base is located in the Tularosa Sub-basin which is part of the Central Closed Basins. The San Andreas Mountains bound the basin to the west (about 30 miles) with the Sacramento Mountains approximately 10 miles to the east. At its widest, the basin is about 60 miles east to west and stretches approximately 150 miles north to south.

AOC-2 is primarily comprised of fairly level terrain and has no prominent surface drainage features. The area is positioned between a main taxiway, the present day flight tower and small access roads (Figure 4). The immediate area within the fenced area has a high concentration of salt cedars while the area to the east is barren. To the west, small scrub brush and desert grasses exist.

1.3 Surface Water

The Tularosa Basin contains all of the surface flow in its boundaries. The nearest inflow of surface waters to the Base comes from the Lost River, located in the north-central region of the Base. The upper reaches of the Three Rivers and the Sacramento River are perennial in the basin. HAFB is dissected by several southwest trending arroyos that control the surface drainage. Hay Draw arroyo is located in the far north. Malone and Rita's Draw, which drain into the Lost River, and Dillard Draw arroyos are located along the eastern perimeter of the Base. Approximately 10,000 years ago, indications are of a much wetter climate. The present day Lake Otero encompassed a much larger area, possibly upwards of several hundred square miles. Its remains are the Alkali Flat and Lake Lucero. Lake Lucero is a temporary feature of merely a few inches in depth during the rainy season.

Ancient lakes and streams deposited water bearing deposits over the older bedrock basement material. Fractures, cracks and fissures, in the Permian and Pennsylvanian bedrock, yield small quantities of relatively good quality water in the deeper peripheral. Potable water is only found from a handful of wells near the edges of the basin with more saline water towards the center. Two of the principal sources of potable water are a long narrow area on the upslope sides of Tularosa and Alamogordo with the other in the far southwestern part of the basin. Alamogordo's water, as well as the Base's, is supplied from Lake Bonito (which is in the Pecos River Basin). Within the boundaries of AOC-2 and the surrounding area, surface flow appears to flow across the site from the east-northeast based upon dendritic erosional patterns. To the northwest a swale exists that may act as a conduit for excessive surface run-off.

1.4 Groundwater

The predominance of the groundwater occurs as an unconfined aquifer in the unconsolidated deposits of the central basin, with the primary source of recharge as rainfall percolation and minor amounts of stream run-off along the western edge of the Sacramento Mountains. Surface water/rainfall migrates downward into the alluvial sediments at the edge of the shallow aquifer near the ranges, and flows downgradient through progressively finer-grained sediments towards the central basin. Because the Tularosa Basin is a closed system, water that enters the area only leaves either through evaporation or percolation. This elevated amount of percolation results in a fairly high water table. Beneath HAFB, groundwater ranges from 5 to 50 feet. Flow for the Base is generally towards the southwest with localized influences from the variations in the topography of the Base. Near the arroyos, groundwater flows directly toward the surface drainage feature. Because there haven't been any previous investigations of the site or its immediate surroundings, there is no hydraulic data for the aquifers.

Previous analyses indicate total dissolved solids (TDS) of greater than 10,000 mg/L in groundwater beneath Holloman. This exceeds the New Mexico Water Quality Control Commission (NMWQCC) limit as potable water and thus, the groundwater beneath HAFB has been designated as unfit for human consumption. Likewise, US EPA guidelines have identified the groundwater as a Class IIIB water source, characterized by TDS concentrations exceeding

10,000 mg/L. Analysis of ground water samples will be completed for determination of the water as to meeting the NMED Drinking Water Standards

1.5 Climate

As a whole, New Mexico has a mild, arid to semi-arid continental climate characterized by light precipitation totals, abundant sunshine, relatively low humidity and relatively large annual and diurnal temperature range (WRCC, 2003). The climate of the Central Closed Basins varies with elevation. The Base is found in the low areas and is characterized by warm temperatures and dry air. Daytime temperatures often exceed 100°F in the summer months and middle 50s in the winter. A preponderance of clear skies and relatively low humidity permits rapid night time cooling resulting in average diurnal temperature ranges of 25 to 35°F. Potential evapotranspiration, at 67 inches per year, significantly exceeds annual precipitation, usually less than 10 inches (Foster Wheeler and Radian, 1997). The very low rainfall amounts resulting in the arid conditions, which with the topographically induced wind patterns combining with the sparse vegetation, tend to cause localized "dust devils". Much of the precipitation falls during the mid-summer monsoonal period (July and August) as brief, yet frequent, intense thunderstorms culminating to 30 – 40% of the annual total rainfall.

