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NAS WHITING FIELD
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WORK PLAN ADDENDUM NUMBER 3 INTERIM REMOVAL ACTION AT SITES 6, 16 AND 38
NAS WHITING FIELD FL
3/14/2002
CH2M HILL



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March 14, 2002

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Subject: Contract No. N62467-98-D-0095
Contract Task Order 0011 - Naval Air Station (NAS) Whiting Field - Milton,
Florida
Work Plan Addendum No. 03, Interim Removal Action at Sites 6, 16 and 38,
Revision 00

Dear Ms. Martin:

CH2M HILL Constructors (CCI) is pleased to provide one (1) fully executed copy of the Work Plan Addendum No. 3, Interim Removal Action at Sites 6, 16 and 38, NAS Whiting Field, Revision 00. Since no changes were made to the draft document, this submittal includes only the signature page and new green covers indicating this version is final.

Please contact me (850.939.8300, ext. 17) if you have any questions or comments regarding this material.

Sincerely,

CH2M HILL

A handwritten signature in black ink, appearing to read "Amy Twitty", written over a light blue horizontal line.

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Project Manager

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CCI Project File No. 151168

**Work Plan Addendum No. 03
Interim Removal Action at Sites 6, 16, and 38**

**Naval Air Station Whiting Field
Milton, Florida**

Revision No. 00

Contract No. N62467-98-D-0995

Contract Task Order No. 0011

Submitted to:

**U.S. Naval Facilities
Engineering Command
Southern Division**

Prepared by:



115 Perimeter Center Place, N.E.
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December 2001

**Work Plan Addendum No. 03
Interim Remedial Action at Sites 5, 16, and 38**

**Naval Air Station Whiting Field
Milton, Florida**

Revision No. 00

**Contract No. N62467-98-D-0995
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December 2001

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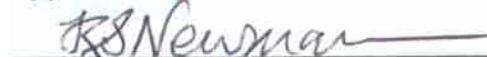


Amy Twitty, Project Manager

2-25-02

Date

Approved By:

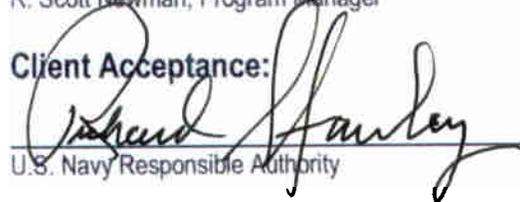


R. Scott Newman, Program Manager

4 Mar 02

Date

Client Acceptance:



U.S. Navy Responsible Authority

12 Mar 02

Date

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Acronym List

AVGAS	aviation gasoline
bls	below land surface
°C	degrees Celsius
CCI	CH2M HILL Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Contract Management Plan
CO	Contracting Officer
COC	contaminant of concern
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DQO	data quality objective
EISOPQAM	Environmental Investigation Standard Operating Procedures and Quality Assurance Manual
ESVs	ecological screening values
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FL-PRO	Florida Petroleum Residential Organic method
FS	feasibility study
HSP	Health and Safety Plan
IRCDQM	Installation Restoration Chemical Data Quality Manual
LTM	Long-term monitoring
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
ml	milliliter
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl tertiary butyl ether
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NELAC	National Environmental Laboratory Accreditation Conference
NRC	National Response Center

PAH	polynuclear aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PPE	personal protective equipment
ppm	parts per million
PRGs	preliminary remediation goals
QA	quality assurance
QC	quality control
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROICC	Resident Officer in Charge of Construction
SAP	Sampling and Analysis Plan
SCTL	soil cleanup target level
SS	stainless steel
SVOCs	semi-volatile organic compounds
TAC	turnaround time
TAL	target analyte list
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
USACE	United States Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOCs	volatile organic carbons

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) has been contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (NAVFAC), to prepare this Work Plan Addendum for work to be performed by CCI at Naval Air Station (NAS) Whiting Field in Milton, Florida. The work is being performed under Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0011, and in accordance with the management approach outlined in the CCI Contract Management Plan (CMP) dated July 1998.

This Work Plan is organized into six sections and four appendices as follows:

Section 1.0 Introduction describes how this plan is organized and the objective of planned remedial activities.

Section 2.0 Execution Plan provides a description of the tasks to be performed under this CTO, the project schedule, and the communications plan.

