DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH FIGHTER WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

ENTERED

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT
Attn: Mr. James Bearzi
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe NM 87105-6303

MAR 13 2008

FROM: 49 CES/CEV
550 Tabosa Ave
Holloman AFB NM 88330-8458

Subject: Response to 15 Jan 2008 Notice of Disapproval: Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

1. The subject response is hereby submitted to NMED for review and approval.

2. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

3. If you have any questions, please feel free to contact 2Lt Athan Waldron at (575) 572-5395.

DEBORAH J. HARTELL
Chief, Environmental Flight

Attachment:

(w/Atch)
Mr. David Strasser
Hazardous Waste Bureau
5500 San Antonio Dr. NE
Albuquerque, NM 87109

(w/o Atch)
Mr. Will Moats
Hazardous Waste Bureau
5500 San Antonio Dr. NE
Albuquerque, NM 87109

(w/o Atch)
Ms Laurie King
USEPA, Region 6 (6PD-F)
1445 Ross Ave., Ste 1200
Dallas, TX 75202-2733

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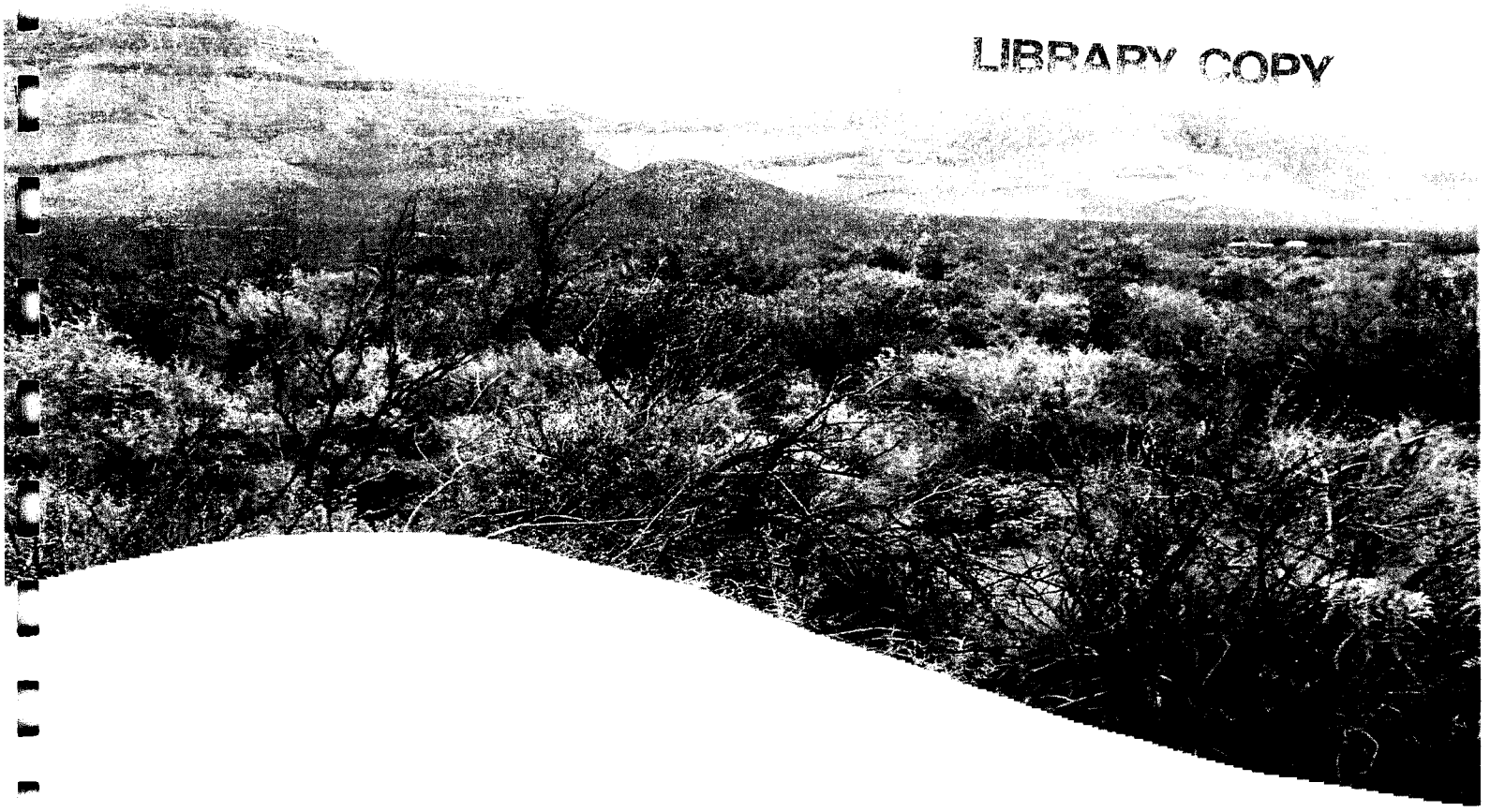

Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

Prepared for:

U.S. Army Corps of Engineers, Omaha District
Environmental Engineering Branch
106 South 15th Street
Omaha, Nebraska 68102-1618

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

Prepared by:

North Wind

North Wind, Inc.
2508 N. Telshor Blvd
Las Cruces, New Mexico 88011

March 2008

North Wind

Review Comments and Resolutions

Reviewer's Name: Ms. Debbie Hartell (HAFB)	Return Comments To: Ms. Debbie Hartell (HAFB)		Comments Due By: 60 days from 15 Jan. 2008
Comments resolved by: Kim Kearney / Doug Jorgensen	Date: 2/11/08		
Document ID:	Document Title: Work Plan for Accelerated Closure Measures at Site SS-13, July 2007, Holloman Air Force Base, NM, EPA ID# NM6572124422	Revision ID:	DRR No.:

Reviewer & Organization: Ms. Debbie Hartell (HAFB)

Item No.	Page No./Section	*	Review Comment	Comment Resolution
1	General comment (on Sections 3.1 to 3.4, 4.3, 5.3, and 7.0)		Please make sure to provide copies of [North Wind internal procedures] ENVP-002, 005, 006, 007, 008, 014, 018, 021 and the Site Safety and Health Plan (NWI, 2007e) for Holloman AFB to submit.	As discussed on 2/28/08, the references to internal North Wind procedures and documents have been removed and replaced with a detailed description of the actual procedures to be followed. A copy of Site Safety and Health Plan (North Wind, 2007e) was submitted with the draft work plan. However, another copy of the SSHP will be provided.
2	Page 15, Section 6.1, 1st Sentence		This sentence states that North Wind will submit a ***Site Closure*** Report. The Permittee must revise the work plan to state that North Wind will submit an ***Accelerated Corrective Measures*** Report. (NMED comment) Remove reference to North Wind. The permittee is required to submit the ACM.	Section 6 changed to read ***Accelerated Corrective Measures*** Report. Reference to North Wind has been removed.
3	Page 15, Section 6, Last Paragraph, 1st Sentence		North Wind will submit the report in Draft and Draft -Final version to USACE/HAFB for review. If there are no comments provided on the Draft-Final version within an established review period, then the Draft-Final version will become Final by distribution of a notification letter. A copy of the Final Report will be sent to NMED following approval by USACE/HAFB. This statement must further be revised. HAFB will submit the final version only. The rest of what is said here should not be part of the work plan. You seem to be confusing your contract with USACE with NMED's requirement for an acceptable WP. Debbie.	Section 6 has been revised to read that HAFB will submit the final version of the ACM to NMED.

North Wind

Review Comments and Resolutions

Reviewer's Name: Mr. James Bearzi, NMED	Return Comments To: Ms. Debbie Hartell (HAFB) and Tom Zink (USACE)		Comments Due By: 60 days from 15 Jan. 2008
Comments resolved by: Kim Kearney/Doug Jorgensen	Date: 2/21/08		
Document ID:	Document Title: Work Plan for Accelerated Closure Measures at Site SS-13, July 2007, Holloman Air Force Base, NM, EPA ID# NM6572124422	Revision ID:	DRR No.:

Reviewer & Organization: Mr. James Bearzi, NMED

Item No.	Page No./Section	*	Review Comment	Comment Resolution
1	General comment (Sections 3.1 to 3.4, 4.3, 5.3 and 7.0)	A	Several sections of the work plan reference North Wind, Inc. documents (e.g. ENVP-002) that provide guidance on sampling activities, decontamination, waste determinations, health and safety considerations, etc. The guidance documents were not provided with sufficient detail in the respective sections. Therefore, the Permittee is required to submit the following North Wind documents for NMED review and approval: ENVP-002, 005, 006, 007, 008, 014, 018, 021 and the Site Safety and Health Plan (NWI, 2007e).	The references to North Wind internal documents and procedures has been removed and replaced with a detailed description of the actual procedures to be followed. A copy of Site Safety and Health Plan (North Wind, 2007e) was submitted with the draft work plan. However, another copy of the SSHP will be provided.
2	General comment (Section 3.1, 3.2, 3.4)	A	The work plan proposes soil and groundwater sampling activities and the site. However, the work plan does not propose the collection of trip blanks of field duplicates for quality control purposes. The Permittee must revise the work plan to include appropriate quality control sample collection and analysis.	The following text has been added to the appropriate sections in the work plan: In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested.
3	Figures 3-1 and 3-2	A	NMED requires that figures/maps provided in work plans and report be to scale and show a coordinate system (i.e. UTM, latitude/longitude) and the boundaries of the site. The Permittee must revise Figures 3-1 and 3-2 to satisfy these requirements.	Figures 3-1 and 3-2 were revised as requested.
4	Page 1, Section 1.3, 3rd Sentence	A	This sentence states that a maximum of 0.04 **mg/L** of arsenic was identified in five soil samples. The Permittee must revise the sentence to read 0.04 **mg/kg** or arsenic.	Section 1.3 was revised as requested.

5	Page 8, Section 3.1.3	A	This section provides a description of the locations of the proposed soil borings. However, no where in the work plan are the anticipated depths of the soil borings provided. The Permittee is required to revise the work plan to provide this information.	The following sentence was added to Section 3.1. The soil borings are anticipated to extend to a depth of fifteen feet bgs.
6	Page 8, Section 3.2, 1st Sentence	A	This sentence states the "up to 10 cubic yards" of soil is to be excavated and disposed of. The Permittee is required to clarify what will occur if sampling results show the need to excavate more than 10 cubic yards of soil.	The following sentence was added to Section 3.2 to provide clarification: If laboratory results from confirmation sampling indicate that contamination remains at the site, additional excavation and confirmation sampling will be conducted until remedial action levels are met.
7	Page 9, Section 3.2, 2nd Sentence	A	This sentence states that confirmation samples will be collected following contaminated soil excavation but does not specify how this will be accomplished. The Permittee must revise the work plan to state that samples will be collected at a frequency of one per 20 linear feet per excavation sidewall with a minimum of one per sidewall. A minimum of two soil samples shall be collected from any sidewall greater than 18 feet in length. Also, confirmatory sampling shall be biased to areas with the greatest potential for contamination.	Section 3.2 was revised to read: Confirmation samples will be collected from the bottom and sidewalls of the excavation from those areas most likely to have contamination. The frequency of confirmation samples shall be as follows: one sample per 20 linear feet of excavation sidewall with a minimum of one sample per sidewall; a minimum of two soil samples from any sidewall greater than 18 feet in length; and a minimum of one soil sample per every 200 square feet of excavation bottom or as determined using the EPA Visual Sample Plan determinations (EPA 2007). During excavation activities, sidewall and excavation closure sample collection and analysis will be performed in accordance with NMED regulations.

8	Page 9, Section 3.2, 4th Sentence	A	This sentence states that confirmation samples will be analyzed for arsenic. The Permittee must revise the work plan to state that samples will also be analyzed for all hazardous constituents that were discovered during the investigation sampling that were found to be either above the soon-to-be established background levels for inorganic constituents or above the detection limits for organic constituents.	Section 3.2 has been revised to read: Soil samples collected for confirmation purposes will be analyzed for VOCs, SVOCs, herbicides, pesticides and RCRA metals.
9	Page 9, Section 3.2, Last sentence	A	This sentence states that once the confirmation sample results are received the excavation will be backfilled. The Permittee must revise the work plan to state that the excavation will not be backfilled until confirmation sampling confirms the absence of contaminated soil. This may mean conducting additional excavation and confirmation sampling based on the results of the first round or subsequent rounds of confirmation sampling.	The last sentence in Section 3.2 has been revised to read: The excavation will remain open until confirmation samples are received and indicate that the remaining soil meets the cleanup criteria. Additional excavation and confirmation samples may be required prior to meeting the cleanup criteria. Once the confirmation sample results indicate that the cleanup criteria have been met, the excavation will be backfilled with clean fill and re-graded to its original elevation.
10	Page 9, Section 3.3, 3rd Sentence	A	This sentence states that monitoring wells **may** be installed using pre-packed well casings. The Permittee must revise the work plan to state that monitoring wells **will** be installed using pre-packed well casings. If this is not the case, the alternative monitoring well installation procedures must be stated.	Section 3.3.2 has been added to read: Boreholes for ground water monitoring wells will be extended to approximately five feet below the groundwater interface, with the exception of the deep monitoring well which will be drilled to a depth of approximately 100 feet bgs. Monitoring wells installed using a hollow stem auger shall be completed with a schedule 40, two inch diameter polyvinyl chloride (PVC) monitoring well pipe with approximately 10 feet of 0.020 slot size screen section placed into the borehole after the auger rods have been removed. The lengths of the screen section and screen slot size are estimated, and may be adjusted in the field based on the field technician classification of the subsurface materials.

				An appropriate size sand pack will then be placed into the annular space to a depth at least two feet above the top of the screen. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of two feet thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second two foot thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt. Monitoring wells installed using direct push technology will be completed using a two inch diameter monitoring well pipe with 10 feet of pre-packed screen section. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of two feet thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second two foot thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt.
11	Page 10, Section 3.4, Second Paragraph	A	This paragraph states that groundwater samples will be analyzed for VOCs, SVOCs, RCRA Metals, herbicides and pesticides. The Permittee must revise the work plan to state that groundwater samples will also be analyzed for total dissolved solids (TDS).	The last paragraph in Section 3.4 has been revised to read: All groundwater wells will be sampled and analyzed for VOCs, SVOCs, RCRA metals, herbicides, pesticides and total dissolved solids (TDS).

12	Page 14, Table 5-1	A	This table states that the maximum holding times for soil samples for SVOCs, pesticides and herbicides will be **14** days to extraction. The Permittee must revise the table to state that the maximum holding times for SVOCs, pesticides and herbicides will be **7** days to extraction.	The holding time indicated in Table 5-1 has been changed to a 7 day holding time.
13	Page 15, Section 6.1, 1st Sentence	A	This sentence states that North Wind will submit a ***Site Closure*** Report. The Permittee must revise the work plan to state that North Wind will submit an ***Accelerated Corrective Measures*** Report.	Section 6 has been revised to indicate that the name of the report is ***Accelerated Corrective Measures*** Report.
14	Page 15, Section 6, 5th Bulleted Sentence	A	This sentence states that tables with sample results will be submitted. The Permittee must revise the work plan to state that all laboratory sampling reports and QC data will also be submitted.	This bulletin Section 6 has been revised to read: Tables with sample results, along with copies of all the laboratory sample reports and Quality Control data [will be submitted].
15	Page 15, Section 6, Last Paragraph, 1st Sentence	A	This sentence states that North Wind will submit the report in Draft, Draft-Final and Final versions. The Permittee must revise the work plan to state that only a Final version will be submitted to NMED.	Section 6 has been revised to read that HAFB will submit the final version of the ACM to NMED.

NWI-5020-001

Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

March 2008

Contract No. W9128F-04-D-0017

Prepared for:
Omaha District
U.S. Army Corps of Engineers
Environmental Engineering Branch
106 South 15th Street
Omaha, Nebraska 68102-1618

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

Prepared by:
North Wind, Inc.
2508 N. Telshor Blvd
Las Cruces, NM 88011

CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
amsl	above mean sea level
bgs	below ground surface
CoC	Chain-of-Custody
CQCSM	Contractor Quality Control Site Manager
DRMO	Defense Reutilization Management Office
EPA	United States Environmental Protection Agency
ft	feet
FTL	field team leader
HAFB	Holloman Air Force Base
HCl	Hydrochloric Acid
HDPE	high density polyethylene
HNO_3	Nitric Acid
HSWA	Hazardous and Solid Waste Amendments
IDW	investigation derived waste
IRP	Installation Restoration Program
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ml	milliliter
NMED	New Mexico Environmental Department
North Wind	North Wind, Inc.
oz.	ounce
PID	photoionization detector
PM	Project Manager
POC	point of contact

PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SSHO	site safety and health officer
SVOC	semi-volatile organic compound
TDS	total dissolved solids
USACE	United States Army Corps of Engineers
VOA	volatile organic analysis
VOC	volatile organic compound

1. INTRODUCTION

This Work Plan establishes the technical approach, procedures, and requirements for conducting the Accelerated Closure Measures at the Sodium Arsenite Spill Site (SS-13) located on Holloman Air Force Base (HAFB). The purpose of these activities is to characterize soil and groundwater and remove contaminated soil at SS-13 prior to site closure. North Wind, Inc. (North Wind) prepared this Work Plan under Contract No. W9128F-04-D-0017 for the U.S. Army Corps of Engineers (USACE), Omaha District. This document satisfies the corrective action requirements of the Hazardous and Solid Waste Amendments (HSWA) portion of the Holloman Air Force Base (AFB) Resource Conservation and Recovery Act (RCRA) permit.

1.1 General Site Description

Holloman AFB is located in Southern New Mexico, approximately 50 miles northeast of Las Cruces, NM. HAFB was originally established in 1942 as Alamogordo Air Field just six miles west of Alamogordo, New Mexico (see Figure 1-1). Initial construction began at the airfield February 6, 1942. The base was re-named in 1948 after Colonel George Holloman, who was a pioneer in early rocket and pilot-less aircraft research. The site has a rich history of aeronautical accomplishments ranging from military planes to jets to missile defense research. The site lays is an elevation of approximately 6,300 feet above mean sea level (amsl). The terrain is relatively flat with a slight slope to the east. Groundwater occurs at approximately 10 to 15 feet (ft) below ground surface (bgs). The hydraulic gradient at the site is relatively flat and varies, but generally flows to the south.

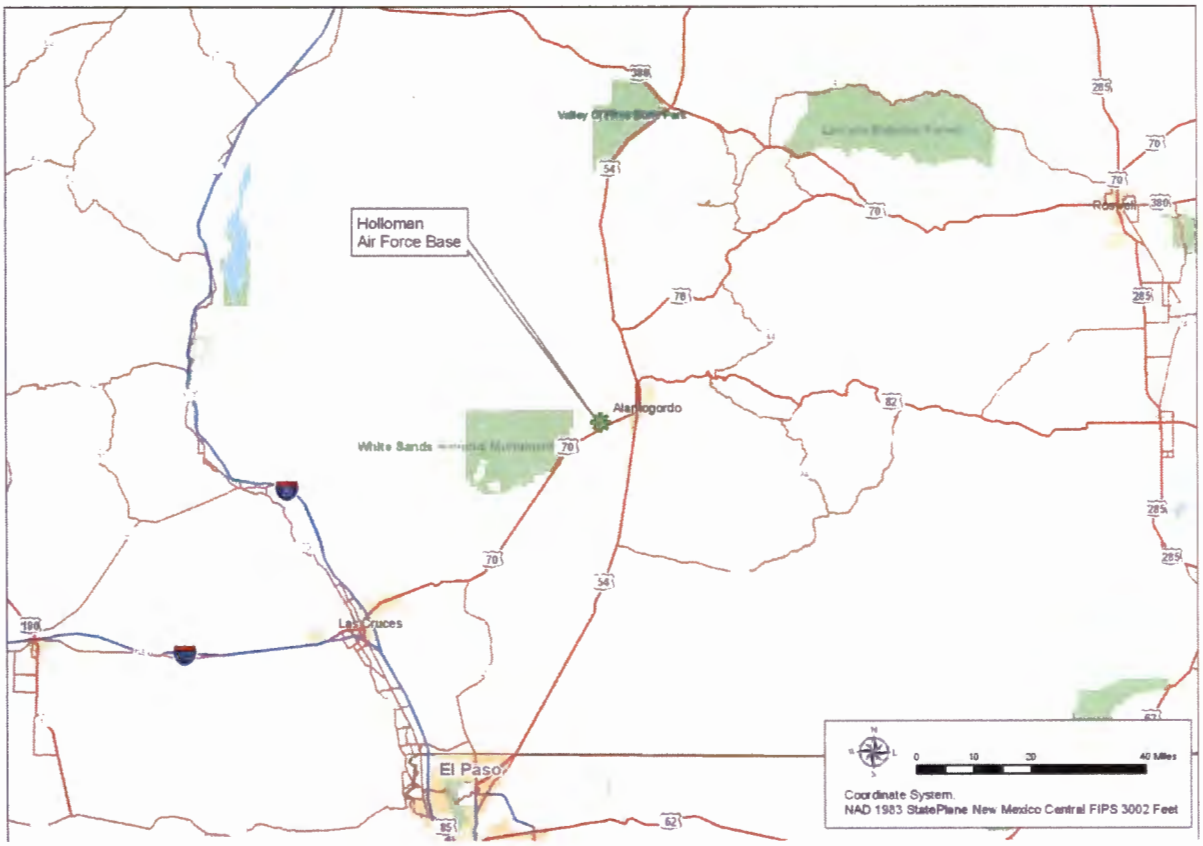

Figure 1-1. Holloman AFB Location Map.