1.6 Geology

The sedimentary rocks which make up the adjacent mountain ranges are between 500 and 250 million years old (WSMR, 2003). During the period when the area was submerged under the shallow intra-continental sea, the layers of limestone, shale, gypsum and sandstone were deposited. In time, these layers were pushed upward through various tectonic forces forming a large bulge on the surface. Approximately 10 million years ago the center began to subside resulting in a vertical drop of thousands of feet leaving the edges still standing (the present day Sacramento and San Andreas mountain ranges). In the millions of years following, rainfall, snowmelt and wind eroded the mountain sediments depositing them in the valley (i.e., Tularosa Basin). Water carrying eroded gypsum, gravel and other matter continues to flow into the basin.

As the Tularosa Basin is a bolson, which is a basin with no surface drainage outlet, sediments carried by surface water into a closed basin are bolson deposits. The overlying alluvium generally consists of unconsolidated gravels, sands and clays. Soils in the basin are derived from the adjacent ranges as erosional deposits of limestone, dolomite and gypsum. A fining sequence from the ranges towards the basin's center characterizes the area with the near surface soils as alluvial, eolian and lacustrine deposits. The alluvial fan deposits are laterally discontinuous units of interbedded sand, silt and clay while the eolian deposits consist primarily of gypsum sands. The eolian and alluvial deposits are usually indistinguishable due to the reworking of the alluvial sediment by eolian processes. The playa, or lacustrine deposits, consist of clay containing gypsum and are contiguous with the alluvial fan and eolian deposits throughout HAFB. There has been the identification of stiff caliche layers, varying in thickness, at different areas of the Base. At the site, soils are predominantly silty sands and interbedded clays.

Although no previous soil investigation exist, it can be assumed that the site's geology is similar to the soils found at the majority of the Base. They are primarily comprised of silty sands with some clay. At depth, approximately 12 to 15 feet below ground surface (bgs), caliche deposits are commonly found. The soils tend to be hard packed to blocky and poorly sorted. The surface of the site is comprised of crushed gravels.

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2 PA/SI ACTIVITIES

The objective of the inspection activities at the site are to 1) determine if any soil contamination exist at the site and if so, 2) delineate the horizontal and vertical extent of the soil contamination, 3) determine whether hazardous conditions exist at the site as a result of the possible previous disposal activities within the boundaries of the site, and 4) whether immediate mitigation procedures or additional investigation are required. The PA/SI for AOC-2 will be conducted in accordance with the State of New Mexico requirements and following the guidelines set forth under CERCLA as found in the *Guidance for Performing Preliminary Assessments Under CERCLA*, EPA/540/G-91/013, Publication 9345.0-01A, September 1991, and *Guidance for Performing Site Inspections Under CERCLA*, EPA/540-R-92-021, Directive 9345.1-05, September 1992. Upon conclusion of the investigative activities, a PA/SI report will be developed in accordance with Section 3 of this work plan.

2.1 Preliminary Assessment Activities

This PA will provide information on possible hazardous waste associated with the site, waste disposal practices of any hazardous waste, migration pathways with affected media and the identification of target receptors. The proposed PA consists of a compilation of existing information about the site and its surrounding area, with an emphasis on obtaining comprehensive information on possible hazardous substances present and the potential receptors. The PA is designed to meet two goals: accurately and completely support a site disposition recommendation an d provide information that will be useful to the subsequent SI. The scope to meet these objectives will have the following parts:

- Review existing information about the site
- Conduct a site and environs reconnaissance
- Receptor information
- Evaluate all information collected

2.1.1 Information Collection and Review

Information gathered through file searches will be useful in developing the potential for releases of hazardous substances to the site, transport from the site and the exposure of identified targets to any released substance. Documents of particular interest include site sketches, inspection reports, aerial photographs, permit applications, hazardous waste handling notification forms (both RCRA and CERCLA 103(c)), waste hauling manifests and any possible record of discussion pertaining to the site. Throughout the review of the existing information process, data relating to non-contaminant information (geology, hydrogeology, etc.) shall be retained as well to aide in the overall site assessment.

2.1.2 Site and Environs Inspection

The purpose of the site inspection is to visually observe the site, adjacent areas, and the environs completing documentation of the vegetation, surface soils, surface topography, site boundaries, etc. and possibly identify any potential hazardous waste source or indications of hazardous material(s). Records should be kept of any evidence or signs of contamination (i.e., stained soils or stressed vegetation), migration of hazardous substances from an identified source and the presence of potential target receptor. At this time, the site should be thoroughly photographed with applicable documentation.