Section 3.0 Sampling and Analysis Plan outlines the required testing of environmental media, including construction materials under this CTO. Specific procedures are included in the Basewide Work Plan.

Section 4.0 Waste Management Plan addresses the management and disposal or recycling of wastes generated during the execution of this CTO.

Section 5.0 Quality Control Plan includes the submittal register and the site-specific project organization chart. The submittal register presents the project-related submittals and their projected submittal dates.

Section 6.0 References provides a listing of documents referenced in this Work Plan Addendum.

The following support documents are presented as appendices to this Work Plan Addendum:

- Appendix A Health and Safety Plan
- Appendix B Project Schedule
- Appendix C Quality Control Attachments

The Environmental Protection Plan included in the Basewide Work Plan provides general information on the appropriate requirements to be adhered to during the performance of the work at NAS Whiting Field.

1.1 Remedial Action and Objective

The objective of the remedial activities being performed by CCI under this CTO is the performance of surface soil excavations of benzo(a)pyrene and total recoverable petroleum hydrocarbon (TRPH) at Site 6, polynuclear aromatic hydrocarbons (PAHs) at Site 16, and pesticides and TRPH at Site 38. Subsequent to attainment of soil remediation cleanup goals, the sites will be restored to meet surrounding conditions and specifications.

1.2 Site Location and History

The location and history of Sites 6, 16, and 38 are described below.

1.2.1 Site 6 South Transformer Oil Disposal Area

Site 6 is located in the central portion of NAS Whiting Field in the Midfield area, southeast of the Midfield Maintenance Hangar, Building 1454. Transformers were reportedly drained into the grassed ditch (0- to 2-inch depth) east of Building 1454 from the 1940s until 1964. Polychlorinated biphenyls (PCBs) may have been present in the dielectric fluid drained from the transformers. Runoff from the grassed ditch drains in a northeasterly direction and eventually into Big Coldwater Creek, which is located approximately 2.3 miles east of the disposal site. A former aviation gasoline (AVGAS) storage tank area is adjacent to Site 6 to the northwest (Tetra Tech NUS, Inc. [TtNUS], 2001). Refer to Figure 1-1 for the site location.

In 1986, Geraghty & Miller performed a verification study to provide an assessment of the physical and chemical conditions at NAS Whiting Field. Ten composite soil samples consisting of sandy clay were collected to a depth of 2 feet along the flanks of the ditch at Site 6. The samples were analyzed for polychlorinated biphenyls (PCBs); however, no PCBs were detected above the detection limit of 0.2 milligrams per kilogram (mg/kg) (TtNUS, 1999).

In 1990, during a Phase I Remedial Investigation (RI) at NAS Whiting Field, 12 surface soil samples were collected and analyzed for PCBs. The analytical results exhibited extremely low concentrations of PCBs ranging from 6.9 to 33 micrograms per kilogram ($\mu\text{g}/\text{kg}$). Additional soil sampling at deeper depths was recommended to completely define the extent of PCB contamination (TtNUS, 1999).

In 1998, TtNUS concluded a RI at Site 6, based on Phase IIA fieldwork and analysis conducted in 1992 by ABB Environmental Services. The Phase IIA investigations found the source of chemicals in the surface and subsurface soils could be attributed to the release of transformer fluids into the grassed drainage ditch located south of Building 1454. The Phase IIA activities included a soil gas survey (in conjunction with Sites 5 and 33 at NAS Whiting Field), soil borings, subsurface soil sampling, monitoring well installation, and groundwater sampling. Four surface soil samples and 17 subsurface soil samples were collected at Site 6. All samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, PCBs, and metals. Additionally, all surface samples and three subsurface samples at 6SB04 (5 to 7 feet, 10 to 12 feet, and 20 to 22 feet) were analyzed for total petroleum hydrocarbons (TPH). The exceedances for the subsurface soil included benzo(a)pyrene and vanadium in Phase IIA sample location 6SB03 at 5 to 7 feet below land surface (bls) at concentrations of 290 $\mu\text{g}/\text{kg}$ and 48.9 mg/kg, respectively. These concentrations were above U.S. Environmental Protection Agency (USEPA) Region III risk-based concentrations (RBCs) or Florida Department of Environmental Protection (FDEP) soil cleanup target levels (SCTLs) for direct soil exposure (residential).