1.2 Site History

SS-13 is located in the Civil and Engineering Complex next to the Defense Reutilization Management Office (DRMO) storage facility. The approximate location of SS-13 is shown on Figure 1-2. The site was a two foot deep depression used to store sodium arsenite, a weed killer used to sterilize runway areas. Approximately 83, 30-gallon containers of sodium arsenite were stored at this location in 1979. In August of 1979, one of the cans was found empty and had a hole in the bottom. It is assumed that approximately 30 gallons of sodium arsenite was release at the site. All containers of sodium arsenite not needed at HAFB were removed from this site. The depression was backfilled and capped with asphalt in the early 1990s. The site is currently used as a storage area.

Figure 1-2. Approximate Location of SS-13 on Holloman AFB.

1.3 Previous Investigations

A 1983 Phase I Records Search reported that the release had occurred and that site cleanup operations could not be confirmed (CH2M HILL, 1983). In 1987 two soil borings and one monitoring well were installed and sampled during the Phase II Installation Restoration Program (IRP) investigation (Dames and Moore, 1987). The Phase II IRP results identified arsenic in groundwater at 0.01 milligram per liter (mg/L) and a maximum of 0.04 milligrams per kilogram (mg/kg) arsenic in five soil samples. The samples were analyzed for arsenic only. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, and metals were not analyzed. Based on the low levels of arsenic found at the site, the Phase II IRP recommended no further action.

A 1993 decision document concluded that the SS-13 site does not present significant threat to the environment; therefore, the No Further Action alternative recommendation was approved and the decision document for closure was signed by New Mexico Environment Department (NMED) in April 1993

(EA 1993). In 1999, a petition to close the SS-13 site was rejected by the NMED due to lack of characterization data and delineation of the site. A data gap analysis, removal of contaminants and documentation of site conditions is required prior to closure of the site.

1.4 Purpose and Objective

The purpose and objective of the Accelerated Closure Measures activities is to characterize current soil and groundwater conditions at the SS-13 site and remove any identified contaminated soil at the SS-13 site prior to site closure. A staged approach will be used to first identify areas of soil contamination using soil borings and soil sampling. Once the approximate vertical and horizontal extent of the soil contamination has been identified, the affected soil will be excavated and disposed, estimated to be up to ten cubic yards. Finally groundwater monitoring wells will be installed and sampled in order to determine the potential impacts to groundwater at the site.

2. PROJECT ORGANIZATION

To manage and execute task orders, North Wind will employ an integrated program organization. Our proposed organizational structure is clearly illustrated in Figure 2-1. The roles and responsibilities described below clearly identify which employees will conduct drilling, sampling, laboratory review, health and safety oversight, and deliverable and report preparation for this project.

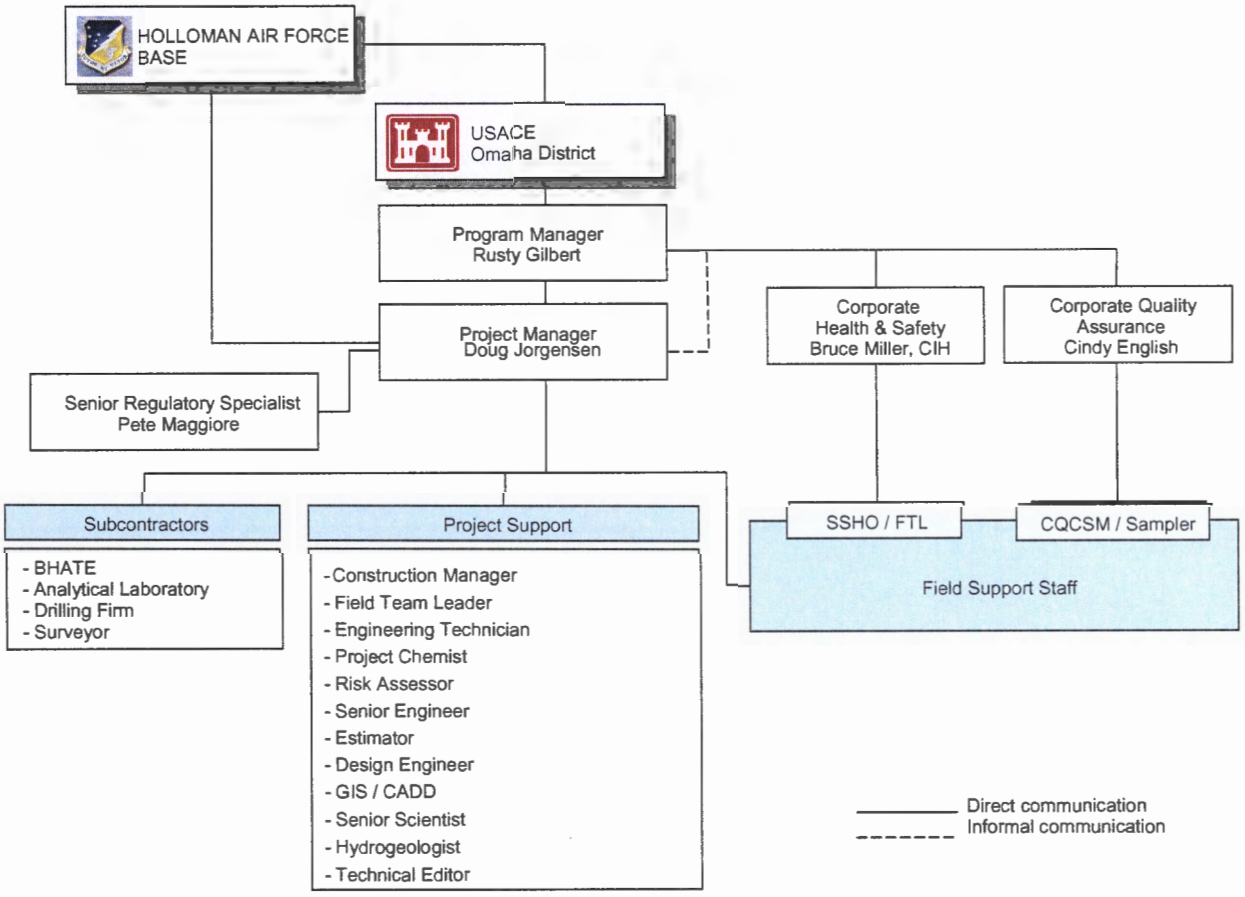

Figure 2-1. Project Organizational Structure.

The proposed structure is "flat" to allow for efficient execution and empower management. It represents a streamlined management approach that will result in optimal use of resources, that is cost-effective, and that is highly responsive to the interests of the USACE and HAFB.

North Wind has routinely demonstrated that a two-person field team, consisting of a sampler/Contractor Quality Control Site Manager (CQCSM) specialist and a combined Site Safety and Health Officer (SSHO)/Field Team Leader (FTL), can consistently deliver quality results on schedule and on budget. As discussed further below, the SSHO/FTL serves a dual role overseeing the safety of the operations and ensuring that the field work is accomplished according to approved project plans. More detailed descriptions of roles and responsibilities for key project personnel are provided in the following sections.

2.1 Roles and Responsibilities

All personnel are responsible and obliged to personally stop any work they determine unsafe. Project personnel are also responsible for identifying practices or conditions that are or may be adverse to quality and for recommending cessation of work to a Line Manager, Project Manager (PM), or the Quality Assurance (QA) Manager. Line Managers and PMs are responsible for assessing conditions potentially adverse to quality and for taking appropriate action, including stopping work. In all cases, these responsibilities override planning and scheduling considerations.

The following sections describe specific roles and responsibilities for key project personnel, (i.e., PM, SSHO/FTL and CQCSM/Sampler).

2.1.1 Project Manager

Mr. Doug Jorgensen will serve as the PM. Mr. Jorgensen will provide day-to-day supervision and ensure that the scope is executed according to schedule and budget. Mr. Jorgensen will frequently communicate with the USACE and HAFB, as appropriate, to discuss progress and/or to resolve any issues that may arise and will be responsible to provide required project reporting and final closeout of the project. Other duties of the PM include:

- Serving as the primary point-of-contact (POC) to client for all aspects of task order execution,
- Ensuring routine compliance with the project work plans,
- Verifying training and qualifications of personnel conducting quality-affecting work,
- Responding and correcting quality problems and deviations,
- Directing staff to prepare deliverables and execute field work,
- Coordinating, managing, and overseeing all subcontractors involved with the project,
- Negotiating subcontract agreements and approving subcontractor invoices,
- Reviewing and approving all task order submittals, and
- Ensuring compliance with all applicable federal, state, and local regulations.

2.1.2 Site Safety Health Officer/Field Team Leader

The SSHO/FTL will be a duel role on site when work is being performed. The SSHO/FTL is responsible for safety of the field team and oversees implementation of the work plan. The SSHO/FTL is often a working team member and may contribute to any aspect of the fieldwork as necessary. The SSHO/FTL is required to work cooperatively with the CQCSM to accomplish the work safely, on schedule, and in accordance with applicable quality requirements. Specific duties include:

- Supervising field activities, ensuring that health and safety procedures are understood and followed by all field personnel, and reporting and correcting any violations of policy or regulation,

- Conducting daily meetings where the tasks for the day will be outlined and explained (as necessary) and safety issues discussed,
- Verifying that all safety and health training requirements have been met,
- Ensuring that health and safety procedures are understood and followed by field personnel, and for reporting and correcting any violations of policy or regulation,
- Serving as the emergency coordinator for any safety related incidents,
- Implementing the Site Safety and Health Plan (NWI, 2008) and work scope according to the approved work plan. Ensuring that all procedures and QA/QC provisions are adhered to in the field,
- Ensuring that field equipment is properly calibrated and maintained and that records are maintained,
- Ensuring that individual samples are properly handled and appropriate custody documentation is prepared to allow for tracking sample possession from field collection through laboratory receipt, and
- Directing all subcontractor activities in the field, ensuring that subcontractors adhere to site-specific installation requirements as well as contractual requirements.

2.1.3 Contractor Quality Control Site Manager

The CQCSM, or alternate, will be on-site when definable features of work are being performed. The CQCSM is accountable for the quality of the fieldwork and reports directly to the PM. Responsibilities of the CQCSM include:

- Monitoring the methods used to meet the level of quality,
- Maintaining acceptable records of the Quality Control (QC) activities, including daily QC reports,
- Communicating and coordinating any corrective actions taken with the Government on-site representative and North Wind QA Manager as applicable,
- Verifying that work performed is in compliance with Government and approved site-specific work plans,
- Ensuring that documentation (i.e., chain of custody forms, sample request forms, and labels) are complete and accurate,
- Ensuring that there are no uncorrected deviations from approved procedures, and
- Ensuring that corrective actions are taken.

3. FIELD ACTIVITIES

The objective of the field activities is to assess the soil and groundwater conditions at SS-13 and remove areas of soil contamination if found. The field activities are broken down into the following tasks:

- Subsurface soils investigation,
- Contaminated soil remediation,
- Monitoring well installation, and
- Groundwater investigation.

This Work Plan along with the Site Safety and Health Plan (SSHP) govern all field activities. The following sections include the sampling methods, locations and a summary of the number and type of samples to be collected.

3.1 Subsurface Soil Investigation

Two soil samples will be collected from each soil boring and analyzed for VOCs, SVOCs, total RCRA metals, herbicides, and pesticides. In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested. Samples will be collected from those locations most likely to have contamination based on field screening, visual, and olfactory observations. At least one sample will be collected from the groundwater interface zone.

Soil borings will be drilled using a direct push method or a hollow stem auger with a split spoon sampler. Deeper soil borings to be completed as groundwater monitoring wells will be sampled using a hollow stem auger with a split spoon sampler. Borings will be sampled on a continuous basis. The auger or core tip will be drilled to the desired depth at the top of the sampling interval, the corer, split spoon, or thin walled tube is then driven into the undisturbed soil and withdrawn with the sample. The corer, split spoon sampler, or tube is then opened and the sample is collected.

A photoionization detector (PID) will be used as a field screening tool to measure the organic vapor concentrations during soil sampling and soil excavation activities. The PID will be calibrated to "fresh air" and to a calibration standard of 100 parts per million isobutylene gas prior to use. Soil samples for field screening will be collected in clean, new, Ziploc™ bags, warmed to approximately 40 degrees Fahrenheit, and then the volatiles will be measured directly from the bag using a PID.

In general, near-surface soil will be collected with unused disposable spoons and placed into appropriate sample containers. Soil obtained from borings using split spoons or direct push tooling will be collected from freshly opened tubes or sleeves. Samples to be analyzed for VOCs will be collected first followed by samples to be analyzed for less volatile parameters. Samples will be collected and placed into appropriate containers using the sampling methods outlined in Sections 3.1.1 and 3.1.2. The anticipated soil boring locations are discussed in Section 3.1.3.

All personnel handling sampling equipment or opening sample containers will don a new pair of nitrile gloves prior to collecting each sample. Soil samples will be collected with decontaminated or new disposable equipment.

Sampling tools used to collect samples (i.e., spoons, drill sleeves, sample trays, etc.) will be disposable and only used once to ensure integrity of the samples. Drilling equipment will be decontaminated following completion of each boring or well by scrubbing drilling equipment that came in contact with soils with soap and water to removes all visible particulate matter and residual oils and grease followed by a final rinse with tap water.. This cleaning process may be preceded by a steam or high pressure water wash to facilitate additional residuals removal. Water generated from decontamination processes will be containerized in 55-gallon drums and managed in accordance with protocol discussed Section 7 of this work plan.

3.1.1 Collection of VOC Samples

The following describes the protocol for collection of volatile organic samples from the soils investigation:

1. Collect samples in one (1) tared 4 oz glass jar with septa lined lid.
2. Ensure empty jars are weighed with lid and label in place and mark weight on container if not already done so by laboratory.
3. Add entire contents of methanol preservative provided by laboratory (if not already placed in jar by laboratory).

   NOTE: *Only use methanol specified for VOC analysis and provided by the appropriate laboratory.*

4. Fill the container approximately 1/4 full of soil using a disposable spoon (soil must be completely submerged). Use caution to not splash preservative.

   NOTE: *As with any sampling procedure for volatiles, care must be taken to minimize the disturbance of the sample in order to minimize the loss of the volatile components. The sample should be collected as soon as possible after the surface of the soil or other solid material has been exposed to the atmosphere; generally in less than a few minutes at most.*

5. Place lid on sample container (ensure lid and top of jar are free of soil particles).
6. Place container on flat surface and mark meniscus on sample label.
7. Complete sample label.

   NOTE: *Do not add custody seal, tape, parafilm, or other material to tared sample container.*

3.1.2 Collection of Non-Volatile Samples

The following describes the protocol for collection of non-volatile samples from the soils investigation:

1. Collect all other soil samples in 8 oz glass amber jars with no preservative,
2. Remove lid from sample container,
3. Fill container completely full of soil using an unused disposable spoon,
4. Replace container lid (make sure lid and top of jar are free of soil particles),
5. Complete sample label, and
6. Place container in cooler with ice or refrigerator until it can be packaged for shipment.

3.1.3 Anticipated Soil Boring Locations

The anticipated soil boring locations are shown on Figure 3-1. The four soil borings locations are centered around the previous soil boring (13B-1), near the presumed release site. The soil borings are anticipated to extend to a depth of fifteen feet bgs. All anticipated soil boring locations are approximate and may be adjusted based on overhead, surface or subsurface factors. The actual locations of all soil borings will be surveyed.

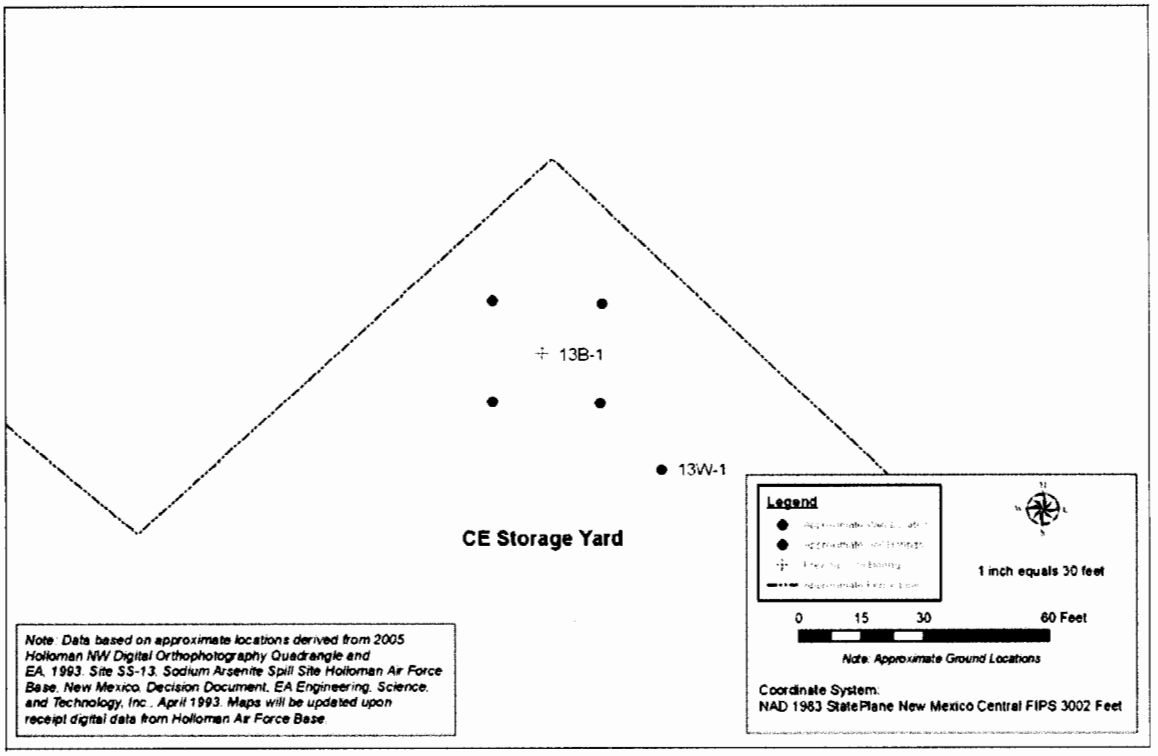

Figure 3-1. Anticipated Soil Boring Locations.

3.2 Contaminated Soil Remediation

The location and amount of soil (estimated to be ten cubic yards) to be excavated and disposed of will be based on the results of the subsurface soils investigation. Contaminated soil will be excavated using standard construction equipment and in compliance with USACE EM 385-1-1 Section 25 Excavations (USACE, 2003), and the Code of Federal Regulations Title 29 Part 1910. The soil will be stockpiled onsite or placed directly into shipping containers. Confirmation samples will be collected from the bottom and sidewalls of the excavation from those areas most likely to have contamination. The frequency of confirmation samples shall be as follows: one sample per 20 linear feet of excavation sidewall with a minimum of one sample per sidewall; a minimum of two soil samples from any sidewall greater than 18 feet in length; and a minimum of one soil sample per every 200 square feet of excavation bottom. During excavation activities, sidewall and excavation closure sample collection and analysis will be performed in accordance with NMED regulations.

Confirmation samples will be collected in the same manner as described in Section 3.1. Decontamination of sampling equipment used to collect samples will not be required as only disposable equipment will be used.

Soil samples collected for confirmation will be analyzed for VOCs, SVOCs, RCRA metals, herbicides, and pesticides and all hazardous constituents that were discovered during the investigation sampling at levels either above the background levels for inorganic constituents or above the detection limits for organic constituents. All confirmation samples will be analyzed under an expedited turn around time. In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested. The excavation will remain open until confirmation sample results are received and indicate that the remaining soil are at or below the residential Soil Screening Levels, provided in Appendix A of the revised NMED guidance document *Technical Background Document for Development of Soil Screening Levels, Revision 4,* June 2006 (NMED, 2006). Additional excavation and confirmation sampling may be required prior to meeting the soil screening levels. Once the confirmation sample results indicate that the soil screening levels have been met, the excavation will be backfilled with clean fill and re-graded to its original elevation.

3.3 Groundwater Monitoring Well Installation

Groundwater monitoring activities will be performed with the use of direct push and/or hollow stem auger technology. Drilling equipment will be operated under manufactures guidelines, and will be operated by qualified and experienced personnel.

3.3.1 Anticipated Monitoring Well Locations

The anticipated monitoring well locations are shown on Figure 3-2. All anticipated monitoring well locations are approximate and may be adjusted based on overhead, surface or subsurface factors. The actual monitoring well locations will be determined by results and observations gathered during the soil boring investigation. The direction of groundwater flow is reported and assumed to be generally to the south, although groundwater flow direction may vary depending on a variety of factors.

One nested groundwater well pair comprised of one shallow well (approximately 30 ft total depth) and one deep well (approximately 100 ft total depth) will be installed. Two additional shallow groundwater monitoring wells will also be installed. The elevation and location of all monitoring wells will be surveyed. One soil sample shall be collected from each monitoring well during drilling activities. Samples shall be collected, handled, and labeled as described in Section 3.1.

3.3 2 Monitoring Well Construction and Development

Boreholes for groundwater monitoring wells will be extended to approximately five feet below the groundwater interface, with the exception of the deep monitoring well which will be drilled to a depth of approximately 100 feet bgs. Monitoring wells installed using a hollow stem auger shall be completed with a schedule 40, two inch diameter polyvinyl chloride (PVC) monitoring well pipe with approximately 10 feet of 0.020 slot size screen section placed into the borehole after the auger rods have been removed. The lengths of the screen section and screen slot size are estimated, and may be adjusted in the field based on the field technician classification of the subsurface materials.