2.1.3 Receptor Information

This portion of the site assessment consists of identifying and locating any potential receptor to off-site transport of potential hazardous substances. The receptors will include, but not limited to water wells (drinking water as well as irrigation), surface waters, public facilities, residences, etc. For this site, there are no known wells or residences. The air traffic control tower with access road poses the highest potential of impact to a receptor.

2.1.4 Data Evaluation

The principal objective of the PA is to evaluate potential hazards in determining further action at the site. As already determined, and discussed in section 1.4 , the groundwater beneath the entire Base has been identified as a Class IIIB water source exceeding the limits for total dissolved solids. However, the potential exist for local groundwater to have a total dissolved solids value of less than 10,000. Therefore, ground water will be included as part of the historical data, if available, evaluation process as well. The soils, surface and subsurface and any identified surface waters will be the primary focus of attention for the review and subsequent report. Pathways of exposure shall be the primary focus of interest for each media.

2.2 Site Inspection Activities

Generally, the SI is the first investigation completed to collect and analyze environmental samples in support of the site evaluation. The sample locations are strategically planned to identify the substances present, determine whether hazardous substances are or have been released to the environment, and determine whether any hazardous substance has impacted a specific target. For this site, a focused SI (FSI) will be completed to meet the project objectives. This is because there is some previous knowledge of site activities with probability for the presence of hazardous substances and the sampling requirements have been pre-determined as well. Prior to the initiation of any sampling activities, the AF Form 322 and utility clearance permitting will need to be completed. To meet the FSI objectives, the following activities will be performed:

- Collect soil and groundwater samples to characterize the presence of any hazardous substances.

- Analyze the soil and groundwater samples for VOCs, SVOCs, Total Petroleum Hydrocarbons (TPH-GRO, DRO and ORO), RCRA metals and TDS (water only).
- Identify the location of each sampling point with a GPS system.

2.2.1 AF Form 332

Air Force Form AF Fm 332, Attachment A, authorizes construction work at HAFB and is required for the initiation of any construction work. This work order describes what activities will take place at the location. The AF Fm 332 also is the mechanism by which the utility clearance/dig permit is authorized. Form 332 will be initiated by Bhate. Both the AF Fm 332 and dig permit will be reviewed by required Base personnel for their approvals to begin work in their area or that which may affect a utility under their authority. Prior to the submittal of AF Fm 332, the sampling locations will be clearly indicated with marker flags or stakes.

2.2.2 Dig permit/Utility Clearances

As note above, utility clearance approvals will be completed by Base personnel. Upon receipt of the approved dig permit with the utility clearances, the site supervisor or other authorized project personnel will complete a site walk-down confirming the dig permit authorizations and make any required changes. The following subsections provide detailed descriptions for completing each activity.

2.2.3 DPT Soil Assessment

The field work for the Phase II RFI will be conducted in accordance with HAFB Standard Operating Procedures (SOPs) provided in the Basewide Quality Assurance Project Plan (QAPP) (Bhate, 2003) which is a field document available to each project personnel. These SOPs outline methodologies for soil boring advancement, soil sampling, soil sample description, field screening, sample management, equipment decontamination, and chain-of-custody procedures. During the sampling effort, the intent is to work around the existing site vegetation having minimal impact to the area.

Six soil borings (Figure 5) will be advanced at the site to an anticipated depth of 20 feett bgs using Direct Push Technology (DPT) methodology in accordance with HAFB SOP No. 4. Continuous soil samples will be collected from these borings with lithologic descriptions per HAFB SOP No. 7. A total of 14 soil samples, including two field duplicate samples, will be submitted to the laboratory for analysis. The proposed boring locations have been positioned to provide maximum coverage of the site. Initial site reconnaissance and PA research information can alter the final positioning of the sampling. Contingency sampling has not been scheduled. Analytical results and/or site conditions may suggest this requirement which will be presented in the PA/SI Report. The samples will be placed on ice and shipped under strict chain-of-custody to Elab located in Nashville, Tennessee. Residual soil from the soil sampling will be discarded in accordance with the waste management procedures established in Section 5, Investigative Derived Waste (IDW) Management.