In the surface soil, 14 analytes exceeded site-specific background concentrations and either USEPA Region III RBCs or Florida SCTLs for direct soil exposure (residential). However, based on the March 2001 Feasibility Study (TtNUS, 2001), the contaminants of concern (COCs) for the surface soil at Site 6 are benzo(a)pyrene (6SB03) and TPH (6SB04). TPH

concentrations in the surface soil at 6SB04 were above FDEP industrial criteria; however, the TPH concentration in the 5- to 7-foot sample in the subsurface at 6SB04 was well below cleanup criteria. Vanadium also exceeded current FDEP residential SCTLs. In anticipation of the future revision of Chapter 62-777 Florida Administrative Code (FAC) affecting vanadium cleanup criteria, only benzo(a)pyrene and TRPH were addressed in this investigation. Refer to Figure 1-2 for the locations of the former Phase IIA samples and current areas of investigation.

On August 9, 2001, CCI collected eight native surface soil samples, 15 subsurface samples, and associated quality control/quality assurance (QA/QC) samples in the vicinity of Phase IIA samples 6SB03 and 6SB04 for the source delineation of benzo(a)pyrene and TRPH, respectively. A 75-foot by 75-foot sampling grid was set up around the location of the original samples with sample locations on 25-foot centers. Initially, four surface soil samples were collected on 10-foot centers immediately surrounding the original Phase IIA sample locations. The samples were taken from 0 to 2 feet bls and analyzed for COCs. The decision on whether to continue collecting samples for benzo(a)pyrene or TRPH analysis was based on the analytical results of the initial samples.

At soil sample location 6SB03, the results presented in the RI indicated an exceedance of benzo(a)pyrene at 5 to 7 feet bls; however, no detection of the analyte was present at the 10- to 12-foot interval. Therefore, further delineation was performed to define the extent of benzo(a)pyrene at the 5- to 7-foot interval both vertically and horizontally. Subsurface samples were collected directly beneath original sample 6SB03 from 5 to 7 feet bls, 7 to 8 feet bls, and 8 to 9 feet bls for vertical delineation. Subsurface samples were also collected from the four sample locations immediately surrounding the original sample at 5 to 7 feet bls, 7 to 8 feet bls, and 8 to 9 feet bls for horizontal delineation. Initially, only samples from the 5- to 7-foot interval were analyzed for COCs. The remaining subsurface samples were held for analysis pending these results. Refer to Figures 1-3 and 1-4 for the grid layout and surface/subsurface soil sample locations.

Over the course of investigations at this site, USEPA Region IV changed their criteria for hazardous waste related site evaluations from USEPA Region III RBCs to USEPA Region IX preliminary remediation goals (PRGs). Therefore, analytical results were compared to the USEPA Region IX PRGs and the FDEP SCTLs. No COCs were detected in any of the initial eight surface or five subsurface samples analyzed; therefore, further delineation was unnecessary.

In the vicinity of former Phase IIA sample location 6SB03, surface and subsurface soil samples analyzed for benzo(a)pyrene did not exhibit concentrations above the associated USEPA Region IX PRGs or FDEP SCTLs. Similarly, surface soil samples in the vicinity of former Phase IIA sample location 6SB04 analyzed for TRPH did not exhibit concentrations above the associated USEPA Region IX PRGs or FDEP SCTLs.

Based on the exceedances found during the RI activities and the delineation established by the August 2001 investigation, an area measuring 10 by 10 feet and approximately 5 feet deep should be excavated in each of the former Phase IIA sample locations 6SB03 and 6SB04. The combined soil volume from the two areas proposed for excavation is approximately 37 cubic yards.