An appropriate size sand pack will then be placed into the annular space to a depth at least two feet above the top of the screen. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of two feet thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second two foot thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt.

If direct push technology is used, monitoring wells installed with this technology will be completed using a two inch diameter monitoring well pipe with 10 feet of pre-packed screen section. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of two feet thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second two foot thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt.

Upon completion of well installation activities, monitoring wells will be developed. Well development is necessary to restore the aquifer's hydraulic conductivity and remove drilling fluids and fine grained material. Development shall be completed using a low-flow pump with new disposable tubing, or a bailer. Water shall be removed from the well during development until the removed groundwater is clear, approximately 50 gallons of water have been removed, or the well is purged dry and allowed to recover twice. Development water removed from each well will be containerized in 55-gallon drums and managed in accordance with protocol discussed Section 7 of this work plan.

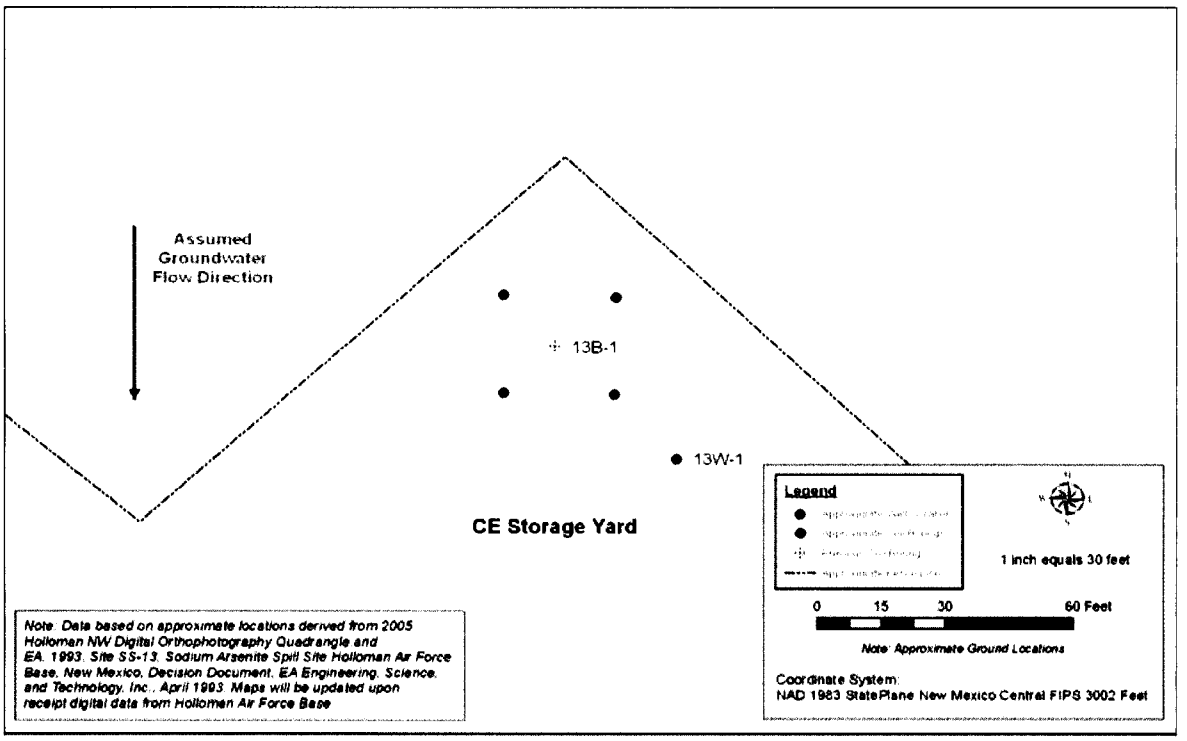

Figure 3-2. Anticipated Monitoring Well Locations.

3.4 Groundwater Investigation

The static water levels will be measured following well completion and development. The water levels in groundwater monitoring wells will be allowed to stabilize for a minimum of 24 hours after well construction and development prior to obtaining the static water level and conducting sampling. Measurements will be taken from the top of the casing on the highest side of the casing, which will then be marked. If the casing top is essentially level, the measurement will be taken from the north side of the casing. All water level measurements will be collected prior to sample collection.

Various instruments may be utilized to measure groundwater quality during the purging of monitoring wells prior to sampling. These instruments may be individual sensors or a multi-probe system. Field

parameters to be measured during well purging include: pH, temperature, conductivity, turbidity, and dissolved oxygen. These parameters will be used to determine when the well has stabilized during purging. Stabilization will be considered complete when the following criteria are met, or the well is purged dry. If the well is purged dry, samples will be collected following recharge.

Table 3-1. Purge parameter stabilization criteria.

Parameter	**Stabilization Criterion (Maximum difference in three values measured at an interval of 3 to 5 minutes)**
pH	+/- 0.1 standard units
Conductivity	+/- 3% Sm^{-1} (siemens per meter)
Redox Potential/ Oxidation Reduction Potential (ORP)	+/- 10 mV (millivolts)
Dissolved Oxygen (DO)	+/- 10% for DO > 1 mg/L (milligrams per liter) +/- 0.1 mg/L for DO < 1 mg/L
Turbidity	+/- 10% NTU (Nephelometric Turbidity Units)
Temperature	+/- 0.5 degrees Celsius

Samples will be collected either after a well in a low-yielding formation has recovered enough that it contains sufficient volume to fill the required sample containers, or after completing purging and stabilization of a well in a high-yielding formation. Groundwater samples will be collected using a new, disposable bailer that is lowered into the well, filled, and retrieved from the well, or using a specialized low-flow sampling pump with dedicated, disposable tubing.

Reusable sampling equipment (pumps, water level meter, etc.) will be decontaminated prior to mobilization to the sampling site and in between each well. A description of equipment decontamination is included in Section 3.1 of this work plan.

All groundwater wells will be sampled and analyzed for VOCs, SVOCs, RCRA metals, herbicides, pesticides and total dissolved solids (TDS). In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested.

4. FIELD OPERATIONS DOCUMENTATION

The SSHO/FTL will be responsible for controlling and maintaining all field documents and records. Sample documentation, shipping, and custody procedures for this project are based on the Environmental Protection Agency (EPA) recommended procedures that emphasize careful documentation of sample collection and sample transfer. Any necessary changes to forms, labels, or logbooks will be made by striking out the error with a single straight line and re-entering the correct information. The new entries will be initialed and dated by the person making the change. The following sections describe requirements for maintaining field logbooks, photographs, and chain-of-custody (CoC) records during sampling.

4.1 Field Logbooks

All field logbooks will be constructed from bound, waterproof, serial numbered pages and will be used to record field activities. Typically, one field logbook will be maintained; however, any number of logbooks may be maintained if the need arises and the SSHO/FTL determines it is necessary.

NOTE: *Preprinted field forms, separate from the field logbook, may be used by any member of the field team to record repetitive information (e.g., equipment checklists, sample information, well logs, etc.). Completed field forms may be transcribed into electronic form or simply retained in the project file.*

Only the SSHO/FTL may authorize the start of a new logbook. The project name, project number, SSHO/FTL name, telephone number, and office address will be listed on the inside cover of all field logbooks. The logbook will only be used to document daily field activities in sufficient detail to allow field personnel to reconstruct events that transpired during the project. This document will contain information pertaining to:

- Daily activities and chronology,
- Observations made during the environmental investigation,
- Equipment calibration results, and
- Significant events.

Logbook entries must be dated, legible, made in black, indelible, ink, and contain accurate documentation. Language used will be objective, factual, and free of personal opinions. Hypotheses for observed phenomena may be recorded; however, they must be clearly indicated as such and only relate to the subject observation. Corrections to erroneous data will be made by crossing through the entry and entering the correct information. The person making the correction must initial and date where the error occurred. Unused portions of logbook pages will be crossed out, signed, and dated at the end of each workday. Care should be taken to ensure that no lines are skipped on a page. In the event that lines are skipped they should be lined out, signed, and dated.

Only field team members may be in custody of the logbook during field activities. Personnel with custody of a logbook will sign and date the logbook prior to initiation of each day's fieldwork. If it is necessary to transfer custody of the logbook during the course of fieldwork, the person relinquishing the logbook will sign and date the logbook at the time the logbook is transferred, and the person receiving the logbook will do likewise.

4.2 Photographs

Photographs will be used to supplement written descriptions of field activities. Photographs will be recorded on digital media and backed up to secondary media on a daily basis. The first photograph of a new location series will include the site name or location identifier as appropriate. Photographs will be stored as individual JPG files. All photograph files will be named with site name or location identifier, date of photograph, and sequential photograph number.

4.3 CoC Documentation

Chain of Custody (CoC) forms will be used to document the transfer of samples from one person's custody to another (e.g., from the sampler to the laboratory). The sampler will complete the CoC following sample collection, noting the sample identification, time and date of collection, sample matrix, project and sampler information, preservation, number of containers, and the requested analysis. Each person handling the sample collection will sign for receipt and acknowledge release of the collection to the next person, until the samples are received at the laboratory.

Sample information may also be recorded in field logbooks or field forms. All sample information will be checked to minimize transcription errors prior to sample shipment. Because the CoC is the formal record of sample identification information and custody, the information contained on the CoC will take precedence over other field documentation.

When custody of the samples is transferred, or when samples are relinquished to a common carrier, the sampler will sign, date, and note the time on the form. A separate form will accompany each delivery of samples to the laboratory. The CoC form will be included inside the cooler used for transport of the samples. In addition to the standard information noted on the CoC, the following project specific requirements apply:

- Include the laboratory subcontract number,
- Include the USACE project number (obtained from USACE chemist),
- Include the Location Identifier for purposes of completing the electronic deliverable,
- Indicate the sample collection type (e.g., grab vs. composite), and
- Use a checklist to verify the accuracy and completeness of the form prior to sample shipment.

All entries on the CoC will be recorded in indelible, black ink. Any necessary changes to the CoC will be made by striking out the error with a single straight line and re-entering the correct information. The new entries will be initialed and dated by a sampler.

5. SAMPLE HANDLING

The following sections describe requirements for sample identification, sample containers and preservation, and sample packaging and shipping.

5.1 Sample Identification

Sample labels are required for properly identifying samples. All field samples will be labeled with the label affixed to the container before or shortly after it is filled and prior to transportation to the laboratory. The sample label will include the following information:

- Sample identification number,
- Location identification,
- Date and time of sample collection,
- Initials of person collecting the sample,
- Analysis requested,
- Preservation method, and
- Any other information pertinent to the sample.

A sample number will be used to identify each sample collected and submitted for analysis. Samples will be numbered in such a manner as to prevent the laboratory from distinguishing the QC samples from other site samples. The sample identification number will be a unique number to which all information pertaining to the sample can be correlated.

5.2 Sample Containers and Preservation

Sample container types will be consistent with EPA and NMED requirements for the specific parameters of interest, and are identified in Tables 5-1 and 5-2 for the associated analytical methods. Sample containers will be obtained directly from the analytical laboratory in sealed boxes and will be verified as pre-cleaned by the analytical laboratory with the appropriate certificates. Extra containers will be available in case of breakage, contamination, or collection of additional samples.

All samples collected will be preserved according to EPA and NMED protocols. Chemical preservatives and chilling will be used for samples, where required. Appropriate measures will be taken to ensure that storage requirements, with respect to temperature, are maintained in the field, during transport to the laboratory, and during storage at the laboratory. Tables 5-1 and 5-2 identify required sample container types, preservative requirements, and hold times for soil and groundwater samples, respectively, collected under this project.

Table 5-1. Sample containers, preservation, and holding times for soil samples.

Analysis	Method Number	Container[a]	Preservative	Maximum Holding Times
VOCs	EPA SW8260B	4 oz. septa, tared amber glass	Methanol	14 days
SVOCs	EPA SW8270C	4 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis
RCRA Metals	EPA 6010B, EPA 7470A	8 oz. glass, 4 oz. glass	4°C +/- 2°C	180 days, 28 days for mercury
Pesticides	EPA SW8081A	8 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis
Herbicides	EPA SW8151	8 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis
a. Sample material for multiple non-volatile analyses may be combined as approved by the laboratory.				

Table 5-2. Sample containers, preservation, and holding times for groundwater samples.

Analysis	Method Number	Container	Preservative	Maximum Holding Times
VOCs	EPA SW8260B	Three 40-ml VOA vials	No headspace, HCl to pH < 2; 4°C +/- 2°C	14 days
SVOCs	EPA SW8270C	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis
RCRA Metals	EPA 6010B, EPA 7471B	500 ml HDPE, 250 ml HDPE	HNO_3 to pH <2; 4°C +/- 2°C	180 days, 28 days for mercury
Pesticides	EPA SW8081A	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis
Herbicides	EPA SW8151	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis

5.3 Sample Packaging and Shipping

Coolers for sample shipments will be inspected and clean prior to sample packing. The cooler will be lined with a large plastic bag or individual samples will be placed in sealable, plastic bags. The individual sample containers will be wrapped with bubble wrap or plastic bags for protection and placed upright in the coolers for shipment. To maintain the sample temperature at 4°C, blue ice packs or double-bagged wet ice will be placed around the sides and top of the liner bag or inside the bag and in between samples. The liner shall be sealed and the CoC placed in the cooler prior to being sealed. The cooler shall be sealed using shipping tape, and signed custody seals will be placed along the cooler seams to ensure the cooler has not been opened during transport.

An experienced SSHO/FTL will provide oversight of all sampling activities to ensure that all samples are properly preserved and protected from breakage or loss. Prior to every sampling event, the SSHO/FTL will ensure that the laboratories are aware of the pending shipments and are prepared to meet all requirements. Prior to the end of each sampling event, the SSHO/FTL will review all field documentation to ensure that instructions to the analytical laboratory are clear and complete and that all of the necessary information to interpret the results is properly recorded (a checklist should be used).

6. REPORTING

Upon completion of the field activity, an Accelerated Corrective Measures Report will be prepared and submitted. The report will contain, at a minimum, the following information:

- A detailed description of the site activities performed in support of the investigation,
- A photographic log that details site activities,
- Maps of soil borings, test pits, and groundwater monitoring wells,
- Maps with soil sample locations and results,
- Tables with sample results, along with copies of all the laboratory sample reports and Quality Control data, and
- A Risk Based Evaluation of the site.

This report, in Draft and a Draft -Final version, will be submitted to the USACE/HAFB for review. HAFB will submit the final version to NMED.

7. WASTE DISPOSAL

Wastes generated during this investigation will include excavated soil, general refuse, soil cuttings from soil borings, groundwater retrieved during well development and sampling activities, and decontamination wastes, including wash water, plastic sheeting, etc. Potentially hazardous investigation derived waste (IDW) will be containerized (e.g., 55-gallon drums, over-packs, supersacks, etc.) or otherwise secured. Hazardous waste determinations will be made in accordance with the Code of Federal Regulations Title 40 Part 261 and NMED Regulations. Table 7-1 summarizes the anticipated waste streams and disposal paths.

Table 7-1. Anticipated waste streams and disposal paths.

Waste Stream	Disposition
Refuse	All general refuse such as personal protective equipment, gloves, paper towels, plastic sheeting, scrap metal, etc., that do not have the potential to contain hazardous material will be placed in a base dumpster.
Waste water	Waste water from decontamination operations, well development, groundwater sampling, etc., will be containerized and managed on site until analytical results are available after which it will be properly disposed. It is anticipated that project waste water will be disposed of at the base waste water treatment plant.
Soil	Excavated soil and soil cuttings generated during drilling will be containerized and managed on site until analytical results are available after which it will be properly disposed. Non-contaminated and petroleum contaminated soil may be spread on site. RCRA hazardous soil will require transportation off-site for appropriate disposal.

8. PROJECT SCHEDULE

The anticipate project schedule is shown in Figure 8-1.

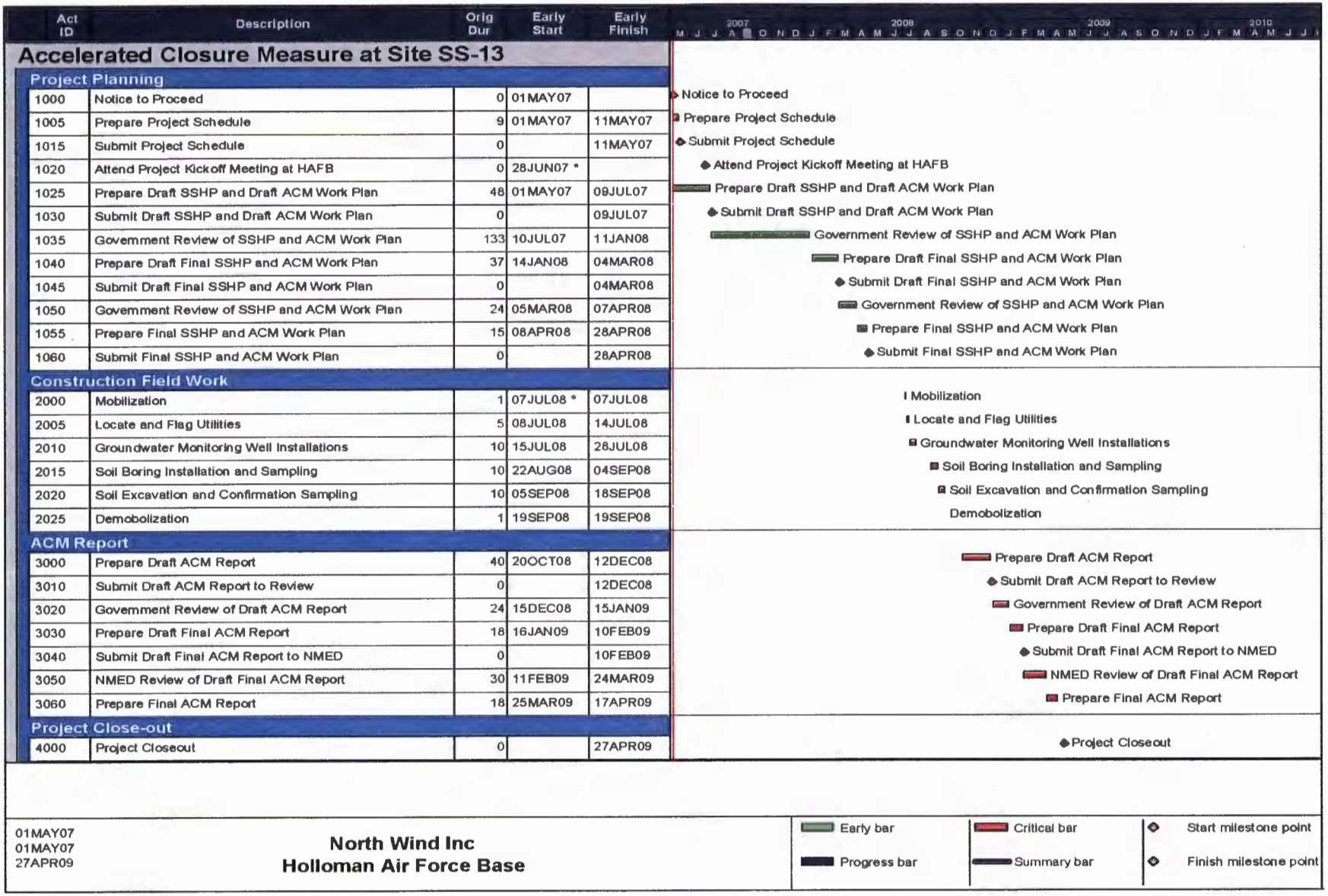

Figure 8-1. Anticipated Project Schedule.