Soils will be field screened for in accordance with HAFB SOP No. 6 using an organic vapor analyzer (OVA) with soil-headspace screening techniques. Notation will also be made of any visual (discoloration) and/or aromatic indicative of potential contamination. Based on headspace screening results and noted irregularities with the soil's color and odor, two soil samples from each soil boring with the highest OVA readings will be selected for laboratory analyses. Should the screening not identify one or more intervals in which to select, then the lower most interval prior at the soil-water interface and uppermost, or single OVA detection shall be retained for laboratory analysis.

2.2.4 DPT Groundwater Assessment

At each soil boring location, a groundwater sample will be collected for laboratory analyses via DPT methods using a screen point and peristaltic pump or bailer. At this time, the hydrogeology for the site has not been documented, so the collection method may warrant changes during the investigation. A total of 7 groundwater samples, including one field duplicate sample, will be submitted to the laboratory for analysis. The samples will be placed on ice and shipped under strict chain-of-custody to Elab located in Nashville, Tennessee.

During sampling activities, standard water quality parameters from Table 3-1 of the QAPP Addendum for this project (Appendix A) and include pH, conductivity, ORP, dissolved oxygen, temperature and turbidity will be documented per the HAFB SOPs 4 and 9. A flow through cell, or similar, should be used for collection of water quality parameters. Purging of sample locations for groundwater is complete when parameters meet stability within 10% variability over three consecutive readings in a 15-minute period and turbidity has achieved 50 NTUs.

2.2.5 Laboratory Analysis

Each soil and groundwater sample (including the field duplicates) will be analyzed for their respective analytes in accordance with Table 2-1. Soil samples will be analyzed for VOCs by Method 8260, SVOCs by Method 8270, Total Petroleum Hydrocarbons by Method 8015, and RCRA metals (arsenic, barium, chromium, cadmium, lead, mercury, selenium and silver) with the exception of mercury, which will be analyzed by Method 7421.

Table 2-1. Sample Analtyes and Methodologies

Analysis	Water	Soil
VOC	EPA Method 8260B	EPA Method 8260B
SVOC	EPA Method 8270C	EPA Method 8270C
TPH (GRO/DRO/ORO)	EPA Method 8015	EPA Method 8015
Metals	EPA Methods 6010B/7470A	EPA Methods 6010B/7471A
Total Dissolved Solids	EPA Method 160.1	Not Applicable

Groundwater samples will be analyzed for VOCs by Method 8260, SVOCs by Method 8270, Total Petroleum Hydrocarbons by Method 8015, RCRA metals (arsenic, barium, chromium, cadmium, lead, mercury, selenium and silver) by 6000 Series Method with the exception of mercury, which will be analyzed by Method 7421. Field filtration will be performed for the fraction of samples submitted for metals analysis.

Table 2-2 is a matrix indicating the analytical requirements for AOC-2. The sample labeling and packaging is detailed within the Basewide QAPP and/or QAPP Addendum.

Table 2-2. PA/SI Summary of Analytical Parameters forAOC-2

Analytical Constituents	Soil Samples	Water Samples
TPH Gasoline-Range Organics/Diesel Range Organics/Oil Range Organics Modified Method 8015	17 samples 12 regular 2 trip blanks 2 field duplicates 1 MS/MSD	9 samples 6 regular 1 trip blanks 1 field duplicates 1 MS/MSD
Volatile Organic Compounds Method 8260	17 samples 12 regular 2 trip blanks 2 field duplicates 1 MS/MSD	9 samples 6 regular 1 trip blanks 1 field duplicates 1 MS/MSD
Semi-Volatile Organic Compounds Method 8270	15 samples 12 regular 0 trip blanks 2 field duplicates 1 MS/MSD	8 samples 6 regular 0 trip blanks 0 field duplicates 1 MS/MSD
RCRA Metals Methods 6000s and 7421 (mercury)	15 samples 12 regular 0 trip blanks 2 field duplicates 1 MS/MSD	8 samples 6 regular 0 trip blanks 0 field duplicates 1 MS/MSD

2.2.6 Site Restoration

Upon completion of the site inspection activities, the site will be restored to the original condition. Sampling locations will have been backfilled or grouted to the surface. The site will be canvassed for trash, debris, etc.

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3 PA/SI REPORT

The summary report will focus on the following subsections presenting them in fashion in which final conclusions can be drawn in identifying the need for further action beyond the planned Site Inspection: site historical review, site inspection, receptor information, historical data evaluation, and investigation data evaluation (for both soil and groundwater COCs). Each will be discussed in a manner in which final conclusions can be drawn to identify the needs for further action beyond the PA/SI. Both the PA and SI findings will be incorporated into the overall project report as the PA/SI Report.