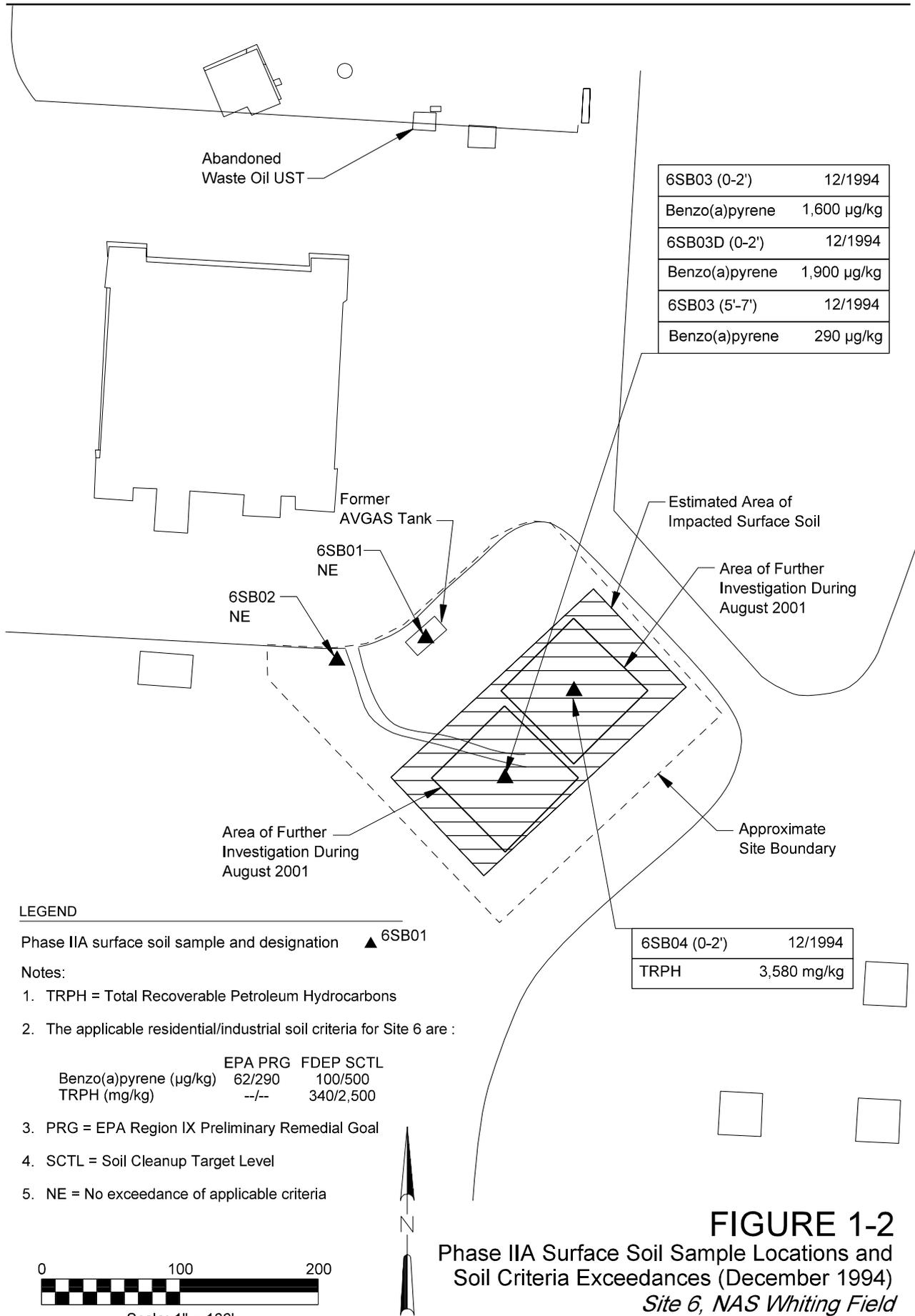


FIGURE 1-2
 Phase IIA Surface Soil Sample Locations and
 Soil Criteria Exceedances (December 1994)
Site 6, NAS Whiting Field

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Phase IIA surface soil sample and designation