9. REFERENCES

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Addendum to the HAFB Base Wide Site Safety and Health Plan

Site Safety and Health Plan and Accident Prevention Plan for Post-Closure Operation-Construction (PCO-C) at Site SS-13

Holloman Air Force Base, New Mexico

Prepared for:

U.S. Army Corps of Engineers, Omaha District
Environmental Engineering Branch
106 South 15th Street
Omaha, Nebraska 68102-1618

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

Prepared by:

North Wind, Inc.
2508 North Telshor Blvd.
Las Cruces, NM 88011

March 2008

NWI-5020-002

Addendum to the HAFB Base Wide Site Safety and Health Plan

Site Safety and Health Plan and Accident Prevention Plan for Post-Closure Operation-Construction (PCO-C) at Site SS-13

Holloman Air Force Base, New Mexico

March 2008

Contract No. W9218F-04-D-0017

Prepared for:
Omaha District
U.S. Army Corps of Engineers
Omaha, Nebraska

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

Prepared by:
North Wind, Inc.
2508 N. Telshor Blvd.
Las Cruses, NM 88011

Addendum to the Holloman AFB Base-Wide Site Safety and Health Plan

Site Specific Safety and Health Plan and Accident Prevention Plan for the Post Closure Operation-Construction (PCO-C) at Site SS-13

Holloman Air Force Base, New Mexico

Plan Prepared by:

Micah Nielsen, CIH, NWI Safety & Health Department	**Date**

Plan Approved by:

Bruce Miller, CIH, NWI Health and Safety Director	**Date**
Kim Kearney, NWI Project Manager	**Date**

CONTENTS

APPENDICES

FIGURES

TABLES

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienist
ACM	asbestos containing material
AFB	Air Force Base
AL	action level
ANSI	American National Standards Institute
APP	Accident Prevention Plan
APR	air purifying system
CFR	Code of Federal Regulations
CIH	certified industrial hygienist
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CRZ	contamination reduction zone
CWA	controlled work area
DART	days away, restricted or transferred
dBA	decibel A-weighted
dBC	decibel C-weighted
DRMO	Defense Reutilization Management Office
EMR	experience modification rate
EPA	Environmental Protection Agency
EZ	Exclusion Zone
FTL	Field Team Lead
FM/UL	Factory Mutual/Underwriters Laboratory
EM	Engineering Manual
ESH	Environmental Health and Safety
EZ	exclusion zone
GFCI	ground fault circuit interrupter
HAFB	Holloman Air Force Base
HASP	Health and Safety Plan
HAZWOPER	hazardous waste operations and emergency response
HRD	Human Resources Director
HSM	Health and Safety Manager
HTRW	hazardous, toxic, and radioactive waste
IDLH	immediately dangerous to life or health

kV	kilo volt
LEL	lower exposure limit
LO/TO	lockout/tagout
mph	miles per hour
MSDS	material safety data sheets
NIOSH	National Institute of Occupational Safety and Health
NMED	New Mexico Environment Department
NRR	noise reduction rating
NWI	North Wind, Inc.
OEL	occupational exposure limit
OHP	occupational health physician
OSHA	Occupational Safety and Health Administration
PA	Public Address
PACM	potential asbestos containing material
PCO-C	Post Closure Operation-Construction
PEL	permissible exposure limit
PM	Project Manager
POC	Point of Contact
PPE	personal protective equipment
ppm	parts per million
RCRA	Resource, Conservation, and Recovery Act
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SSO	Site Safety Officer
SZ	support zone
TAL	target analyte list
TLV	threshold limit value
TWA	time weighted average
UL	Underwriters Laboratory
USACE	United States Army Corp of Engineers
VOC	volatile organic compound

1. INTRODUCTION

This Site-Specific Health and Safety Plan (SSHP)/Accident Prevention Plan (APP) establishes the procedures and requirements that will be used to eliminate or minimize health and safety risks to persons working the post closure operation-construction (PCO-C) at Site SS-13 at Holloman Air Force Base (HAFB), New Mexico. The SSHP/APP is an addendum to the *Base Wide Health and Safety Plan for Holloman Air force Base*, Alamogordo, NM (Holloman HASP). The Holloman HASP will supersede any discrepancies that may exist within this site-specific SSHP/APP.

As required by 29 Code of Federal Regulations (CFR) 1926.65, "Hazardous Waste Operations and Emergency Response;" United States Army Corps of Engineers (USACE) Safety and Health Requirements Engineering Manual (EM) 385-1-1; and USACE Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (ER 385-1-92). It contains information about the hazards involved in performing the work, as well as the specific actions and equipment that will be used to protect persons while working at the project site.

A project-specific Accident Prevention Plan, prepared according to requirements of EM 385-1-1, "Safety and Health Requirements Manual," is provided in Appendix A.

Except in emergency situations, no deviations from the SSHP/APP may be implemented without prior notification and approval of the North Wind, Inc. (North Wind) Project Health and Safety Manager (HSM). Changes in working conditions may necessitate modifications to the SSHP/APP. North Wind prepared this plan under the USACE Omaha District Contract No. W9218F-04-D-0017.

1.1 General Site Description

HAFB is located in Southern New Mexico, approximately 50 miles northeast of Las Cruces, NW (see Figure 1-1). HAFB was originally established in 1942 as Alamogordo Air Field just six miles west of Alamogordo, New Mexico (see Figure 1-2). Initial construction began at the airfield February 6, 1942. The base was re-named in 1948 after Col. George Holloman who was a pioneer in early rocket and pilot-less aircraft research. The site has a rich history of aeronautical accomplishments ranging from military planes to jets to missile defense research. The site lays at an elevation of 6,300 feet above mean sea level. The terrain is relatively flat with a slight slope to the east. Depth to the aquifer ranges from approximately 100 to 125 feet below ground surface.

Figure 1-1. Location of the Holloman AFB within New Mexico.

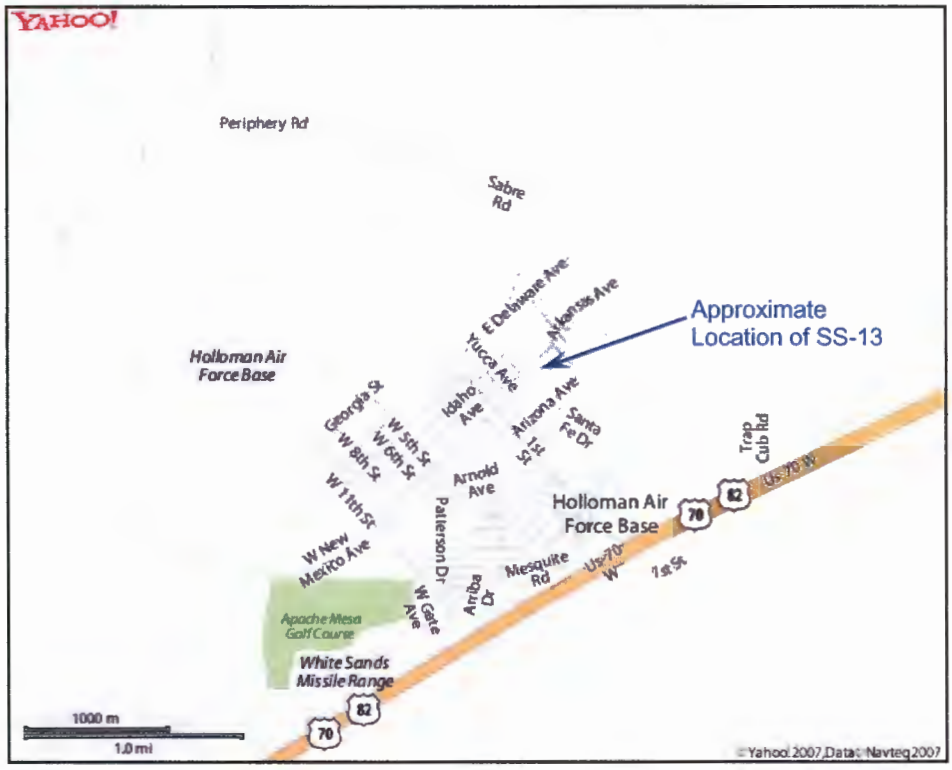

Figure 1-2. Layout of Holloman AFB and location of SS-13 site.

1.2 SS-13 Site History

SS-13 is located in the Civil and Engineering Complex next to the Defense Reutilization Management Office (DRMO) storage facility. The approximate location on SS-13 is shown on Figure 1-2. The site was a two foot deep depression used to store sodium arsenite, a weed killer used to sterilize runway areas. Approximately 83, 30-gallon containers of sodium arsenite were being stored at this location in 1979. In August of 1979, one of the cans was found empty and had a hole in the bottom. It is assumed that approximately 30 gallons of sodium arsenite was release at the site. All containers of sodium arsenite not needed at HAFB were removed from this site. The depression was backfilled and capped with asphalt in the early 1990s. The site is currently used as a storage area.

A 1983 Phase I Records Search reported that the release had occurred and that site cleanup operations could not be confirmed (CH2M Hill, 1983). In 1987 two soil borings and one monitoring well were installed and sampled during the Phase II IRP investigation (Dames and Moore, 1986). The Phase II IRP results identified arsenic in groundwater at 0.01 mg/L and a maximum of 0.04 mg/L arsenic in five soil samples. The samples were analyzed for arsenic only (no volatile organic compounds [VOC], semi-volatile organic compound [SVOC], herbicides, or other metals were analyzed). Based on the low levels of arsenic found at the site, the Phase II IRP recommended no further action.

In 1999, a petition to close the SS-13 site was rejected by the New Mexico Environmental Department (NMED) due to lack of characterization and delineation of the site (USACE, 2006). A data gap analysis, removal of contaminates and documentation of site conditions is required prior to closure of the site.

1.3 POC-C Activities Site SS-13

As part of the PCO-C activities conducted at the SS-13 site, North Wind will perform the following activities:

- Preparation of a draft and final work plan and APP/SSHO.
- Installation and sampling of 4 soil borings.
- Collection of 2 soil samples from each boring for VOC, SVOC, TAL metals, herbicides, and pesticide analysis.
- Excavation, transportation and disposal of approximately 30 cubic yards of contaminated soil (hazardous waste).
- Collection of closure/confirmation samples from the excavation prior to backfill.
- Installation of three shallow groundwater monitoring wells.
- Installation of one deep groundwater monitoring well.
- Collection of 5 groundwater samples for VOCs, SVOCs, TAL Metals, Herbicides and Pesticides.
- Preparation of a draft and final closure report including risk based assessment of contamination to soil and groundwater in accordance with the Base's RCRA permit (USACE, 2006).

2. HAZARD ASSESSMENT

The objective of the hazard assessment section is to identify hazards present during each phase of work and provide guidance to eliminate or mitigate these hazards. Major remediation activities and the associated hazards are identified in Table 2-1. The applicable hazard assessment of the Holloman HASP is presented in section 4.0.

2.1 Hazard Mitigation

Personnel will potentially be exposed to the safety and health hazards identified for the major work activities in Table 2-1. The following sections provide mitigation steps necessary to reduce or eliminate the risk of personnel injury or exposure during the performance of the site work activities. The mitigation steps identified are intended to provide the minimum protective actions to be taken during work activities. The hazard mitigation listed is in addition to personal protective equipment (PPE) requirements specified in Section 7. The Site Safety and Health Officer (SSHO)/Field Team Lead (FTL) may implement additional or more stringent mitigation steps if determined necessary by field condition observations. No hazards will be left unmitigated. Identification of new hazards will be reported to the Project HSM, and this SSHP will be revised or supplemented with additional hazard assessment and mitigation information related to the new hazards. Much of the following subsections are also address in Section 8.0 of the Holloman HASP.

Table 2-1. Activity hazard analysis Site SS-13.

Work Activity	Potential Hazard or Hazardous Agent	Applicable SSHP Hazard Mitigation Section and Requirements
Mobilize/Demobilize Deliver Equipment Stage Equipment/ Materials Load Equipment Final Site Cleanup	Heavy Equipment Operation Material Handling Electrical Hazards Walking/Working Surfaces Heat/Cold Stress Biological Hazards Inclement Weather Noise Hand Tools Flammable/Combustible Materials	2.1.1 Heavy Equipment Operation 2.1.2 Material Handling and Back Strain 2.1.3 Walking/Working Surfaces 2.1.4 Heat/Cold Stress 2.1.5 Biological Hazards 2.1.6 Inclement Weather 2.1.7 Noise 2.1.10 Hand and Power Tools 2.1.11 Flammable/Combustible Materials
Direct Push Drilling Rotary Drilling Groundwater Monitoring Well Installation	Heavy Equipment Material Handling/Back Strain Walking/Working Surfaces Heat/Cold Stress Biological Hazards Inclement Weather Noise Chemical/COC Exposure Hand Tool Operation Flammable/Combustible Materials	2.1.1 Heavy Equipment Operation 2.1.2 Material Handling and Back Strain 2.1.3 Walking/Working Surfaces 2.1.4 Heat/Cold Stress 2.1.5 Biological Hazards 2.1.6 Inclement Weather 2.1.7 Noise 2.1.9 Chemical/COC Exposure 2.1.10 Hand and Power Tools 2.1.11 Flammable/Combustible Materials
Soil Sample Collection	Material Handling Walking/Working Surfaces Heat/Cold Stress Biological Hazards Noise Chemical/COC Exposure	2.1.2 Material Handling and Back Strain 2.1.3 Walking/Working Surfaces 2.1.4 Heat/Cold Stress 2.1.5 Biological Hazards 2.1.6 Inclement Weather 2.1.7 Noise 2.1.9 Chemical/COC Exposure
Groundwater Well Sample Collection	Material Handling Walking/Working Surfaces Heat/Cold Stress Biological Hazards Noise Chemical/COC Exposure	2.1.2 Material Handling and Back Strain 2.1.3 Walking/Working Surfaces 2.1.4 Heat/Cold Stress 2.1.5 Biological Hazards 2.1.6 Inclement Weather 2.1.7 Noise 2.1.8 Chemical/COC Exposure
Excavation, Transportation, and Disposal of Contaminated Soil	Heavy Equipment Operation Excavation Material Handling/Back Strain Walking/Working Surfaces Heat/Cold Stress	2.1.1 Heavy Equipment Operation 2.1.2 Material Handling and Back Strain 2.1.3 Walking/Working Surfaces 2.1.4 Heat/Cold Stress 2.1.5 Biological Hazards

Work Activity	Potential Hazard or Hazardous Agent	Applicable SSHP Hazard Mitigation Section and Requirements
	Biological Hazards Chemical/COC Exposure Hand Tool Operation	2.1.6 Inclement Weather 2.1.7 Noise 2.1.8 Chemical/COC Exposure 2.1.9 Surface Penetration 2.1.10 Hand and Power Tools

2.1.1 Heavy Equipment Operation Hazards and Mitigation

The hazards associated with the operation of heavy equipment and industrial vehicles (e.g., excavator, front loader, and trucks) include injury to personnel, equipment damage, and/or property damage. All heavy equipment will be operated in the manner in which it was intended and according to manufacturer's instructions. Only authorized personnel will be allowed near operating heavy equipment and industrial vehicles and should maintain visual communication with the operator. Work-site activities shall comply with the requirements in EM 385-1-1, Section 16, "Machinery and Mechanized Equipment." Minimum safe operating practices include:

- Before any machinery is placed in use, it shall be inspected and tested by a qualified operator and determined to be in safe operating condition in accordance with the manufacturer's recommendations. The North Wind SSHO/FTL (or designee) shall be responsible for documenting the inspection. Whenever machinery is found to be unsafe, the equipment shall be taken out of service and its use prohibited until the unsafe condition has been corrected.

- All heavy equipment shall have a working reverse signal alarm sufficiently distinct to be heard under site conditions. Heavy equipment shall also have a service brake system and a parking brake system capable of stopping and holding the equipment while fully loaded on the grade of operation. Equipment shall include at least one fire extinguisher with a minimum rating of 10A/60BC.

- Machinery or equipment will only be operated by designated qualified operators. Getting off or onto equipment while it is moving is prohibited. The use of headphones for entertainment purposes while operating equipment or while working in the CWA is prohibited.

- Personnel working near equipment should know how to turn the equipment off in the event of an emergency. Walking directly behind or to the side of heavy equipment without the operator's knowledge is prohibited. A warning device or signal person shall be provided where there is danger to persons from moving equipment, swinging loads, buckets, or booms. Personnel shall not work or pass under or ride in the buckets or booms of loaders. Furthermore, no workers shall be within 100 feet of the front or the rear of the equipment while they are excavating soil in order to avoid potential injury from projectiles.

- Workers shall not wear loose or frayed clothing, long hair, dangling ties, or jewelry around moving machinery or other sources of entanglement.

- Whenever equipment is parked, the parking brake shall be set. Equipment parked on an incline shall have the wheels chocked or tracks blocked in addition to setting the parking brake. All equipment shall be kept out of traffic lanes and access ways and shall be stored so as not to endanger personnel at any time. Equipment left unattended at night and parked adjacent to a roadway or active work area

shall have lights or reflectors, or barricades with lights or reflectors, to identify the location of the equipment.

- Machinery shall not be serviced, repaired, or adjusted while it is in operation nor shall moving parts be oiled, except on equipment that is designed or fitted with safeguards to protect the persons performing the work. No one shall work under vehicles supported by jacks or chain hoists without protective blocking that will prevent injury if jacks or hoists fail.

- All traffic in and out of the SS-13 Location will follow State of New Mexico traffic regulations, and operators will obey traffic control devices and speed limits. Off-road use of vehicles shall be limited to necessary activities, and vehicle operators shall not exceed a speed of 10 miles per hour, except in an emergency.

- Rigging and equipment shall not be used in excess of its safe working load, and shall be used in accordance with the manufacturer's recommendations for safe use.

- Rigging shall be removed from the work area and properly stored to prevent damage when it is not in use.

2.1.2 Material Handling and Back Strain

Material handling and maneuvering of various pieces of equipment could result in employee injury. All lifting and material handling will be performed in a manner that minimizes injuries to the person lifting or handling the materials. The following precautions shall be implemented, as a minimum, to reduce potential worker injuries:

- Mechanical and hydraulic lifting devices will be used to move large or heavy materials whenever possible.

- Employees will be trained in and will use safe lifting techniques for manual material handling tasks.

- Personnel will not lift objects weighing more than 50 pounds or one third of their body weight (whichever is less) alone.

- Good housekeeping shall be maintained and enforced by the North Wind SSHO/FTL to reduce potential for injuries during material handling activities.

- Whenever heavy or bulky material is to be moved, the material handling needs will be evaluated in terms of weight, size, distance, and path of movement to select the safest method for handling the material. When possible, materials will be handled using mechanical device or handling aids prior to using manual material handling.

2.1.3 Walking/Working Surfaces

Slips, trips, and falls during fieldwork result in a large number of personnel injuries. These slips, trips, and falls frequently result from hazards that can be easily identified and corrected. The North Wind SSHO/FTL is responsible for monitoring the worksite daily and ensuring good housekeeping is maintained. This includes ensuring walkways are maintained clear and free of ice, ruts, or obstructions that create slip/trip hazards. The working surfaces and steps on equipment and ladders shall be kept clean. Materials and equipment not in use will be properly stored in a manner that does not interfere with

ongoing work. Personnel will use established entry/exit points during the activities and these will be kept clear of obstructions.

Daytime outdoor lighting and office or shop lighting shall be acceptable within the prescribed lighting levels noted in 29 CFR 1910.120(m) and EM 385-1-1, Section 7 (Table 7-1). Site investigation field activities are scheduled to occur only during daylight hours. However, any work conducted on-site at dawn, dusk, or night shall be conducted with sufficient supplementary lighting sources to maintain safe site operations.

2.1.4 Heat/Cold Stress

Project activities will be conducted during months where there is a potential that both heat and cold stress factors, as discussed in the following sections, could affect task-site personnel based on ambient air temperatures and layered PPE.

2.1.4.1 Heat Stress

Outside temperatures are not anticipated to present a heat stress problem during this project; however, if the project is delayed or conducted during warmer months or use of protective clothing is required, heat stress risks may be present. Personnel will be required to wear protective clothing that inhibits the body from cooling. High ambient air temperatures can result in increased body temperature, heat fatigue, heat exhaustion, or heat stroke that can lead to symptoms ranging from physical discomfort, unconsciousness, to death. Personnel must inform the North Wind SSHO/FTL or SSHO when experiencing any signs and/or symptoms of heat stress, or if they observe other personnel experiencing them.

The stress of working in a hot environment can cause a variety of illnesses, including heat exhaustion or heat stroke; the latter can be fatal. Use of PPE can significantly increase heat stress. To reduce or prevent heat stress when ambient temperatures exceed 70°F, the project may implement scheduled rest periods and require controlled beverage consumption to replace body fluids and salts. The following procedures and action levels (ALs) may be used, depending upon ambient site conditions, by project personnel to monitor potential heat stress:

1. **Heart Rate.** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate exceeds 110 beats per minute at the next rest period, shorten the following work cycle by another one-third and also monitor oral temperature.

2. **Oral Temperature.** Use a clinical thermometer (3 minutes under the tongue) to measure the oral temperature at the end of the work period (before drinking). If the oral temperature exceeds 99.6°F, shorten the next work cycle by one-third without changing the rest period. If the oral temperature exceeds 99.6°F at the beginning of the next rest period, shorten the following work cycle by another one-third. Field team members shall not be allowed to wear Level C PPE when oral temperatures exceed 100.6°F.

Personnel shall be trained to recognize the symptoms of heat stress and the appropriate action to take upon recognition. Table 2-2 provides signs and symptoms of heat stress. Project personnel shall review this table as part of the SSHP review prior to working onsite. Even though physiological monitoring is not always necessary, it is essential that personnel understand the significance of heat stress and its recognition.

Individuals showing any of the symptoms of heat rash, heat cramps, or heat exhaustion listed in Table 2-2 will: (1) stop work, (2) exit work area, (3) be decontaminated (as appropriate), (4) remove protective clothing, (5) move to sheltered area to rest, (6) be provided cool drinking water, and (7) be monitored by a cardiopulmonary resuscitation (CPR)/first aid-certified employee while being transported for medical attention. Personnel exhibiting signs and/or symptoms of heat stroke will be immediately transported to the nearest medical facility for medical attention.

Table 2-2. Heat stress signs and symptoms.

Heat-Related Illness	Signs and Symptoms	Emergency Care
Heat rash	Red skin rash and reduced sweating	Keep the skin clean; change all clothing daily; cover affected areas with plain cornstarch or with powder containing cornstarch.
Heat cramps	Severe muscle cramps; exhaustion, sometimes with dizziness or periods of faintness	Move the patient to a nearby cool place; give the patient half-strength electrolytic fluids; if cramps persist, or if more serious signs develop, seek medical attention.
Heat exhaustion	Rapid, shallow breathing; weak pulse; cold, clammy skin; heavy perspiration; total body weakness; dizziness that sometimes leads to unconsciousness	Move the patient to a nearby cool place; keep the patient at rest; give the patient half-strength electrolytic fluids; treat for shock; seek medical attention. DO NOT TRY TO ADMINISTER FLUIDS TO AN UNCONSCIOUS PATIENT
Heat stroke	Deep, then shallow, breathing; rapid, strong pulse, then rapid, weak pulse; dry, hot skin; dilated pupils; loss of consciousness (possible coma); seizures or muscular twitching	Cool the patient rapidly. Treat for shock. If cold packs or ice bags are available, wrap them and place one bag or pack under each armpit, behind each knee, one in the groin, one on each wrist and ankle, and one on each side of the neck. Seek medical attention as rapidly as possible. Monitor the patient's vital signs constantly. DO NOT ADMINISTER FLUIDS OF ANY KIND

2.1.4.2 Cold Stress

Additional cold weather hazards exist from working on snow or ice covered surfaces. Slip, fall, and material handling hazards are increased under these conditions. Every effort must be made to ensure walking surfaces are kept clear of ice. Table 2-3 provides a guide for cold stress work/warm-up schedule.