3.1 Evaluation of Soil COCs

Based on the direction provided by NMED as the Residential Direct Exposure Limit for kerosene and jet fuel, listed in Table 2 of the New Mexico Environment Department TPH Screening Guidelines (Attachment B), a TPH screening level of 940 mg/kg will be used to evaluate the data provided by the offsite analytical laboratory.

For any VOCs, SVOCs or metals that are detected in the soil, the concentration will be evaluated against the residential screening levels provided in the NMED guidance document Technical Background Document for Development of Soil Screening Levels (NMED, 2000). Tables containing the soil screening levels (SSLs) from this guidance document are provided in Attachment C. Each collected soil sample laboratory data will be compared to these SSLs. If the completed evaluation indicates an acceptable risk, the no further excavation will be required and the site can be considered for closure with no further action.

3.2 Evaluation of Groundwater COCs

Ground water shall meet the standards of Subsection A and B of Section 20.6.2.3103 Standards for Ground Water of 10,000 mg/L TDS Concentration or Less of the New Mexico Administrative Code (NMAC). If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants shall apply, which ever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

The vadose zone shall be abated so that water contaminants in the vadose zone shall not be capable of contaminating groundwater or surface water, in excess of the standards in Subsection B and C of Section 20.6.2.4103 Abatement Standards and Requirements, through leaching, percolation or as the water table elevation fluctuates. Groundwater pollution at any place of withdrawal for present or reasonably foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to conform to the following standards:

1. Toxic pollutants as defined in Section 20.6.2.1101 NMAC shall not be present, and
2. The standards of Section 20.6.2.3103 NMAC shall be met.

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4 HEALTH AND SAFETY REQUIREMENTS

Project Health and Safety practices will adhere to the Base Health and Safety Plan (HASP) (Bhate, 2003) and the project Activity Hazard Analysis, as included in Appendix B, for the investigation activities at AOC-2. It is anticipated that no greater than modified level D personal protection equipment (PPE) will be required to complete the site inspection and sampling activities. This includes: Occupational Safety and Health Administration (OSHA) approved safety shoes, ANSI approved safety glasses (Z87.1) and hard hat (Z89.1-1997: Type I), sleeved shirt and long pants, and as required, hearing protection, leather work gloves and/or nitrile gloves during sampling.

Site security is part of safety at the site for the investigation. Items of concern include the proper designation and demarcation of the investigation boundaries (i.e., exclusion zone (EZ), contamination reduction zone (CRZ) and construction zone (CZ)), as appropriate. Likewise, compliance with any intrusive work requirements, posting of potential hazards, and control of un-authorized site personnel (Bhate HASP, 2003) will be completed. This is discussed at length in the 2003 Base HASP.

At a minimum, the site will be secured with caution tape surrounding the perimeter of the site delineating the outer boundary of the Construction Zone. This is essential in the utility clearance process and it serves as the demarcation of the site for both project and non-project persons. Presently, there exists a fence surrounding the immediate presumed boundaries of the site. This shall be used as the construction zone. Because there is little information regarding the possible hazardous substances at the site at this time, a contamination reduction zone and/or exclusion zone will be established as guided by the HASP and site prevailing conditions.

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5 IDW MANAGEMENT AND DECONTAMINATION

Investigative-derived waste (IDW) generated by the activities of this investigation (Table 5-1) will be managed and characterized according to the following guidelines. All removed soils will be returned to their respective boring as backfill. Liquid wastes, such as decontamination rinses, are anticipated to be non-hazardous and as such, can be disposed of through the Base water treatment facility. PPE and other site non-hazardous debris/waste shall be disposed in standard trash receptacle.

Table 5-1. Proposed Waste Streams for AOC-2

Activity	Waste Stream		
	PPE	Soil	Water
Equipment Decontamination	X		X
Soil Sampling	X	X	

5.1 General Decontamination Procedures

All equipment, inclusive of small hand and sampling tools and down hole tooling will require decontamination. Small items can be decontaminated in five-gallon buckets and the like at the site (Basewide QAPP). The larger equipment will be decontaminated at the subcontractor staging area via high temperature – high pressure water cleaner and scrub brushes.

5.1.1 Personal Protective Equipment

Prior to disposal, used personal protective equipment (PPE), disposable items, and the decontamination pad liner will be rinsed cleaned with tap water and diluted detergent solution. Cleaned PPE and presumed clean, based upon non-contact with contaminated soils, water or equipment, and other disposable clean items will be contained in trash bags and disposed of at the applicable receptacle.