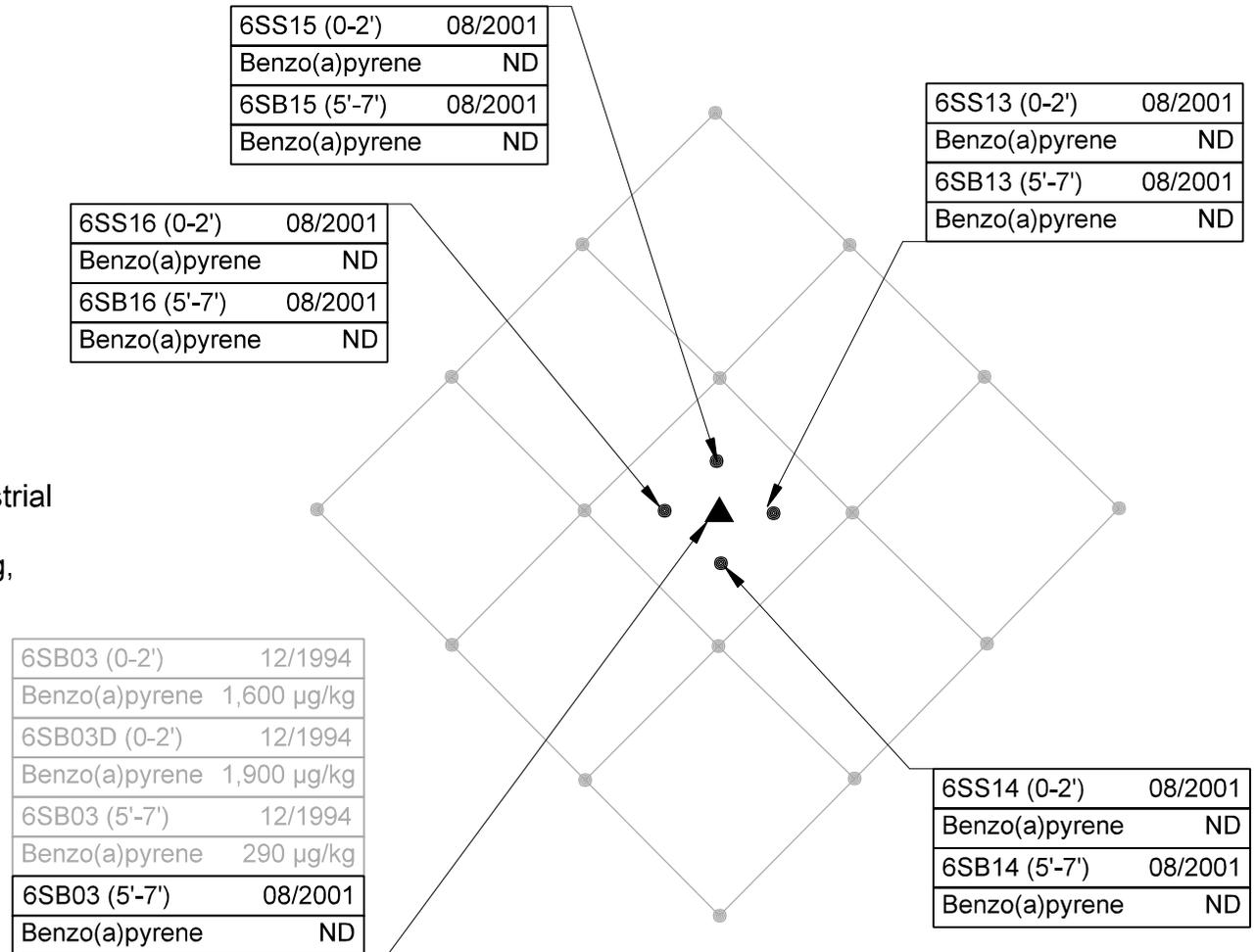
6SB03
▲

Additional grid surface soil sample and designation

6SS13
●

Notes:

1. EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for benzo(a)pyrene are 62 µg/kg and 290 µg/kg, respectively.
2. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for benzo(a)pyrene are 100 µg/kg and 500 µg/kg, respectively.
3. ND = Non-detect



Scale: 1" = 25'

FIGURE 1-3

Surface Soil Sample Exceedances
Grid for 6SB03

Site 6, NAS Whiting Field

LEGEND

Phase IIA surface soil sample and designation 6SB04 ▲

Additional grid surface soil sample and designation 6SS36 ●

Notes:

1. TRPH = Total Recoverable Petroleum Hydrocarbons
2. There are no EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for TRPH.
3. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for TRPH are 340 mg/kg and 2,500 mg/kg, respectively.
4. ND = Non-detect