Exposure to low temperatures will likely be a factor during winter field activities and can be at other times of year if the conditions are right. Relatively cool, ambient temperatures and wet or windy conditions increase the potential for cold injury to personnel. The North Wind SSHO/FTL will be responsible for obtaining meteorological information to determine if additional cold stress administrative controls are required. Project personnel will also be cautioned regarding cold stress factors associated

with rapid cooling once impermeable PPE layers are removed, causing the potential for freezing of accumulated moisture on PPE outer and inner surfaces (under extremely cold conditions).

Table 2-3. Cold stress work/warm-up schedule.

	No Wind		Wind							
			5 mph		10 mph		15 mph		20 mph	
Air Temp (°F)	**Max Work Period (min)**	**No. of Breaks**	**Max Work Period (min)**	**No. of Breaks**	**Max Work Period (min)**	**No. of Breaks**	**Max Work Period (min)**	**No. of Breaks**	**Max Work Period (min)**	**No. of Breaks**
-15 to -19	Normal breaks	1	Normal breaks	1	75	2	55	3	40	4
-20 to -24	Normal breaks	1	75	2	55	3	40	4	30	5
-25 to -29	75	1	55	3	40	4	30	5	Do not work	
-30 to -34	55	3	40	4	30	5	Do not work		Do not work	
-35 to -39	40	4	30	5	Do not work		Do not work		Do not work	
-40 to -44	30	5	Do not work		Do not work		Do not work		Do not work	
-45 and below	Do not work		Do not work		Do not work		Do not work		Do not work	

2.1.5 Biological Hazards

The following sections address biological hazards that may be present at Holloman Air Force Base (AFB) as identified in the Holloman HASP. These hazards include poisonous plants, insects, and rattlesnakes (HAFB, 2000).

2.1.5.1 Poisonous Plants

Although contact with poisonous plants is not anticipated at the site, personnel should be aware of the presence of poisonous plants in areas adjacent to the site. Poison ivy is a climbing plant with alternate leaves (arranged in threes that are green to red in color) and with white berries. Poison oak is similar to poison ivy and sumac, but its leaves are oak-like in form. The leaves of these poisonous plants produce irritating oil that causes an intensely itchy skin rash and blister-like lesions.

Cactus spines can inflict painful injuries to unwary site personnel. Prior to access, each work site should be visually surveyed to identify areas where cacti may grow. Workers should be particularly alert to cacti that grow low to the ground. Avoid stepping on or scraping up against cactus plants, and is aware that spines may not always be readily apparent to the casual observer.

2.1.5.2 Insects

Stinging insects, primarily spiders, scorpions, bees, and wasps, are prevalent during the warmer months at Holloman AFB. Field personnel should try to avoid contact by first surveying the areas they will be

reaching into, walking, standing, sitting, leaning, grabbing, or lifting. Many insects bite or sting, but few can cause serious symptoms by themselves.

2.1.5.3 Snakes

Poisonous snakes (rattlesnakes) could be encountered during site activities. Employees are advised to be alert to this danger. Snakebites can be painful and lead to serious illness if not treated immediately. If bitten, employees must seek medical attention immediately. The best thing to do, however, is to avoid contact. Wear sturdy leather boots, avoid walking in areas where snakes may hide, and use extreme caution when moving or lifting objects that could be used by snakes as cover. Never reach under or behind such objects or into other areas where snakes may hide.

The signs and symptoms of snakebites are as follows:

- A sharp, stinging pain with one or more puncture marks in the area
- Swelling, discoloration, and pain in the bitten area

As the poison goes through the body, other symptoms develop such as:

- Weakness
- Nausea and vomiting
- Weak and rapid pulse
- Respiratory distress
- Shock

2.1.6 Inclement Weather

Inclement or adverse weather (e.g., sustained winds 25 mph or greater, electrical storms, heavy precipitation, reduced visibility from dust, or extreme heat or cold) may pose a threat to persons or property at the project site. The SSHO/FTL will evaluate the conditions and decide, with input from other personnel, whether to halt work, use compensatory measures, or proceed.

2.1.7 Noise

Personnel working at the task site may be exposed to noise levels that exceed 85 decibel A weighted (dBA) for 8-hour time weighted average (TWA) and 83 dBA for 10 hour TWA during operation of heavy equipment or portable power hand tools. The effects of high sound levels (noise) may include:

- Personnel being startled, distracted, or fatigued
- Physical damage to the ear, pain, and temporary or permanent hearing loss
- Interference with communication that would warn of danger

Noise measurements will be performed under the direction of a certified industrial hygienist (CIH). A threshold limit value (TLV) of 85 dBA (TWA) will be applied to personnel exposed to noise levels over no more than an 8-hour day. This level is based on a 16-hour "recovery" period in a low noise environment. If personnel are required to work longer than 8 hours in a hazardous noise environment, then the TLV will be adjusted to a lower value. The project CIH must be consulted regarding modifications to the 85 dBA for 8-hour TLV and 83 dBA for 10-hour TWA value.

Personnel exposed to noise that meets or exceeds the allowable level will be enrolled in the North Wind Hearing Conservation Program. Personnel working on jobs that have noise exposures greater than 85 dBA (83 dBA for 10-hour TWA) will be required to wear hearing protection until noise exposure levels have been fully evaluated, and will continue to wear the hearing protection specified by the SSHO until directed otherwise.

2.1.8 Chemicals and Contaminants of Concern

The following sections address each contaminant of concern (COC) that may be encountered when conducting soil and groundwater evaluations, as well as each chemical that may be used at the project site and the associated hazards. For airborne exposure, the potential hazards to site personnel associated with the site COCs can be assessed through comparison of actual exposures with established occupational exposure limits (OELs) based on the toxicity and time of exposure. Permissible exposure limits (PELs) are established by Federal Occupational Safety and Health Administration (OSHA) (29 CFR 1910 Subpart Z). TLVs are established by the American Conference of Governmental Industrial Hygienists (ACGIH; 2007). Immediately dangerous to life or health (IDLH) values are established by National Institute of Occupational Safety and Health (NIOSH). If applicable, dermal and ingestible hazards will also be identified.

2.1.8.1 Contaminants of Concern

The COCs identified at SS-13 are VOCs, SVOCs and TAL metals in soil and groundwater.

These OELs are described as follows:

- An AL is expressed as an 8-hour TWA for contaminants with OSHA substance-specific standards (i.e., lead or arsenic).
- A PEL may be expressed as an 8-hour TWA or as a ceiling limit. Ceiling limits may not be exceeded at any time.
- The ACGIH TLV-TWA is defined as the airborne concentration of a substance to which nearly all workers may be repeatedly exposed, day after day (8 hours per day, 40 hours per week), without experiencing adverse health effects. For some substances, the overall exposure to a substance is enhanced by skin, mucous membrane, or eye contact. These substances are identified by notation(s) following the TLV-TWA values. Other substances have a ceiling value (c), which may not be exceeded during any part of the working exposure.
- Immediately dangerous to life or health (IDLH) values are the maximum airborne concentrations of a substance that one could escape within 30 minutes without escape-impairing symptoms or any irreversible health effects.

Table 2-4 provides general toxicological information for each COC, including OSHA AL and PEL, American Conference of Governmental Industrial Hygienist (ACGIH) TLV, and IDLH values.

Table 2-4. Occupational health exposure and toxicological properties for contaminants of concern.

Chemical Contaminant	OSHA AL (ppm)	OSHA PEL (ppm)	ACGIH TWA-TLV (ppm)	IDLH (ppm)	Target Organs	Routes of Exposure	Exposure Symptoms
Sodium Arsenate (inorganic compounds, as As)	0.001 mg/m^3	0.01 mg/m^3	0.01 mg/m^3	0.002 mg/m^3 (15 min)	Liver, kidneys, lungs, lymphatic system **Potential Carcinogen**	Inhalation, skin absorption, skin and or eye contact	Nasal septum; gastrointestinal disturbances; dermatitis; respiratory irritation; hyperpigmentation of skin
Nitric Acid (HNO_3)	1	2	2	25	Eyes, skin, respiratory system, teeth	Inhalation, ingestion, skin, eye contact	Irritation eyes, skin, mucous membrane; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion
Sulfuric Acid (H_2SO_4)	0.12	0.25	0.05	3.7	Eyes, skin, respiratory system, teeth	Inhalation, ingestion, skin, eye contact	Irritation eyes, skin, throat; pulmonary edema, skin burns; dermatitis.
Hydrochloric Acid (HCl)	—	5 (C)	2 (C)	—	Eyes, skin, respiratory system	Inhalation, ingestion, skin or eye contact	Irritation to nose, throat, larynx; coughing; dermatitis; burns to eyes or skin; pulmonary edema
Pesticides/herbicides	—	—	—	—	Skin, liver	Ingestion; skin and/or eye contact	Lesions may develop 1 to 3 weeks after contact; (potential human carcinogen)
SVOC/VOC	Constituent specific				Lungs, nervous system, skin	air, dermal	Light headedness, dizziness.

ppm = parts per million
C = ceiling, meaning that this limit should never be exceeded

Personnel shall be instructed on the hazards associated with the identified chemical agents, the target organs, routes of exposure, symptoms of exposure, and the controls being implemented to limit exposure. A general description of all COCs is as follows.

2.1.9 Surface Penetration

Serious accidents and extensive property damage occur when excavating equipment encounters unexpected underground utility lines. Such utilities include gas lines, electrical lines, sewers, and telephone lines. Utility locations will be determined prior to any boring or drilling activities. All surface penetration activities will conform to state and local regulations and will be supervised by the SSHO/FTL or designee.

Prior to the start of soil excavation or surface penetration, the specific area will be evaluated to ensure the safety of personnel. It shall be the North Wind SSHO/FTL's responsibility to ensure adequate investigation has been conducted and required authorization has been documented prior to performing any soil boring or surface penetration tasks.

All excavations will be performed in accordance with USACE EM 358-1-25, *Excavations*.

2.1.10 Portable Power Hand Tools

Though not expected, if power tools are used then each shall be listed or approved by a nationally recognized testing laboratory for the specific application of use. Hand and power tools shall be used, inspected, and maintained according to the manufacturer's recommendations. The tools will be inspected, tested, and determined to be in safe operating condition before use by the operator. Tools having defects that render them unsafe shall be removed from service and secured to prevent use until the tool has been returned to a safe condition. Power tools designed to accommodate guards shall be equipped with such guards. Loose or frayed clothing, loose long hair, and dangling jewelry shall not be worn while working with any power tool. Personnel working with power hand tools shall be familiar with these safety requirements and are responsible for their implementation.

2.1.11 Flammable/Combustible Materials

Though not expected, if fuel that will be used for equipment operation is stored at the site, it will be safely stored, handled, and used. Only Factory Mutual/Underwriters Laboratory (FM/UL)-approved flammable liquid containers, labeled with the content, will be used to store small quantities of fuel. All fuel containers will be stored at least 50 feet from any facilities (trailers) and ignition sources or stored inside an approved flammable storage cabinet. Portable motorized equipment (i.e., generators, light plants, etc.) will be shut off and allowed to cool down in accordance with the manufacturer's operating instructions prior to refueling to minimize the potential for a fuel fire. Refueling tasks will only be conducted by designated personnel.

Portable fire extinguishers, with a minimum rating of 10A/60BC, shall be located at the site entrance into the CWA (or exclusion zone [EZ]) to combat Class ABC fires. Fire extinguishers of adequate size (per the SSHO determination) will be located in all active work areas, on or near site equipment that have exhaust heat sources, and on or near all equipment capable of generating ignition or having the potential to spark.

3. FIELD PROJECT ORGANIZATION

The organizational structure for this project reflects the resources and expertise required to perform the work, while minimizing risks to worker health and safety, the environment, and the general public. The names of the individuals in key roles at the site and lines of responsibility and communication are shown on the organizational chart for the site (Figure 3-1). The following sections outline the responsibilities of key site personnel. This section is applicable to Section 2.0 within the Holloman HASP.

3.1 Project Manager

North Wind has designated a Project Manager (PM), Kim Kearney, who has overall responsibility for project oversight during the site investigation. Ms. Kearney or her designee will interact with regulatory agency personnel to ensure proper implementation of the Work Plan (USACE, 2006) and SSHP. She also will be responsible for managing all subcontracts, providing necessary resources and guidance to the project team and subcontractors, and maintaining consistency in procedures and work products. Mrs. Kearney will provide guidance and technical oversight and will review all final reports.

3.2 Site Safety and Health Officer/Field Team Leader

North Wind will appoint an SSHO/FTL for the site investigation. The SSHO/FTL will be directly responsible to the North Wind Project HSM and will have the specific training, knowledge, and experience necessary to implement the SSHP and verify compliance with applicable safety and health requirements. The SSHO will have the primary responsibility of implementing the SSHP, which includes ensuring personnel health and safety, reviewing subcontractor health and safety practices, correcting improper conditions, and following accepted safety practices. In addition, the SSHO will coordinate site specific training for all project personnel. Most of this training will occur during the mobilization phase. Unless an emergency is involved, the SSHO will notify the North Wind PM and Project HSM prior to modifying any safety procedures detailed in the SSHP. For this project, the SSHO will be a dual-hatted position with the primary FTL.

3.3 Certified Industrial Hygienist & Project Health & Safety Manager

The Project CIH is responsible for approving the SSHP and oversight of the assigned SSHO (Section 3.4). The CIH may conduct health hazard assessments, and advises the SSHO on adequate health protection; conducts or oversees worker exposure monitoring to determine exposure to hazardous agents; determines and oversees the medical surveillance requirements; and provides recommendations to the SSHO and PM based on exposure monitoring. The CIH for this project is Mr. Bruce Miller of North Wind, who is also the Project HSM. The Project HSM has responsibilities to provide technical guidance to the North Wind PM, field team, and SSHO to ensure that all requirements of the North Wind SSHP are followed. If warranted, the Project HSM will conduct site safety audits during the site investigation to ensure that the SSHP is being implemented correctly.

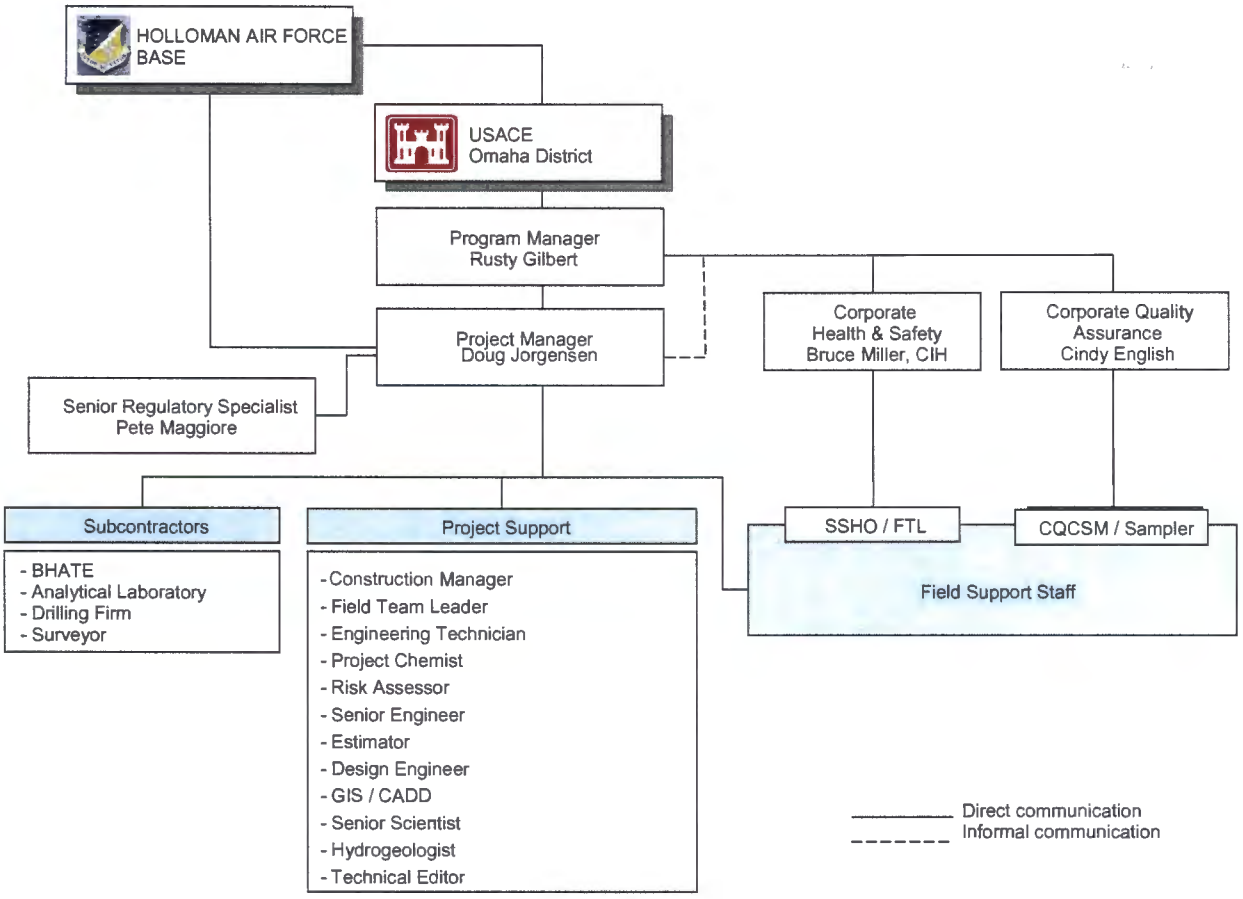

Figure 3-1. Project organizational chart.

3.4 Field Team Personnel

The field team personnel are required to safely complete the onsite tasks required to fulfill the Work Plan and comply with the requirements for work and the SSHP. Field team personnel include all North Wind and subcontractor personnel performing work onsite not identified elsewhere in this section. Field team personnel will immediately notify the Project Manager, Field Team Lead (FTL) or SSHO of unsafe conditions. Personnel are expected to work in a safe and compliant manner, and in no case may personnel perform work in a manner that conflicts with the intent of or the inherent safety and environmental cautions expressed in this SSHP. Personnel who violate safety procedures will be dismissed from the site and may be terminated.

3.5 Occupational Health Physician

The occupational health physician (OHP) will coordinate with the Project CIH to determine the appropriate medical surveillance required for project personnel. Medical surveillance will be determined based on the types of materials onsite, the scope of work being performed, and the potential for worker exposures. The OHP evaluates personnel according to Section 5, "Medical Surveillance Program," and 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response." In addition, the OHP provides medical opinions to the Project CIH (upon request) related to occupational exposures as well as providing written medical opinions as to worker's fitness for duty.

3.6 Visitors

Visitors with official business at the project site, including USACE personnel, representatives of the HAFB, and state or federal regulatory agencies can enter the designated or CWA only after meeting the training requirements shown in Table 4-1 (see Section 4).

If no potential for exposure to a COC or safety hazards exists, a visitor may be escorted at the project site after receiving a site orientation consisting of:

- An overview of the work areas at the site and access restrictions,
- Inherent site hazards (e.g., terrain and equipment) and mitigating actions or avoidance,
- Required PPE for entry to the site (must be trained to wear required PPE),
- Emergency action to take in case of a take-cover or evacuation alarm or other site emergency.

NOTE: *Visitors might not be allowed into the CWA during certain tasks (i.e., heavy equipment or drilling operations) to minimize risks to workers and visitors. The Project Manager, in consultation with the SSHO, will decide whether a visitor can enter a CWA.*

Where access is allowed, a fully trained task-site representative (e.g., FTL, SSHO) will escort visitors entering the project CWA. A casual visitor to the task site is a person who does not have a specific task or official business at the project site. ***Casual visitors are not permitted in North Wind controlled project work areas.***

4. PERSONNEL TRAINING

In compliance with applicable OSHA requirements (29 CFR 1910.120) and the USACE health and safety program, the North Wind SSHO will have received OSHA supervisory training and will have a working familiarity with the health and safety procedures specific to hazardous waste operations, as established under 29 CFR 1926.120. Project personnel will be experienced in hazardous waste site work, use of PPE, and emergency response procedures.

4.1 Hazardous Waste Operations and Emergency Response and Site Safety and Health Plan Training

All site personnel shall receive training as specified in OSHA 29 CFR 1926.65 and the requirements in USACE ER 385-1-92. Table 4-1 summarizes training requirements for site personnel. Specific training requirements for each worker may vary depending on the hazards or responsibilities associated with their individual job assignment, area to be accessed, and project task.

Table 4-1. Required site-specific training for project personnel.