5.1.2 Hazardous and Special Waste

There is not expected to be any hazardous or special waste generated during the completion of this project.

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6 QAPP ADDENDUM

The laboratory performing the chemical sample analysis will follow the Final Quality Assurance Project Plan Addendum provided as Appendix B to this work plan.

6.1 Standard Operating Procedures

Applicable SOPs for completing this excavation are located in Appendix A of the Base Wide QAPP.

6.2 Sample Identification

Each environmental sample will be identified on the sample label and chain-of-custody (COC) records for each sample collected, regardless of type. Field duplicates will be paired with another random sample and will be blind samples. The duplicate samples will appear in sequence with the regular samples. The identifier nomenclature will adhere to the procedures and guidelines established in the Basewide QAPP. Sample labeling will adhere to the format provided in the Base Wide QAPP and/or Project QAPP Addendum.

6.3 Sample Documentation

Sample documentation, identification and tracking will adhere to the prescribed methods found in the Basewide QAPP and/or its respective project specific addendum. All sampling activities will include documentation of significant activities, things during sampling and sample identification information. At a minimum, field log books will be utilized to record dates and times, sampling protocols, project numbers, and sampler's name. Daily Quality Assurance Reports will be completed and submitted weekly to the HAFB Project Manager. Other pertinent information will include COC numbers and air-bill tracking number. Chain-of-custody forms will be completed and included with each sample shipment; one COC per cooler.

6.4 Data Reporting

Data obtained during the excavation will be reported according to the Base QAPP. In accordance with USACE EM200-1-6, the investigative data is classified as definitive data. The data will be generated using rigorous, analyte-specific analytical methods where analyte IDs and quantitations are confirmed and QC/QA requirements have been satisfied. For this project, regular, field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples are to be collected concurrently. The data meet the objectives of the project for level of accuracy and precision required, intended use of the data, analytical methods, time constraints and allowable decision errors. Risk evaluation and sampling results will be tabulated and summarized in thePA/SI report for the site. An Environmental Restoration Program Information Management System (ERPIMS) submittal is not required for this project.

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7 ORGANIZATION

During the investigation activities at the AOC-2 site, *Mr. Jerry Pelfry* will serve as the Bhate Site Manager overseeing and directing all investigation sampling activities. Mr. Pelfry will also provide on-site management of any sub-contractor for the project. *Mr. Frank Gardner* is the Bhate Program Manager and will ensure required project documents, permits, contractual agreements and other program tasks are completed. Key project personnel and others are listed in Table 7-1. The Site Inspection activities are anticipated to begin in the Spring of 2004. The actual start schedule is highly dependant upon the completion of existing remedial actions at the base.

Table 7-1. Key Personnel and Responsibilities

Name	Project Title/Assigned Role	Phone Numbers
Jerry Pelfrey	Field Team Leader/SHSO	work: (505) 679-2100
To Be Determined	Field Samplers	work:
Jerry Pelfrey	First Aid Personnel (Note-all onsite personnel are required to be trained in CPR and first aid)	work: (505) 679-2100
Other Project Personnel		
Frank Gardner	Bhate Program Manager	work: (970) 216-7819
Eric Lehnertz	Health and Safety Specialist	work: (205) 934-2487

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8 REFERENCES

Bhate Environmental Associates, Inc. July 2003. *Draft Basewide Health and Safety Plan.*

Bhate Environmental Associates, Inc. July 2003 *Draft Basewide Quality Assurance Project Plan.*

Environmental Protection Agency. September 1991. *Guidance for Performing Preliminary Assessments Under CERCLA.*

Environmental Protection Agency. September 1992. *Guidance for Performing Site Inspections Under CERCLA.*

Foster Wheeler. March 1998. Characterization Summary and No Further Action (NFA) Documentation for Installation Restoration Program Sites SS-2/5 POL Yard (AOC T), SD-47 POL Washrack Area (SWMU 133), and SS-60 Building 828 (SWMU 230).

Foster Wheeler. July 2002. *2001 Long-Term Groundwater Monitoring Report, Holloman Air Force Base, New Mexico.*

New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. December 2000, Revised January 2001. *Technical Background Document for the Development of Soil Screening Levels.*

Western Regional Climate Center (WRCC). 2003. Desert Research Institute State Narrative Web Page, http://www.wrcc.dri.edu/narratives/NEWMEXICO.htm.

White Sands Missile Range (WSMR). 2003. Public Affairs Office, Site Informational Web Page, http://www.wsmr.army.mil/paopage/Pages/WU%2360.htm.

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