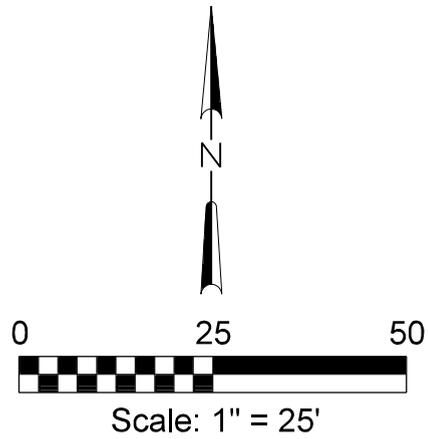
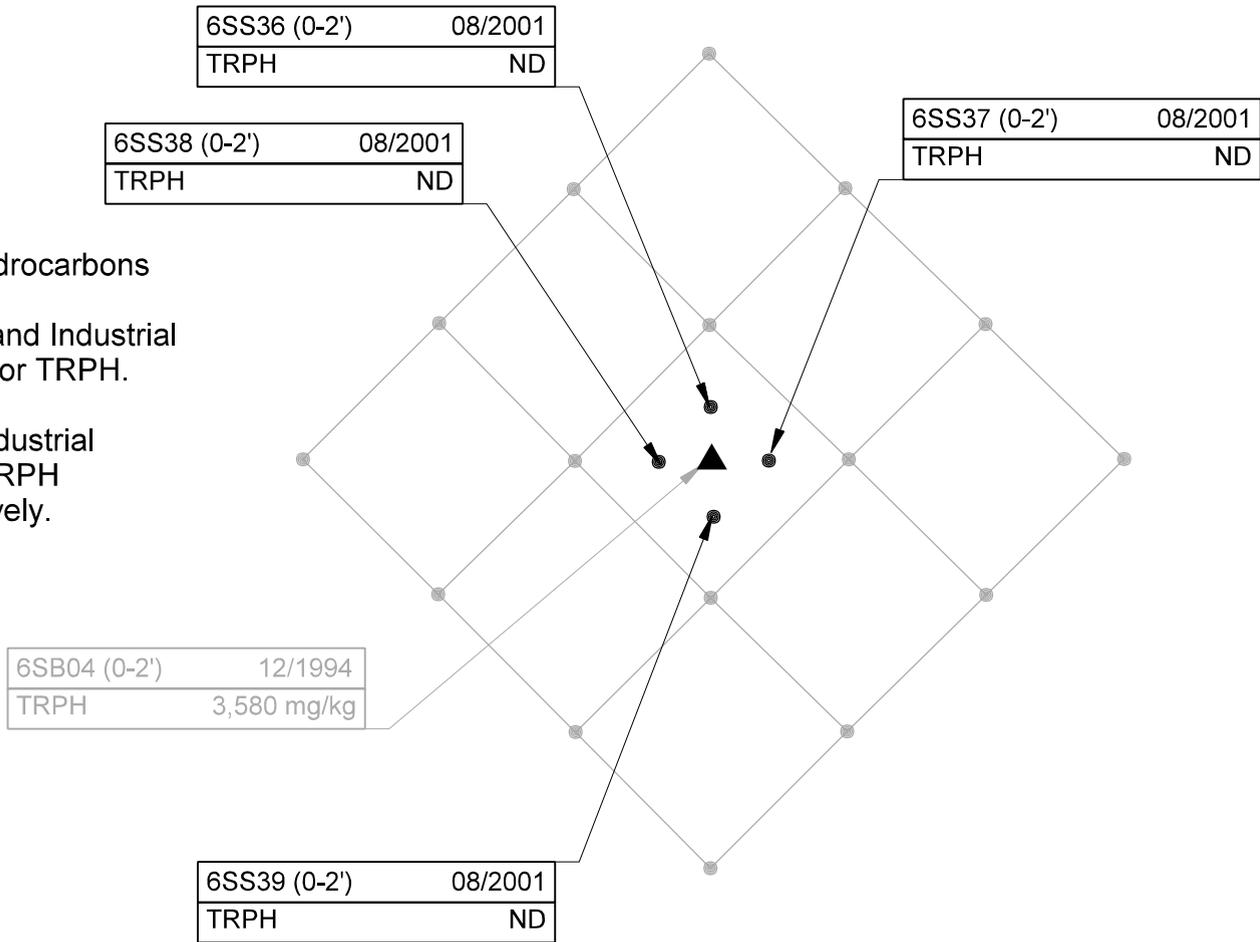


FIGURE 1-4
 Surface Soil Sample Exceedances
 Grid for 6SB04
Site 6, NAS Whiting Field