Training	PM, SSHO/ FTL, CQCSM	Field Crew	Nonworkers Requiring Access Beyond the Support Zone	Nonworkers / Visitor Limited to Support Zone Access Only
40-hr Hazardous Waste Operations and Emergency Response (HAZWOPER) and 8-hr Refresher	X	A	A	—
8-hr HAZWOPER Supervisor	B	—	—	—
Site-Specific Health and Safety Plan	X	X	X	Briefing on site hazards, controls, and emergency actions
CPR/First Aid	B	B	—	—
Equipment Operator	—	C	—	—
PPE Training	D	D	D	—
* Respirator Training (with fit test and medical evaluation)	E	E	—	—
Fire Extinguisher Training	F	F	—	—

X = Training required.
A = Only required for intrusive tasks including soil boring.
B = Minimum of one HAZWOPER Supervisor and two CPR/first aid trained person onsite at all times during site operations.
C = Must be designated and qualified by employer for the equipment prior to operation.
D = Prior to donning or using any PPE, personnel shall be trained in proper use, inspection, donning, care, maintenance limitations, and storage of the PPE per 29 CFR 1910.132, "General Requirements."
E = Includes training, medical exam, and fit test for air purifying respirator (APR) as needed based on hazards (29 CFR 1910.134).
F = As part of the SSHP training.
* - Only if deemed applicable on site by the SSHO.

Proof that all required training courses have been completed (including applicable refresher training) will be made available upon request. Before beginning work at the site, site-specific training will be conducted by the SSHO. This training will consist of a complete review of this SSHP with time for discussion and questions. At the time of this training, personnel training records will be checked and verified to be current and complete for all required training shown in Table 4-1. Upon completing site-specific training, personnel will sign a North Wind training acknowledgement roster (Appendix B) indicating that they have received this training, understand the tasks and associated hazards that will be conducted, and agree to follow the SSHP safety requirements.

4.2 Safety Meeting, Feedback, and Lessons Learned

A daily safety meeting (or equivalent) will be conducted by the SSHO/FTL or designee. During this meeting, daily tasks are to be outlined; hazards identified; hazard controls, mitigation, and work zones established; PPE requirements discussed; and feedback from personnel solicited. At the end of this meeting, any new work-control documents will be reviewed and signed.

Particular emphasis will be placed on lessons learned from the previous workday's activities and how tasks can be completed in the safest, most efficient manner. All personnel are encouraged to contribute ideas to enhance worker safety and mitigate exposures to hazards at the project sites. This training will be documented daily on a North Wind form *HSF-100, Tailgate Safety Briefing* (NWI, 2006a).

4.3 Other Safety Training

Health and safety topic-specific training or safety meetings can also be held during the course of the project to reinforce key safety topics. These meetings can be conducted by assigned project health and safety professionals or any field team member and should be held in conjunction with the safety meeting.

5. MEDICAL SURVEILLANCE AND PHYSICAL EXAMINATIONS

Project site personnel shall participate in the medical surveillance program as required in 29 CFR 1910.120. Medical surveillance examinations will be provided before assignment, annually, and after termination of hazardous waste site duties or employment. This includes:

- Personnel who are or may be exposed to hazardous substances at or above the OSHA PEL or published exposure limits, without regard to respirator use, for 30 or more days per year.
- Personnel who wear a respirator in performance of their job or who are required to take respirator training to perform their duties under this SSHP must participate in the medical evaluation program for respirator use at least annually, as required by 29 CFR 1910.134.

A board-certified or board-eligible OHP will be contracted for occupational health services in support of this project. This SSHP, including the analysis of hazards, required PPE, site COCs, and other exposure related information, shall be made available to the OHP for each employee participating in field activities. Exposure monitoring results and hazard information furnished to the physician must be supplemented or updated annually as long as the employees are required to maintain a hazardous waste/hazardous material employee medical clearance for this project.

The OHP shall evaluate the physical ability of an employee to perform the work assigned, as identified in the site SSHP or other job-related documentation. A documented medical clearance (i.e., physician's written opinion) will be provided to the employee and the HSM stating whether the employee has any detected medical condition that would place him/her at increased risk of material impairment of his/her health from work in hazardous waste operations, emergency response, or respirator use (as applicable). The physician may impose restrictions on the employee by limiting the amount and/or type of work performed. The physician's responsibilities, with regard to personnel assigned to hazardous waste site activities, include but are not limited to:

- Providing current comprehensive medical examinations, as determined by the examining physician, for identified personnel.
- Obtaining records/reports from employee's private physicians, as required by the physician for a complete evaluation.
- Conducting a medical evaluation in the event that management questions the ability of an employee to work or if an employee questions his/her own ability to work.

The OHP will evaluate all information provided, including medical questionnaires, physical exam findings, blood chemistry and urinalysis results, preexisting medical conditions, nature of work to be performed, actual and potential hazards and exposures, and other factors deemed appropriate by the physician for determining the following for each employee:

- Ability to perform relevant occupational tasks.
- Ability to use respiratory protection, as required.
- Ability to work in other PPE and heat/cold stress environments.
- Requirement for entry into substance-specific medical surveillance programs.

All employees participating in the site investigation also shall be required to complete monthly exposure/injury reports and to undergo annual follow-up medical examinations. If an employee suspects exposure, additional medical monitoring will be available and the employee must complete an employee exposure/injury incident report and North Wind Form *HSF-005.1, Incident Report Form*, (NWI, 2006b).

6. EXPOSURE MONITORING

Monitoring and sampling will be used throughout project tasks to (1) assess the effectiveness of engineering controls, (2) determine the appropriate PPE requirements for individual tasks, and (3) determine the need for upgrading and downgrading of PPE, as described in Section 7. Monitoring with direct-reading and mobile instruments will be conducted to provide the HSM with real-time and trending data to assess the effectiveness of control measures.

The SSHO may choose to conduct full- and/or partial-period sampling of airborne contaminants and monitoring of physical agents based on site conditions. When conducted, air sampling will be performed using applicable NIOSH, OSHA, or other validated methods. Both personal and area sampling and monitoring may be conducted.

Various direct-reading instruments (or equivalent) may be used to determine the presence of chemical and other physical agents. The frequency and type of sampling and monitoring will be determined by changing site conditions, direct-reading instrument results, observation, and professional judgment.

All monitoring instruments will be maintained and calibrated in accordance with the manufacturer's operating instructions. Direct reading instruments will be calibrated, at a minimum, before daily use and more frequently as determined by the project SSHO. Calibration information, sampling and monitoring data, results from direct-reading instruments, and field observations will be recorded on exposure monitoring forms as stated in Section 13.

6.1 Air Monitoring

Based on the hazards assessment for site investigation activities, no air monitoring is anticipated. Nuisance dust may occur during soil disturbance activities (i.e., excavation, vehicular traffic). A real-time aerosol/particulate monitor may be used in conjunction with visual observations to determine the airborne particulate concentrations. Where visible dust levels are observed in the worker's breathing zone (generally 2.5 mg/m3), control measures (i.e., wetting the soil or repositioning workers) will be used to control exposures to airborne dusts. No monitoring is required if the workers can be repositioned from visible dust.

If asbestos containing material (ACM) or potential asbestos containing material (PACM) are encountered, the material will be wetted, covered, and the USACE notifications made. Personnel working in the presence of non-friable and undisturbed asbestos will have asbestos awareness training. The class of asbestos work to remove the material will then be determined based on the nature and condition of the ACM/PACM. Once the class of asbestos work is determined, the ACM/PACM will be managed and removed in accordance with 29 CFR 1926.1101, "Asbestos" to include notifications, site postings/controls, air monitoring, medical surveillance, PPE, storage, and disposal.

6.2 Noise Monitoring

Noise measurements will be performed (as determined necessary by the SSHO) for activities with the potential to create noise problems. For hearing protection purposes, it will be assumed that all heavy equipment generates noise levels in excess of 85 dBA; therefore, hearing protection will be required when operating the equipment or when within 25-feet of operating equipment. The requirement for hearing protection can be removed if sound level measurements show exposures that are less than 85 dBA. A problem may exist if persons have to raise their voices to communicate from just a few feet away from each other.

A TLV of 85 dBA (TWA) will be applied to personnel exposed to noise levels over no more than an 8-hour day. This level is based on a 16-hour "recovery" period in a low noise environment. If personnel are required to work longer than 8 hours in a hazardous noise environment, then the TLV will be adjusted to a lower value, such as 83 dBA for a 10-hour TLV TWA value. The Project HSM must be consulted regarding modifications to the 85 dBA for 8-hour TLV, and 83 dBA for 10-hour TLV TWA value.

Personnel exposed to noise that meets or exceeds the allowable level will be enrolled in the North Wind Conservation Program in accordance with North Wind *HSP-008, Hearing Conservation*, (NWI, 2006c). The SSHO shall ensure the results are reported back to the sampled employee, representative sampled employees, and the PM.

Personnel working on jobs that have noise exposures greater than 85 dBA (83 dBA for 10-hour TWA) will be required to wear hearing protection until noise exposure levels have been fully evaluated and noise exposure mitigated to reduce it to less than the established limits, as determined by the SSHO. Hearing protection (i.e., earplugs or earmuffs) shall be available at the site for use by personnel who must work for extended periods in the established noise areas.

6.3 Project Action Levels and Associated Actions

To prevent and mitigate potential personnel exposure to environmental and physical hazards at the project site, AL for any COC evaluated and determined to present with a high exposure potential. Each AL and associated responses for operational hazards are listed on Table 6-1. If an AL is reached for any COC, personnel will take the appropriate action (as stated). For upgrading PPE, the threshold (i.e., protection factor) for the particular level being worn must be exceeded, or another type of contaminant introduced, to justify PPE modification. For example, half-face air-purifying respiratory protection offers the respiratory protection factor of 10, so the contaminant must exceed 10 times the TLV for an upgrade to be warranted.

Table 6-1. Action levels and associated responses for project operational hazards.

Contaminant or Parameter Monitored	Action Level	Response Taken if Action Level Is Exceeded
Sloughing of Trench Walls	Excavations deeper than four feet.	1. Slope walls at minimum 1.5 (horizontal) to 1 (vertical) ratio. 2. Base of excavated soil pile will be at least two feet from the edge of excavation top edge. Ex: Depth of 6 feet (vertical) will slope to 9 feet from location of trench.
Nuisance particulates (insoluble or poorly soluble - not otherwise specified)	≤2.5 (optical detector) or visible dust.	1. Use wetting or misting methods to minimize dust and particulate matter and continue to monitor. 2. Monitor only visible dust for personnel that cannot be repositioned.
	10–25 mg/m^3 Sustained for 5 minutes in worker's breathing zone (optical detector).	1. Use wetting or misting methods to minimize dust and particulate matter and continue to monitor. 2. Substitute equipment or change method to reduce emissions at source. 3. Evaluate air movement (wind) conditions and reschedule tasks or reposition personnel to upwind position of source and continue to monitor.

Table 6-1. (Continued)

Contaminant or Parameter Monitored	Action Level	Response Taken if Action Level Is Exceeded
Nuisance Particulates (Continued)	>25 mg/m3 Sustained for 2 minutes on worker breathing zone (optical detector) OR >10 mg/m3 (inhalable fraction) >3 mg/m3 (respirable fraction) (as measured with full-period monitoring)	1. Halt operations, place equipment in safe configuration, and exit work area until water truck can wet area. 2. Monitor area after wetting: **IF** airborne levels drop below 10 mg/m3, **THEN** resume activities and continue to monitor. **IF** airborne levels are above 10 mg/m3, **THEN** rewet area and continue to monitor. **IF** airborne levels can not be controlled below 25 mg/m3 by wetting, **THEN** move operation to alternant location (with engineering controls if possible). 3. Verify engineering control operation (where in place) or institute engineering controls (i.e., use of closed cabs for equipment operators): **IF** wetting or misting methods prove ineffective, **THEN** don particulate respiratory protection (as directed by SSHO) or cease operations until area can be adequately wetted, or other dust control can be achieved, or weather condition causing elevated dust level (e.g., high winds) subside. **NOTE:** *Respiratory protection will be selected based on the nature of the contaminant. If metal particulate contaminants have been sampled for, then a dust mask (filtering face piece) may be worn for nuisance particulates.*

Table 6-1. (Continued)

Contaminant or Parameter Monitored	Action Level		Response Taken if Action Level Is Exceeded	
Known or discovered airborne contaminant (chemical, dust fume, fiber or particulate)	Based on individual contaminant exposure limit (2007 ACGIH TLV or OSHA PEL) and 29 CFR 1910 or 1926 substance-specific requirements. Generally, sustained levels at the TLV or PEL in the worker's breathing zone for two minutes should be used as action limit. Where ceiling values or OSHA substance-specific action limit exists, use these values.		1. Substitute equipment or change method to reduce emissions at source. 2. Verify engineering control operation (where in place) or institute engineering controls. 3. Evaluate air movement (wind) conditions reschedule tasks or reposition personnel to upwind position of source. 4. Move operation to alternant location (with engineering controls if possible). 5. **IF** engineering and administrative controls do not control contaminant below exposure limit, **THEN** reevaluate engineering and administrative controls or don respiratory protection (selected in coordination with HSM based on specific contaminant and nature of exposure). **IF** OSHA substance-specific standard action limit is exceeded, **THEN** initiate applicable medical surveillance requirements.	
Hazardous noise levels	<84 dBA 8-hour TWA		No action.	
	85 to 114 dBA		1. Substitute equipment with lower noise generating type. 2. Isolate noise source or place sound-absorbing barrier in noise path. 3. Hearing protection required to attenuate hazard to below 85 dBA, 8-hour TWA exposure, or equivalent shorter exposure at higher level (use only one-half the rated NRR for ear plugs to meet attenuation requirement).	
	(a) >115 dBA	(b) >140 dBC	(a) Isolate source, evaluate NRR for single device, double protection (as needed).	(b) Control entry around source and isolate source. No exposure to continuous, intermittent, or impact noise in excess of a peak 140 dBC level.
Heat and Cold Stress	Monitoring by SSO to verify Heat/cold stress requirements identified in Section 2.1.6 are not exceeded		Response to heat or cold stress symptoms will be in accordance with Section 2.1.6.	

Table 6-1. (Continued)

Contaminant or Parameter Monitored	Action Level	Response Taken if Action Level Is Exceeded

dBA = decibel A-weighted
dBC = decibel C-weighted
IDLH = immediately dangerous to life or health
LEL = lower exposure limit
NRR = noise reduction rating
SSO = Site Safety Officer
TWA = time-weighted average

7. PERSONAL PROTECTIVE EQUIPMENT

North Wind shall provide all field team personnel with appropriate PPE and protective clothing and shall ensure that all PPE and protective clothing is kept clean and well maintained. All field personnel shall wear Level D protective clothing and PPE at during the soil and groundwater evaluation. Protective clothing and safety equipment requirements are summarized in Table 7-1.

The SSHO may modify Level D PPE upon actual field conditions and hazards present. The SSHO will stop work immediately if PPE upgrading is required in order to implement the necessary PPE changes. Level C PPE is not anticipated to be necessary for this field project.

Levels of protection shall be upgraded or downgraded as necessary based on direct reading and full-period (as warranted) readings and the action levels presented in Table 6-1. The SSHO is responsible for ensuring that all personnel wear appropriate protective equipment. The project HSM will be consulted with any questions related to PPE degradation and if Level C is deemed necessary shall assist with an addendum for this SSHP, and establishing a cartridge change-out schedule when respiratory protection is required. Where respiratory protection is worn, all requirements of North Wind *HSP-007, Respiratory Protection* (NWI, 2006d) and 29 CFR 1910.134, Respiratory Protection will be followed.

Table 7-1. Required PPE for STLF field operations.

Level	Protective Clothing	Safety Equipment
D	▪ Work clothing - Long pants, sleeved shirt (optional use of Tyvek coveralls per SSHO direction) ▪ Safety-toed boots (ANSI Z41) ▪ Safety glasses or goggles (ANSI Z87.1) ▪ Hard hat (ANSI Z89.1) ▪ Hearing protection (as required if >85 dBA) ▪ High visibility reflective vests ▪ Gloves (leather for material handling or material as specified by the SSHO or a MSDS for other contaminants)	Particulate monitor Eyewash station Decontamination equipment First aid kit Fire extinguishers

ANSI = American National Standards Institute
PPE = personal protective equipment
SSHO = Site Safety and Health Officer

8. SITE CONTROL AND COMMUNICATIONS

Site control and security will be maintained at the project locations during all activities to prevent unauthorized personnel from entering the CWA. Entry into and exit from these areas will be controlled through the appropriate use of barriers, cones, and signs See Appendix B for the location of the signature page.

The SSHO/FTL should be consulted regarding equipment layout at the project site to minimize hazards from equipment. Equipment layout at the project site should reflect the nature of the hazard present and be mitigated through the use of engineering controls (i.e., barriers, guards, and isolation), administrative controls (i.e., roped-off restricted areas or controlled access), and qualifications of operators and those assisting in the operation of the equipment, when required.

Good housekeeping will be maintained at all times during the course of the project. This includes maintaining working and walking surfaces to minimize tripping hazards, stacking or storing materials and equipment in a central location when not in use, and regularly cleaning up debris and trash that may accumulate at the project site.

Based on the nature of the project tasks, a graded approach with two types of site control designations (work areas) will be used to meet hazardous waste operations and emergency response (HAZWOPER) site control requirements. These work areas will be based on the potential hazards, complexity of work tasks, duration of project tasks, and location and number of non-project personnel near the project area.

The two basic areas that will be established for this project include:

- CWA (established for low-hazard routine tasks).
- Exclusion zone (EZ) buffer by a Contamination Reduction Zone (CRZ) with a contamination reduction corridor for entering and exiting the CRZ (established for higher-hazard, contamination areas).

A CWA will be established as the minimum requirement during site tasks. An EZ and/or OSHA-regulated area may be required if contaminants exceed the AL in a specific project location. Based on the expected levels of chemical contamination present in the groundwater at the site, a CWA will serve as the primary site control.

Figure 8-1 shows the general layout of a CWA that will be established. Figure 8-2 illustrates a generalized configuration of an EZ. These figures represent the general configuration of work zones and are not intended to provide an exact layout or configuration of all equipment or zone sizes. Several factors may result in changing zone configurations, sizes, and locations. These factors include the site being investigated, project tasks being conducted, site monitoring data, and changing wind direction. Additionally, entrance and egress points may change based on these same factors.

Personnel not directly involved with project activities will be excluded from these CWAs. Visitors may be admitted into work areas if they are on official business, have received site-specific training or orientation by the SSHO/FTL or designee, have documented evidence (training record or cards) for all site-specific training requirements for the site they wish to access, and wear required PPE for the area.

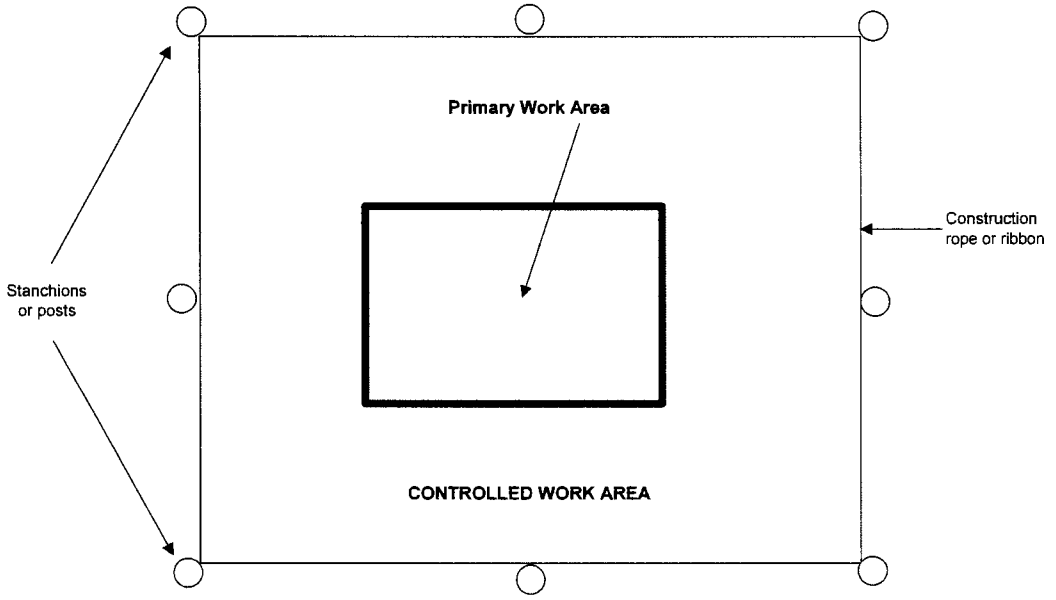

Figure 8-1. General configuration for the controlled work area.