1.2.2 Site 16 Open Disposal and Burning Area

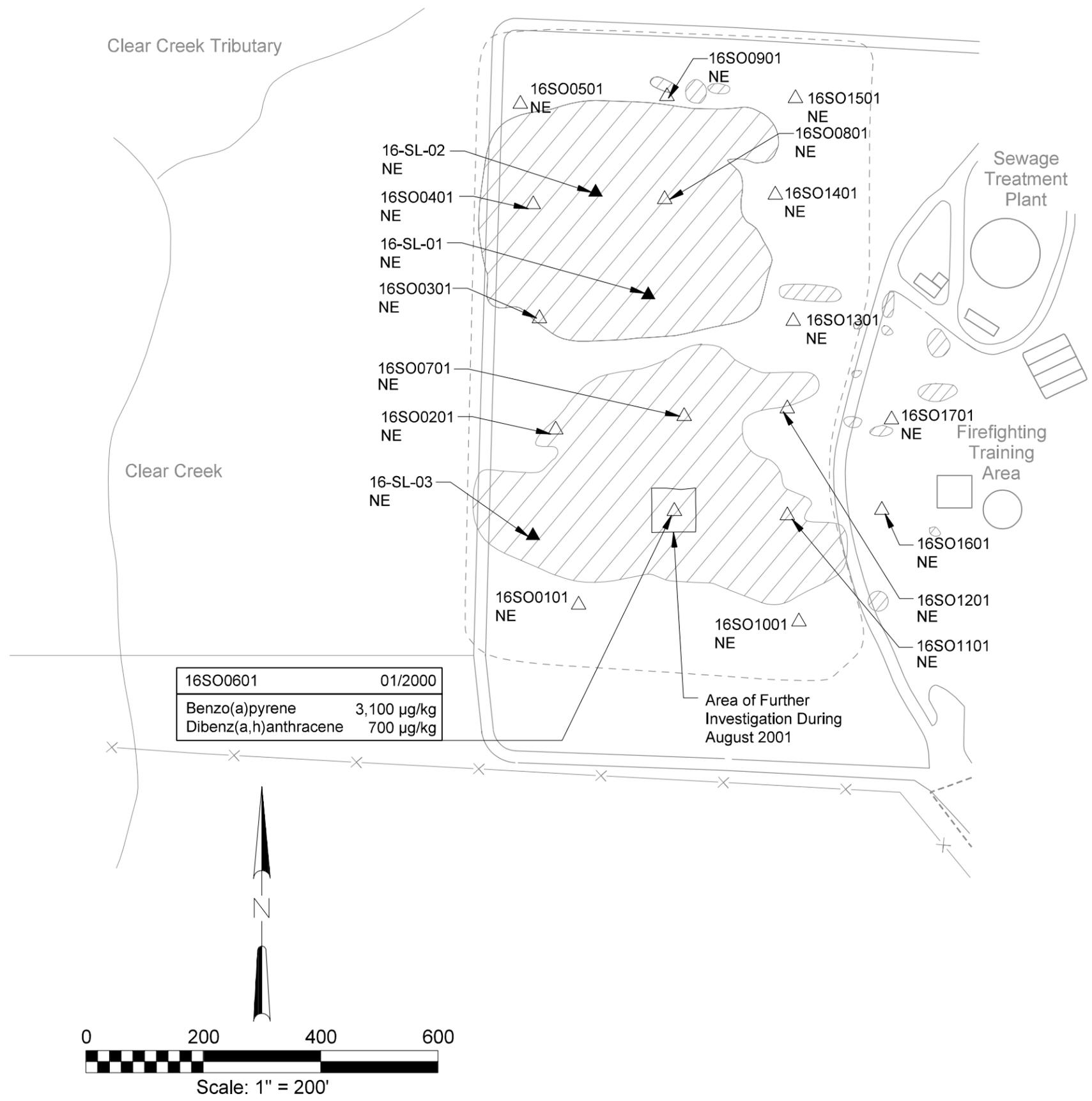
Site 16 is located in the southwest area of NAS Whiting Field, directly west of the South Airfield (Figure 1-1). The site is rectangular in shape, currently forested with planted pine trees, and covers approximately 12 acres. The site was used as the primary waste disposal area for NAS Whiting Field from 1943 to 1965. Two large pits were located on this site into which general refuse plus waste from aircraft operations and maintenance were disposed of at an estimated annual disposal volume of 3,000 and 4,000 tons. To reduce the volume, diesel fuel was used to ignite the waste, which included paints, solvents, waste oil, hydraulic fluid, and wastewater from paint stripping and other operations. Dielectric fluids containing PCBs may also have been disposed of at this site. A small, shallow ephemeral wetland (less than 0.1 acre and less than 2 feet deep) is located along the site's eastern boundary. The land surface slopes to the west at an average grade of 5 percent (Harding Lawson Associate [HLA], 2000).