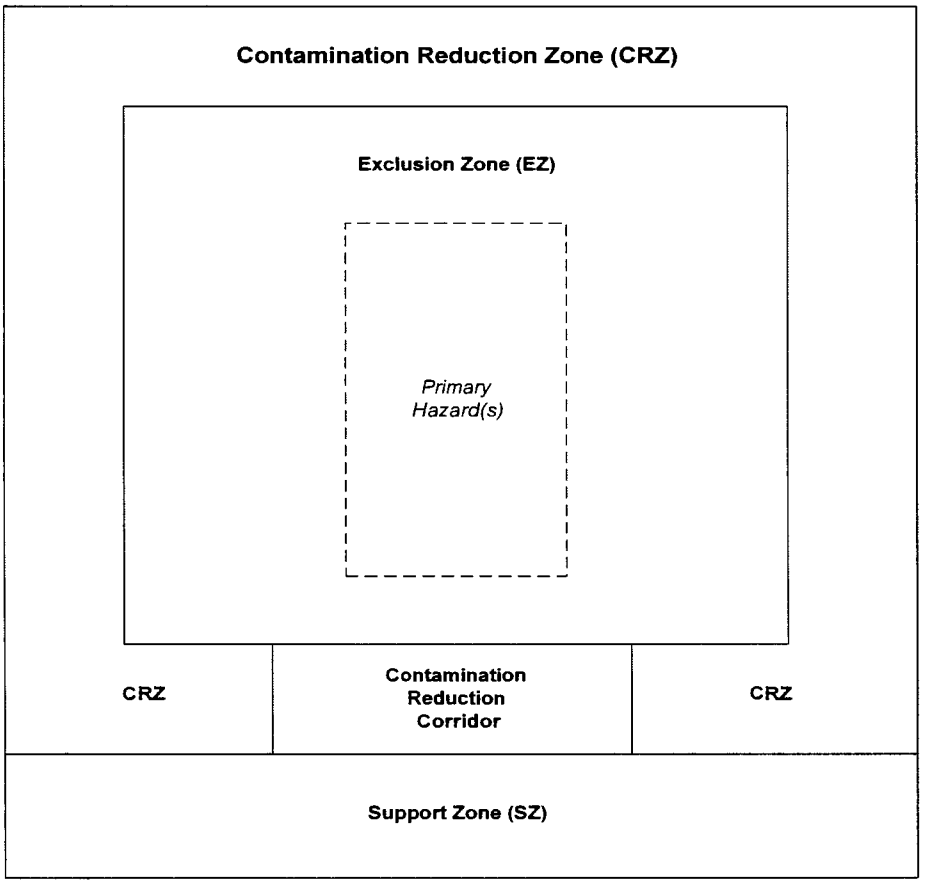

Figure 8-2. General configuration of work control zones (EZ, CRZ, and SZ).

8.1 Exclusion Zone

The EZ is the area where contamination or potential contamination exists. Since this area has the potential for workers to be exposed to site contaminants and safety hazards, all field personnel entering this area will wear the appropriate PPE (minimum of Level D) and adhere to the training and medical surveillance requirements presented in this document. Field personnel entering the EZ will enter and exit through the established entry and exit control points. Gross decontamination will take place near the "hotline" in the EZ before proceeding to the support zone (SZ). The EZ will be demarcated by using lines, placards, and hazard tape and/or signs, or will be enclosed by physical barriers such as chains, fences, or ropes.

8.2 Contamination Reduction Zone

The contamination reduction zone (CRZ), located between the EZ and the SZ, is where field staff and equipment will undergo gross decontamination. The CRZ will serve as a buffer to further reduce the probability of transporting contaminants or being affected by other existing hazards. It will provide additional assurance that the physical transfer of contaminants via personnel or equipment is limited through a combination of decontamination procedures and a minimum required distance between the EZ and SZ.

8.3 Support Zone

The SZ is the area outside the EZ and CRZ and is considered free from recognized site hazards and contaminants and will not be delineated. Support equipment (i.e., project vehicles, supplies, etc.) will be located in this area. Since eating is permitted in this area, potentially contaminated personal protective clothing, equipment, and samples will not be permitted beyond the EZ or CRZ. The location of the SZ at each site will depend on a number of factors, including:

- Accessibility—topography, open space available, locations of roads, or other limitations.
- Visibility—line of sight to all activities in the EZ is preferable.
- Wind direction—the support facilities preferably should be located upwind of the EZ. Shifts in wind direction and other conditions may be such that an ideal location based on wind direction alone does not exist.
- Resources—water, electricity, or places of refuge.

8.4 Site Security

North Wind and subcontractor vehicles will all be clearly marked with their company name on the side for quick identification. North Wind personnel will maintain site security and will prevent unauthorized personnel from entering work areas.

Where chemical or physical hazards beyond existing conditions are created by groundwater evaluation-related activities, the following measures will be implemented. To maintain security at the site locations during working hours, the SSHO will:

- Control all site entrances/exits through the appropriate work control zones.
- Establish a personnel identification system, including limitations to an individual's approved activities.
- Coordinate traffic control measures (if necessary).

- Be responsible for enforcing entry/exit requirements.
- Use caution tape and temporary fencing where feasible.
- Post warning signs and use caution tape around the perimeter of the SZ if the use of temporary fencing is not feasible.

To maintain security during nonworking hours, the SSHO will secure the site prior to leaving at the end of a working day. All equipment and supplies will be secured or stored in locked facilities, and any open holes and trenches will be placed in a safe configuration, barricaded, or roped off.

8.5 Site Communications

Two forms of communication will be available onsite. The first will be for communicating internally between field team members and the second for communicating with off-site personnel. Radios or a public address system will be used for communication onsite between field team members, and the use of telephones (either landline, if available to the SZ, or cell phones maintained with the SSHO) for off-site communication capabilities.

8.5.1 Internal Communication

Internal communication is used to:

- Alert team members to emergencies
- Pass along safety information, such as weather conditions that could affect heat stress, cold stress, or general safety, etc.
- Maintain site control
- Facilitate site work by being able to call to the appropriate party for information without having to decontaminate the work party and equipment and secure the site.

Common types of internal communication devices include:

- Radios
- Noisemakers: vehicle horn, siren, and whistle
- Visual signals.

8.5.2 External Communication

Primary means of external communication devices are telephones, radios, facsimile machines, and computer networks. External communication systems between on-site and off-site personnel are necessary to:

- Coordinate emergency response efforts
- Report to upper management concerning site activities
- Maintain contact with essential off-site personnel.

8.5.3 Verbal Communication

Verbal communication can be impeded by on-site background noise and the use of PPE. Thus, it is vital that pre-arranged signals of communication be arranged prior to the initiation of site activities, particularly when heavy equipment work is involved.

9. STANDARD OPERATING PROCEDURES, CONTROLS, AND WORK PRACTICES

The implementation of safety procedures, controls, and work practices will be used at the project work site to prevent or reduce personnel exposure or injuries. The use of hazard controls will follow the hierarchy of engineering the hazards, administratively controlling hazards, and implementation of PPE. In most cases, the control of hazards will involve all of these. Basic standard operating safety procedures, controls, and work practices are summarized in Table 9-1:

Table 9-1. Safety procedures, controls, and work practices.

Title	Description
Dust Controls	Engineering and administrative controls for dust may include, but are not limited to, dust suppression using water, application of soil surfactants to stabilize exposed soil, use of containment structures, positioning of required personnel upwind of soil disturbance or handling activities, restriction of unauthorized personnel entry into soil disturbance areas, limiting access to the work area to the minimum necessary field personnel, selection of equipment with fully enclosed operator cabs, selection of soil handling and excavating equipment and techniques to minimize dust creation, or stopping operations when wind speeds reach a point that dust is disturbed.
The Buddy System	The "buddy" system, or two-person system, will be used at the site when personnel have entered into the EZ. The buddy system requires each employee to assess and monitor his or her "buddy's" mental and physical well being during the course of the workday and serves as a check for accountability. A buddy must be able to provide assistance; verify the integrity of PPE; observe their partner for signs and symptoms of heat stress, cold stress, or contaminant exposure; and notify other personnel if emergency assistance is needed. Workers need to be able to see or hear and effectively communicate with their buddy at all times when in the EZ.
Established Eating and Drinking Area	Prohibitions against eating or drinking inside the CWA or EZ and CRZ will be enforced. Ingestion of hazardous substances is likely when workers do not practice good personal hygiene habits. It is important to wash hands, face, and other exposed skin thoroughly after completion of work and before smoking, eating, drinking, and chewing gum or tobacco. Also, no chewing, eating, applying skin products or drinking is allowed within the EZ or CRZ. As a minimum, all personnel will wash their hands (or utilize disinfectant solution or towelettes) prior to performing these activities in the designated eating area (typically outside a CWA or within a SZ. Restroom facilities (if necessary, portable toilets) will be made available for field team personnel at the project site.
Excavation and Trenching	Serious accidents and extensive property damage occur when excavating equipment encounters unexpected underground utility lines. Such utilities include gas lines, electrical lines, sewers, and telephone lines. The probability of accidentally encountering these lines is minimized if the lines are marked by a line location service. Before any invasive fieldwork begins, a utility clearance shall be performed to identify the location of any subsurface utilities. Other excavation requirements are listed in EM 385-1-25.

Table 9-1. (Continued).

Title	Description
Material Handling	Material handling tasks pose a significant injury hazard to workers. The precautions in Section 2.1.2 shall be implemented to reduce potential worker injuries. Employees shall be trained in and shall use safe lifting techniques for manual material handling tasks. Good housekeeping shall be maintained and enforced by the Project Manager/FTL to reduce potential for injuries during material handling activities. Whenever heavy or bulky material is to be moved, the material handling needs shall be evaluated in terms of weight, size, distance, and path of movement to select the safest method for handling the material. When possible, materials will be handled using mechanical devices or handling aids as a preference to using manual material handling. Material handling devices shall be available for material handling needs.
Confined Space Entry	Confined space entry is not anticipated based upon the planned evaluation tasks. Based on the required plans, it was determined that confined space entry likely will not occur. Entry includes if the plane at the entry is passed by any part of the body. If conditions change, the SSHO, in consultation with the Project HSM, will evaluate the situation to determine if implementation of North Wind's confined space program is warranted.
Electrical Safety	Only authorized qualified electricians shall be allowed to install, modify, or work on electrical supply systems. This includes installation of a temporary electrical supply or modification of permanent electrical supply equipment. Project field personnel may utilize the electrical supply systems once installed for field use. The following precautions shall be observed: - Prior to use, all electrical equipment, power tools, and extension cords shall be inspected for damage. Damaged or defective electrical equipment shall be removed from service immediately. - All temporary wiring, including all electrical power tools and extension cords, must have a ground fault circuit interrupter (GFCI) installed, or power tools must be double insulated and UL-approved. - All electrical wiring or systems shall be considered energized unless under the protection of lockout/tagout (LO/TO). - Extension cords shall be equipped with a third wire ground and be protected from damage when passing through the work areas. - Safe clearance shall be maintained between overhead power lines and project personnel or conductive equipment. As a minimum, a distance of 10 feet from overhead power lines shall be maintained for voltages of 50 kV or less. For voltages over 50 kV, a minimum of 10 feet plus 4 inches for every 10 kV over 50 kV shall be maintained.
Lockout/Tagout	Before project personnel perform any servicing or maintenance on a system where the unexpected energizing, start up, or release of kinetic or stored energy could occur and cause injury or damage, the system shall be isolated. Personnel working with or around an isolated system must be properly trained as either an affected or an authorized employee as appropriate for the tasks. LO/TO shall only be performed by authorized employees who are trained on the safe application, use, and removal of LO/TO devices. Where LO/TO is required, the requirements of North Wind *HSP-012, Control of Hazardous Energy* (NWI, 2006e) will be followed. The SSHO/FTL shall be responsible for coordinating LO/TO activities.

Table 9-1. (Continued)

Title	Description
Equipment Guarding	Hand and power tools shall be used, inspected, and maintained according to the manufacturer's recommendations. The tools will be inspected, tested, and determined to be in safe operating condition before use. Tools having defects that render them unsafe shall be removed from service and secured to prevent use until the tool has been returned to a safe condition. Power tools and equipment designed to accommodate guards shall be equipped with such guards.
Fall Protection	Working at elevated heights or from ladders is not anticipated to complete the project tasks. If a situation develops that requires personnel to work on an unprotected surface where the worker(s) are equal to or greater than 6 feet high, the SSHO shall ensure the applicable requirements in EM 385-1-1, Section 21, "Safe Access and Fall Protection" are implemented prior to performing the work.
Hazard Communication	The SSHO shall maintain an inventory and active chemical management process for chemicals brought to the work site, in accordance with North Wind *HSP-002, Hazard Communication*, (NWI, 2006f) including: - Maintain copies of all material safety data sheets (MSDSs) for chemicals to which employees are potentially exposed. The MSDSs shall be maintained at the project site and shall be on hand before or as the chemicals arrive onsite. - Ensure an adequate manufacturer's label is in place on each chemical container, or label chemical containers with the chemical's identity and hazard warnings. - Store all chemicals properly in accordance with their MSDSs. Consider compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.
Illumination	The project will perform outside work activities under normal daylight conditions or supplementary light plants will be provided to adequately illuminate the work area. Due to the operation of heavy equipment and the hazards associated with soil boring, the use of light plants will only be permitted after extensive review and approval of the SSHO. Issues to consider include operations taking place, personnel/equipment operating in the area, size of the area, number and adequacy of available light plants, and the ability for personnel to safely work under the artificial lights. With work occurring outside this should not be an issue.
Housekeeping	Practice good housekeeping at all times. Turn in or place tools in the designated storage location after use. Put waste materials in the appropriate waste container or receptacle. If there is a question as to where to dispose of a waste article, personnel should ask the SSHO/FTL.
Work Site Sanitation	Restroom facilities and facilities for washing hands and face will be available for field team personnel at the project site. All personnel will be required to wash their hands and face before eating or drinking in the SZ.

10. DECONTAMINATION

Decontamination procedures shall be implemented as a means to control the potential migration of chemicals or other site contaminants to clean areas and to prevent personnel exposure to chemicals that may contaminate clothing or protective gear. Personnel entering the EZ during soil disturbance activities must decontaminate upon exiting from the EZ. In addition, equipment will be decontaminated, as appropriate, before it is moved into the SZ. Any material that is generated during the decontamination procedures will be labeled and stored until final disposal arrangements are made.

10.1 Personnel Decontamination

All personnel will go through established entry/exit point and decontamination stations before leaving the EZ to clean areas, where an EZ for contaminants is established. Personnel will also go through decontamination if their protective clothing becomes torn in a contaminated area. Personnel may return to the EZ after changing into clean protective gear. The work anticipated at the site will be primarily conducted in Level D with a potential to upgrade to Level C PPE. Table 10-1 presents the typical Level C or Level D decontamination approach associated with a "step-off" decontamination procedure. The decontamination approach presented in Table 9-1 is applicable to field personnel that come in physical contact with potentially contaminated media. Entrance into the SZ will require appropriate decontamination and removal of any PPE worn in the CRZ.

Table 10-1. Typical Decontamination Tasks and Equipment Guidelines.

Step	Purpose	Equipment	Discussion
Step 1	Equipment drop	Plastic bucket or trash bag.	Deposit equipment in plastic bucket or in/on a trash bag to segregate from other equipment.
Step 2	Gross decontamination	Stiff brush, stick, or wiping. HEPA vacuum may be used as determined necessary by SSHO.	Remove visible mud or other grime from outer clothing or equipment. Avoid creating dust.
Step 3	Disposable materials and PPE drop	Container for disposable materials, launderable materials, and respirators.	This station used to discard Tyvek or launderable coveralls, disposable boot covers, disposable gloves, launderable gloves, respirator, and any other outer PPE or materials. Do not shake or otherwise create dust.
Step 4 (Option 1)	Hand washing	Bucket with clean water Soap dispenser Paper towels.	Supplies usually set up on a table at step off line.
Step 4 (Option 2)	Hand washing	Sanitizing hand wipes.	Used most often where cold weather prohibits use of water.
Step 5	General personnel decontamination	Change/shower facilities. Container for modesty clothing.	Provides an area for personnel to change out of modesty clothing, wash face and hands or take a shower, and dress in clean clothing.

NOTE: *These steps are typically for personnel working in the area. Any or all of these steps may be eliminated for personnel conducting site observations that do not contact equipment or potentially contaminated environmental media at the discretion of the SSHO.*

Equipment that may be required for decontamination includes 20- to 30-gallon wash basins, plastic liners, Alconox or other detergent decon solution, rinse water, spray bottles with decon solution, wipes, plastic drop cloths, scrub brushes, towels, benches or stools, and tape.

10.2 Equipment Decontamination

All equipment that comes in contact with the septic waste, contaminated soil or water will be decontaminated before leaving the site. Gross decontamination of equipment will occur in the EZ if one is established, so that the equipment does not potentially spread contaminated soil from the site to the CRZ. A decontamination pad will be set up in the CRZ.

At the end of the project, all residual soil and water on at the site this is designated decontaminated shall be placed on plastic Department of Transportation-approved 55-gallon drums (or similar containers) and managed as a potentially hazardous waste.

Equipment that may require decontamination includes tools, vehicles (i.e., heavy equipment), and certain protective equipment. All material and equipment used for decontamination must be disposed of properly. Disposable clothing, tools, buckets, brushes, and all other equipment that is contaminated will be secured in appropriate specification drums or other containers and labeled. Clothing that will be reused and not completely decontaminated onsite will be secured in plastic bags before being removed from the site. Equipment removed from the EZ before the end of the job will undergo a gross decontamination step near the work site prior to proceeding to the decontamination area. This step will help to ensure that as many of the contaminants as possible remain in the area. This gross decontamination step will involve scraping and rough brushing to remove dirt and other visible contamination while avoiding the creation of airborne dust.

Equipment used in the EZ in areas where contact with site contaminants is likely to occur will be protected from contamination as much as possible by measures such as enclosure in plastic bags or by preventing contact with contaminated materials. Equipment decontamination will be determined by the nature of the equipment and extent of contamination through visible inspection. Employees engaged in equipment and vehicle decontamination will wear adequate Level D PPE to protect from COC exposure.

10.3 Emergency Decontamination

It is not anticipated that emergency decontamination of heavy equipment will be necessary. Emergency decontamination of site personnel may be necessary for medical reasons or in the event of major contamination by contact with contaminated material. Emergency procedures will include:

- Assistance by on-site personnel for the removal of contaminated protective clothing, when time or conditions permit.
- If the employee is injured and cannot be moved, attempts will be made to cut the clothing for removal.
- If the situation is life threatening due to chemical exposure, some form of decontamination or removal of protective clothing will be conducted prior to medical treatment. Emergency personnel will be notified of the nature of the contaminated material and instructed on the importance of preventing skin contact.
- If the employee can walk or be moved without injury, all affected skin areas should be washed thoroughly with soapy water and rinsed.
- Disposal of equipment will be in appropriated collection containers.
- Non-disposable equipment will be placed and cleansed in the area provided for personnel to wash-down non-disposable equipment.

11. EMERGENCY RESPONSE

11.1 Emergency Response Planning

It will be the responsibility of the North Wind Project Manager to determine the appropriate response to an emergency incident. However, at least two members of each North Wind on-site field crew will be trained in CPR and first aid. The response sequence will be to remove all personnel from the source of the chemical or physical hazard, assess the severity of the incident, contact appropriate emergency assistance, and swiftly move injured or exposed personnel to a rendezvous point for aid.

The following planning measures shall be instituted to facilitate responses to emergency situations:

- The SSHO/FTL will conduct a tailgate safety meeting prior to the start of field work. The SSHP shall be made available to all project personnel for review, including applicable subcontractor personnel. After reading the plan, all personnel shall sign an employee training acknowledgement form as illustrated in Appendix B.

- All project personnel, including applicable subcontractor personnel, will be instructed in the use of all field safety equipment before any field work or field sampling takes place.

- All project personnel, including applicable subcontractor personnel, will be instructed in emergency communication protocols appropriate to the site investigation and soil excavation.

- The SSHO/FTL will verify that all North Wind field personnel have fulfilled the project training and medical monitoring requirements.

- The Project Manager will check to see that all required safety equipment is at the job site prior to the start of each day's field activities.

- Emergency contacts and the available local/site resources are described below. The Project Manager shall be responsible for verifying availability of these resources prior to start of the field work at the SS-13 site and for providing any requested or necessary information related to the field work to these emergency contacts and resources.

The project will implement applicable emergency planning tasks before starting field activities. This includes contacting on-site parties, the facility, and local emergency service providers, as appropriate. To implement emergency planning, the SSHO will:

- Review the facility emergency and contingency plans, where applicable.

- Verify that on-site communication equipment (i.e., radios or public address system) is available and functional. Ensure the required off-site communication equipment (telephone or cell phone) is available and functional.

- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital on an informational board or posting location. This information and its location will be communicated to on-site personnel.

- Designate one vehicle as the emergency vehicle, place hospital map inside, and keep the keys in the ignition during field activities. Rehearse the emergency response plan before site activities begin, including driving the route to the hospital.

Base Hospital—*833rd Medical Group Hospital*, the HAFB onsite hospital, is located as shown in Figure 11-1. The HAFB hospital is located at 280 1ST ST, Holloman Air Force Base.

If necessary, a nearby civilian hospital, Gerald Regional Medical Hospital, in Alamogordo, NM, is also available. Figures 11-2 and 11-3 show the route for Holloman AFB to Gerald Regional Medical Hospital in Alamogordo, NM. The Alamogordo civilian hospital is located at 2669 Scenic Dr, Alamogordo.

Figure 11-1. Location of HAFB Hospital at Holloman AFB.

Figure 11-2. Emergency route from HAFB to the civilian hospital in Alamogordo, NM.

Figure 11-3. Location of Gerald Champion Regional Hospital on N. Scenic Dr.

11.2 Emergency Notifications

The SSHO/FTL is responsible for notifying the PM of any emergency events. The SSHO shall ensure personnel are accounted for and proper response actions are implemented during any local or site-wide emergency. Personnel shall be responsible for notifying the SSHO/FTL of any potential emergency situation, as well as for assisting with the situation, in accordance with their training. The SSHO/FTL will, in turn, notify the Project Manager and HSM and USACE representative point of contact (POC) of any emergency event at the project site, and will submit the proper forms in a timely manner for all recordable injuries.

The SSHO/FTL shall inventory and check the site emergency equipment and supplies required in Table 11-1.

HOSPITAL AND EMERGENCY SERVICES (24-HOUR)

Medical Treatment

Ambulance (Base)	(505) 784-4033 or **911**
Base Hospital—833rd Medical Group, Base Hospital 280 1ST ST, Holloman Air Force Base	(505) 479-7171
Gerald Champion Memorial Hospital 2669 Scenic Dr, Alamogordo	(505) 439-2100

DIRECTIONS TO HAFB HOSPITAL

- From the HAFB STFL work site, drive to the 1st Street within the AFB. Proceed in the direction of . 280 1ST ST. This is the base hospital (Figure 11-1).

DIRECTIONS TO GERALD CHAMPION MEMORIAL HOSPITAL

- From the HAFB STFL work site, drive to the 1st Street within the AFB and drive south until reaching Hwy 70/82 eastbound exit to Alamogordo.
- From exit onto HWY 70/82 drive 7.5 miles to Alamogordo to take the northbound route staying on HWY 70 to merge on to Hwy 70/54.
- Drive northbound on for 5 miles until reaching the southbound exit for N. White Sands Blvd (Hwy 54).
- Drive southbound on N. White Sands Blvd for 0.5 miles and turn left on to N. Scenic Dr.
- Continue 2.3 miles eastbound on N. Scenic Dr and Gerald Champion Memorial Hospital will be at 2669 Scenic Dr, Alamogordo.

Table 11-1. On-site emergency response equipment.

Required Equipment	Location at Task Site	Responsible Person	Frequency of Inspection
ABC fire extinguishers	• 1 – 10A/60BC in project vehicle or CWA • 1 – 10A/60BC in a project vehicle in SZ • 1 – 10A/60BC at entrance into the EZ • 1 per project heavy equipment	SSHO/FTL	Monthly
First aid kit	1 – Project vehicle in SZ	SSHO/FTL	Weekly
Eyewash station (15 minute flow and capacity meeting ANSI Standard)	1 – CWA or SZ	SSHO/FTL	Weekly
Liquid materials spill kit	1 – Project vehicle in SZ	SSHO/FTL	Monthly
Communication equipment (radios or PA system for on-site communications, and telephone or cell phone in SZ for off-site communications)	Project site	SSHO/FTL	Daily

ANSI = American National Standards Institute
CWA = Control Work Area
EZ = exclusion zone
FTL = Field Team Lead
PA = public address
SSHO = Site Safety and Health Officer
SZ = support zone

11.3 On Site Incident Response

In case of fires, explosions, or chemical releases, actions to be taken include:

- All personnel shall shut down work operations and evacuate the immediate work area.
- The SSHO/FTL shall immediately notify appropriate emergency response personnel (phone numbers can be found in Table 11-2).
- The SSHO/FTL shall account for personnel at the designated assembly area(s).

The SSHO/FTL shall assess the need for site evacuation and evacuate the site as warranted.

NOTE: *Small fires or spills posing minimal safety or health hazards may be controlled without evacuation.*

Table 11-2. Applicable project telephone numbers.

Emergency Transportation Systems	
Police Department	9-911
Fire Department (Base)	572-7228
Ambulance	(505) 784-4033 or 911
USACE (Lead Agency) Resources	
Project Manager (Mr. Tom Zinic)	(402) 221-7666
Project Industrial Hygienist (Mr. Marc Anderson)	(402) 221-7692
North Wind Project Contacts	
Project Manager (Kim Kearney)	(208) 557-7908
Field Manager/SSHO (Dave Bates)	(208) 528-8718
Project CIH/Project HSM (Bruce Miller)	(208) 557-7900
Other Resources	
Poison Control Center (New Mexico)	(800) 432-8802
Superfund/Resource Conservation and Recovery Act (RCRA) Hotline	(800) 424 9346

11.4 Evacuation

The SSHO/FTL will designate evacuation route(s) and assembly area(s) before work begins. These locations may change based upon site work locations and weather/wind conditions. The SSHO/FTL will communicate any changes to these locations to all field personnel immediately. In case of an evacuation, all personnel will assemble at the assembly area(s) upon hearing the emergency notification for evacuation. The SSHO/FTL will account for all personnel in the on-site assembly area, while a designated person will account for personnel at any alternate assembly area(s).

11.5 Notification and Follow Up

The SSHO/FTL shall make notification related to any emergency response to the PM as soon as it is reasonable following initial emergency control measures. The SSHO/FTL shall provide a written summary of the incident within 24 hours to the PM. The written report will detail the event, cause(s), contributing factors, end result, and mitigation in place to prevent recurrence.

11.6 Spill Control

Any spill that occurs on site (e.g., equipment line break or fuel leak) will be contained and reported to the SSHO/FTL and the USACE. A spill control kit will be used to absorb free liquids or to isolate the spill area (large spill) to prevent migration to other areas. Once the liquid is absorbed or contained, it will be containerized for final disposition. The container will be labeled as to the contents and a material safety data sheet (MSDS) will be obtained for the material.

12. ACCIDENT PREVENTION AND REPORTING

Daily safety and health inspections shall be conducted by the SSHO/FTL to ensure the effectiveness of the SSHP and to determine if operations are being performed in accordance with the SSHP, USACE and OSHA regulations, and contract requirements. In the event of an accident/incident, the actions and procedures will be implemented.

In the event of an injury or exposure, project personnel are required to notify the North Wind SSHO/FTL of any injury or suspected exposure as soon as possible following the occurrence. In the event of an injury or suspected exposure, the SSHO/FTL shall provide first aid treatment (on a voluntary basis) and/or contact the appropriate hospital and ambulance service, if necessary, by calling 911 or the emergency numbers listed in Section 11 (Table 11-2).

As soon as possible after an injury or suspected exposure, the SSHO/FTL shall report the incident to the Project HSM who shall investigate the circumstances surrounding the injury or exposure and file an exposure/injury incident report. This report shall include recommendations on how to prevent similar events from recurring. Within 2 working days of any reportable accident, North Wind shall complete and submit required Accident Reports (Form ENG 3394) in accordance with the following list:

- **Class A Accident**—An accident in which the resulting total cost of property damage and personal injuries is $1 million or greater, or an injury or occupational illness resulting in a fatality or permanent total disability.

- **Class B Accident**—An accident in which the resulting total cost of property damage and personal injuries is $200,000 or more but less than $1 million; or an injury or occupational illness resulting in permanent partial disability; or when three or more personnel are hospitalized as inpatients as the result of a single occurrence.

- **Class C Accident**—An accident in which the resulting total cost of property damage and personal injuries is $20,000 or more but less than $200,000; a nonfatal injury that causes any loss of time from work beyond the day or shift on which it occurred; or a nonfatal occupational illness that causes loss of time from work or disability at any time.

- **Class D Accident**—An accident in which the resulting total cost of property damage is $2,000 or more but less than $20,000.

NOTE: ***The accident investigation may exceed the 2 day notification period required to submit the Form ENG 3394.*** *Accident investigation information collected and documented after the Form ENG 3394 will be communicated to the appropriate USACE personnel following completion of the investigation. If form is not on site request one from the PESM.*

North Wind Form *HSF-005.1, Incident Report Form* (NWI, 2006b) will also be completed. All North Wind employees participating in the site investigation are required to file monthly exposure/injury reports whenever they have been injured or suspect that they have had an exposure.

13. LOGS, REPORTS, AND RECORDKEEPING

The SSHO/FTL will ensure maintenance of the logs and records that relate to all aspects of SSHP implementation. These records will be submitted to the PM as part of the project file and available upon request by the USACE project contracting officer. They shall include, as a minimum:

- Training log of 40-hour initial and 3-day supervised field training,
- Supervisory certifications,
- 8-hour annual refresher training,
- Medical surveillance program fitness for duty,
- First aid and CPR certification,
- Site-specific indoctrination,
- Tailgate meetings,
- Daily inspections (may be part of the quality control report),
- Equipment maintenance,
- Exposure assessment monitoring,
- Contractor Monthly Summary Record of Injuries/Illnesses & Work Hour Exposure.

14. REFERENCES

29 CFR 1910, 2002, Subpart Q, Title 29, "Labor," Part 1910, "Occupational Safety and Health Administration," Subpart O, "Welding, Cutting, and Brazing," *Code of Federal Regulations*, Office of the Federal Register.

29 CFR 1910.120, 2002, Title 29, "Labor," Part 1910, "Occupational Safety and Health Administration," Subpart H, "Hazardous Materials," Section 1910.120, "Hazardous Waste Operations and Emergency Response," *Code of Federal Regulations*, Office of the Federal Register.

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ER 385-1-92, "Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities," United States Army Corps of Engineers, Engineering Regulation, July 1, 2003.

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NIOSH 2005a, "NIOSH Pocket Guide to Chemical Hazards," U.S. Department of Health and Human Services, September, 2005.

NWI, 2006a. *Tailgate Safety Briefing,* North Wind, Inc., HSF-100, August 28, 2006. Revision 1.

NWI, 2006b. *Incident Report Form,* North Wind, Inc., HSF-005.1, August 28, 2006. Revision 1.

NWI, 2006c. *Hearing Conservation Program,* North Wind, Inc., HSP-008, August 28, 2006. Revision 1.

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NWI, 2006e. *Control of Hazardous Energy,* North Wind, Inc., HSP-012, August 28, 2006. Revision 1.

NWI, 2006f. *Hazard Communication,* North Wind, Inc., HSP-002, August 28, 2006. Revision 1

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Appendix A
Accident Prevention Plan

ACCIDENT PREVENTION PLAN

Post Closure Operation-Construction (PCO-C) at Site SS-13

Holloman Air Force Base, NM

March 2008

Prepared for:

United States Army Corps of Engineers, Omaha District
106 S. 15th Street, Omaha, NE 68102-1618
Contract No. W9218F-04-D-0017

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, NM

Prepared by:

North Wind, Inc.
2508 N. Telshor Blvd.
Las Cruces, NM 88011

ACCIDENT PREVENTION PLAN APPROVAL		
Preparer	Micah Nielsen, CIH	Date
Concurrence	Kim Kearney Program Manager	Date
Concurrence	Bruce Miller, CIH Project CIH, Health and Safety Manager	Date

ACCIDENT PREVENTION PLAN

1. PROJECT INFORMATION

Contract Name and Number: SSHP/APP for POC-C at Site SS-13 at HAFB

Contract No. W9218F-04-D-0017

Contractor: North Wind, Inc
2508 N. Telshor Blvd.
Las Cruces, NM 88011
(505) 522-3093

2. BACKGROUND INFORMATION

This Site-Specific Health and Safety Plan (SSHP)/Accident Prevention Plan (APP) establishes the procedures and requirements that will be used to eliminate or minimize health and safety risks to persons working the post closure operation-construction (PCO-C) at Site SS-13 at Holloman Air Force Base (HAFB), New Mexico. The SSHP/APP is an addendum to the *Base Wide Health and Safety Plan for Holloman Air force Base*, Alamogordo, NM (Holloman HASP). The Holloman HASP will supersede any discrepancies that may exist within this site-specific SSHP/APP.

As required by 29 Code of Federal Regulations (CFR) 1926.65, "Hazardous Waste Operations and Emergency Response;" United States Army Corps of Engineers (USACE) Safety and Health Requirements Engineering Manual (EM) 385-1-1; and USACE Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (ER 385-1-92). It contains information about the hazards involved in performing the work, as well as the specific actions and equipment that will be used to protect persons while working at the project site.

A project-specific Accident Prevention Plan, prepared according to requirements of EM 385-1-1, "Safety and Health Requirements Manual," is provided in Appendix A.

Except in emergency situations, no deviations from the SSHP/APP may be implemented without prior notification and approval of the North Wind, Inc. (North Wind) Project Health and Safety Manager (HSM). Changes in working conditions may necessitate modifications to the SSHP/APP. North Wind prepared this plan under the USACE Omaha District Contract No. W9218F-04-D-0017.

3. NORTH WIND, INC. 2006 SAFETY INFORMATION

Hours Worked	Total Recordable Injuries	Total Recordable Illnesses	Recordable Injury Incidence Rate	Total Lost Time Injuries	Lost Time Injuries Incidence Rate	Days Away, Restricted or Transferred (DART)	Experience Modification Rate (EMR)
555,646	1	0	0.3	1	0.3	0.3	0.72

4. NORTH WIND, INC. ENVIRONMENTAL, SAFETY, AND HEALTH POLICY

The purpose of the North Wind, Inc. (North Wind) environmental, safety and health (ESH) policy is to provide general ESH guidelines for conducting all work activities. This policy is based on a sincere desire to eliminate personal injuries, occupational illnesses, environmental releases, damage to equipment and property, as well as to protect the general public.

Every employee and subcontractor of North Wind is charged with the overall responsibility of preventing incidents and eliminating conditions that can lead to occupational injuries and illnesses. It is the North Wind project manager's responsibility to provide a safe work environment. Likewise, management can only give meaning to the ESH program if it takes positive action to ensure that safety and health rules are adequate, enforced, and that effective training programs are employed.

North Wind recognizes that all occupational injuries and illnesses are preventable, and that a high level of safety performance provides long-term beneficial returns including healthy employees and a productive work environment. Therefore, safety will not be compromised. It is fully accepted as an integral part of the North Wind organization and daily project activities. ***Our goal is ZERO occupational illnesses, injuries, or environmental releases.***

5. RESPONSIBILITIES AND LINES OF AUTHORITIES

Specific roles and responsibilities for the project are defined in the SSHP.

6. SUBCONTRACTORS AND SUPPLIERS

WDC Exploration and Wells Bryan Nydowski 505-865-5222	Severn Trent Laboratories Deb Henderer 303-736-0134
Bhate Environmental Associates, Inc. Frank Gardner 303-597-2450	

Other suppliers and services (e.g., equipment rental, surveying, or sanitation) may be contracted as necessary.

All subcontractor interfaces, responsibilities, and accountability are defined in the North Wind subcontracts. Subcontractors will be responsible for complying with all USACE safety requirements related to their scope of services as well as the project SSHP.

7. TRAINING

All training requirements are defined in Section 4 of the SSHP.

8. SAFETY AND HEALTH INSPECTIONS

Health and safety inspections will be conducted by the project Site Safety and Health Officer (SSHO) at a frequency deemed appropriate and commensurate with the tasks being conducted. All personal protective equipment (PPE) and emergency supplies will be inventoried and inspected prior to mobilizing to the project sites. All inspections will be documented in accordance with the project quality assurance plan.

9. SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

The safety goal for this project is ***ZERO recordable accidents or environmental releases***.

It is the policy of North Wind to expect the highest degree of professionalism from its employees and subcontractors during the course of all projects. Starting at the hiring and subcontracting process, North Wind interviews prospective employees and subcontractors to assess their safety awareness and attitude. This includes review of subcontractor recordable injury and illness/lost workday incidence rates and experience modification rates. The primary incentive for conducting all work in a safe and healthful manner is continued success of North Wind, which directly benefits every employee and subcontractor. Safety awards are occasionally given out to highlight exceptional safety awareness or actions.

North Wind has established an annual safety award for the office with the best safety record and most innovative proactive safety awareness training for employees and subcontractors. This award is presented to the winning office manager during the annual North Wind managers meeting by the President of North Wind.

Disciplinary actions will be taken if an employee fails to follow North Wind ESH Program requirements. Actions will range from a written reprimand to termination. Subcontractors who fail to follow North Wind ESH requirements are subject contract termination. ***Unsafe acts or environmental negligence will not be tolerated.*** The project manager and field manager have direct responsibility for safety on this project.

10. ACCIDENT REPORTING

The Human Resources Manager (HRM) (208) 528-8718 will be contacted immediately following any accident, injury, or environmental release. An investigation, commensurate with the severity of the event, will be performed by North Wind for all occurrences (including near misses and first aid cases). *HSP-005, Accident Reporting and Investigation* (NWI-2006g) will be followed. As a minimum, the site supervisor or project manager, and all subcontractor and North Wind employees involved, are required to meet and discuss the incident to determine the root cause and what corrective actions must be taken to prevent future occurrences. Details from the investigation are documented on a North Wind *HSF-005.1, Incident Report Form* (NWI, 2006b).

Additionally, USACE reporting will be in accordance with Section 12 of the SSHP.

Corrective actions and recommendations following the investigation are discussed with all project personnel (including subcontract personnel) prior to continuing site activities. Drug and alcohol testing will be conducted following all accidents. All injuries or illnesses will be evaluated to determine if it is an Occupational Safety and Health Act (OSHA) recordable injury or illness and should be entered on the OSHA 300 Log (as required under 29 CFR 1904).

11. MEDICAL SUPPORT

The Project SSHP states that at least one person with first-aid/CPR training will be on-site at all times. In the event of a medical emergency, the injured person will be evacuated by helicopter to the nearest medical facility, as described in Sections 5 and 11 of the SSHP.

12. PERSONAL PROTECTIVE EQUIPMENT

PPE is described in Section 7 of the Project SSHP and will consist of a minimum of Level D PPE.

13. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL (AS APPLICABLE)

The following lists the applicable section of EM 385-1-1 that will be followed:

Hazard Communication program ..... (01.B.04)

Emergency response procedures and tests .....(01.E.01)

Spill plans .....(01.E.01, 06.A.02)

Posting of emergency telephone numbers .....(01.E.04)

Respiratory protection plan .....(05.E.01)

Health hazard control program ..... (06.A.02)

Hazardous energy control plan ..... (12.A.07)

Contingency plan for severe weather ..... (19.A.03)

Rigging .....(15.A..01-07)

Excavations .....25.B.01-10, 25.C..01)

Plan for prevention of alcohol and drug abuse (Defense Federal Acquisition Regulation Supplement Subpart 252.223-7004, Drug-Free Work Force).

14. CONTRACTOR INFORMATION

North Wind personnel shall comply with the applicable sections of the EM 385-1-1 Safety Manual, as described above, by implementing the site-specific SSHP and the following sections of the North Wind Environmental Safety and Health Program Manual:

ENVIRONMENTAL, SAFETY and HEALTH PROGRAMS

15. SITE SPECIFIC HAZARDS AND CONTROLS

Site specific hazards and required controls are described in the SSHP.

Appendix B
Employee Training Acknowledgement Form

EMPLOYEE TRAINING ACKNOWLEDGEMENT FORM

PCO-C at SS-13 Site Specific Safety and Health Plan/APP

Project personnel signed below have read and/or reviewed the SSHP/APP, understand it, and agree to comply with the requirements listed in the SSHP/APP.

Project Name:	**Project Number:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

Appendix C
Reportable Accident Form for USACE: Form 3394

(For Safety Staff only)	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT (For Use of this Form See Help Menu and USACE Suppl to AR 385-40)	REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name (Last, First, MI)	b. AGE	c. SEX	d. SOCIAL SECURITY NUMBER	e. GRADE
		☐ MALE ☐ FEMALE		

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify)

3. GENERAL INFORMATION

a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time)	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME
	hrs		(1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (Specify)	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify)	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify)

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

a. CONSTRUCTION ACTIVITY	(CODE)	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE)
	#		#

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see help menu)*

a. SEVERITY OF ILLNESS/INJURY	(CODE)	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY
	#			

e. BODY PART AFFECTED	(CODE)	g. TYPE AND SOURCE OF INJURY/ILLNESS	(CODE)
PRIMARY	#	TYPE	#
SECONDARY	#	SOURCE	#
f. NATURE OF ILLNESS/INJURY	(CODE)		
	#		

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT	(CODE)	b. PERSONAL FLOATATION DEVICE USED?
	#	☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER (Specify)	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER (Specify)	(1) FRONT SEAT			
		(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b. OWNERSHIP	c. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see help menu)*

a. TYPE OF VESSEL/FLOATING PLANT	(CODE)	b. TYPE OF COLLISION/MISHAP	(CODE)
	#		#

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

ENG FORM 3394, MAR 99 Version 2 EDITION OF SEP 89 IS OBSOLETE. Page 1 of 4 pages (Proponent: CESO)

11.	CAUSAL FACTOR(S) *(Read Instruction Before Completing)*			
a. (Explain YES answers in item 13)		YES	NO	
DESIGN: Was design of facility, workplace or equipment a factor?		☐	☐	
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?		☐	☐	
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?		☐	☐	
OPERATING PROCEDURES: Were operating procedures a factor?		☐	☐	
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?		☐	☐	
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?		☐	☐	
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?		☐	☐	
a. *(CONTINUED)*		YES	NO	
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?		☐	☐	
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?		☐	☐	
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?		☐	☐	
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?		☐	☐	
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident		☐	☐	
b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? ☐ YES *(If yes, attach a copy.)* ☐ NO				

12.	TRAINING	
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO	b. TYPE OF TRAINING. ☐ CLASSROOM ☐ ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING. (Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*
a. DIRECT CAUSE
b. INDIRECT CAUSE(S)

14.	ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).
DESCRIBE FULLY:	

15.	DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.		
a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16.	MANAGEMENT REVIEW *(1st)*		
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS			
SIGNATURE	TITLE		DATE

17.	MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*		
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS			
SIGNATURE	TITLE		DATE

18.	SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW		
a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS			
SIGNATURE	TITLE		DATE

19.	COMMAND APPROVAL	
COMMENTS		
COMMANDER SIGNATURE		DATE

Page 2 of 4 pages

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10.	ACCIDENT DESCRIPTION *(Continuation)*

13a.	DIRECT CAUSE *(Continuation)*

Page 3 of 4 pages

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

Page 4 of 4 pages