A surface soil assessment was conducted during the Remedial Investigation (RI) of Site 16. During Phase IIA, three surface soil samples (16-SL-01 through 16-SL-03) were collected, and during Phase IIB, 17 surface soil samples were collected (16SO0101 through 16SO1701). Surface soil samples were collected from 0 to 12 inches bls. Figure 1-5 presents the RI sample locations.

Five subsurface soil samples were collected during the excavation of 10 test pits at Site 16 during Phase IIA investigations. The samples were collected from depths ranging from 2 to 10.5 feet bls. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. Eight analytes (calcium, chromium, iron, manganese, potassium, vanadium, zinc, and cyanide) were detected at concentrations exceeding the background screening values. However, no samples exceeded industrial standards for either the FDEP SCTLs or the USEPA Region III RBCs. Arsenic was detected in all five subsurface soil samples. Three of the five samples and the duplicate sample exceeded the industrial FDEP SCTL and USEPA Region III RBC for arsenic. Based on recent FDEP guidance, analysis of soil at NAS Whiting Field Outlying Landing Fields, and the absence of site-related factors, arsenic levels at Site 16 are comparable to naturally occurring concentrations and do not require further consideration (FDEP, 2001).

Lead was also detected in all five subsurface soil samples and exceeded the USEPA Region III residential RBC in two of the samples but was below the associated industrial criteria. Pesticides were detected at concentrations below the residential FDEP SCTLs and USEPA Region III industrial RBCs. No PCBs were detected in the subsurface soil samples (HLA, 2001).

All surface soil samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and target analyte list inorganics. Of the three Phase IIA surface soil samples, only one analyte in one sample location exceeded criteria. Dieldrin was detected above leachability standards, but below residential and industrial criteria. Phase IIB surface soil samples exhibited concentrations of various PAHs and other inorganics above USEPA Region III RBCs and /or FDEP residential SCTLs. Exceedances included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, antimony, arsenic, barium, copper, iron, lead, and vanadium. One pesticide, dieldrin, was above the residential and leachability standards but below the industrial cleanup value. Of the analytes detected,



16SO0601	01/2000
Benzo(a)pyrene	3,100 µg/kg
Dibenz(a,h)anthracene	700 µg/kg

LEGEND

- Phase IIA surface soil sample and designation ▲ 16-SL-01
- Phase IIB surface soil sample and designation △ 16SO0101
- Interpreted landfill areas ▨
- Approximate site boundary - - - - -
- Base boundary / fence - x - x - x -

Notes:

1. All soil samples collected from 0-1' below land surface (bls).
2. The applicable residential/industrial soil criteria for Site 16 are :

	EPA PRG	FDEP SCTL
Benzo(a)pyrene (µg/kg)	62/290	100/500
Dibenz(a,h)anthracene (µg/kg)	62/290	100/500
3. PRG = EPA Region IX Preliminary Remedial Goal
4. SCTL = Soil Cleanup Target Level
5. NE = No exceedance of applicable criteria

FIGURE 1-5

Phase IIA and Phase IIB Surface Soil Sample Locations and Industrial Soil Criteria Exceedances
 Site 16, NAS Whiting Field

only two PAHs, benzo(a)pyrene and dibenzo(a,h)anthracene, were found at concentrations above industrial standards. These exceedances were detected at former Phase IIB sample location 16SO0601 (HLA, 2000). Therefore, one area at Site 16 in the vicinity of sample 16SO0601 required further investigation/delineation.

On August 7, 2001, CCI collected an additional 22 native surface soil samples and associated QA/QC samples in the vicinity of Phase IIB sample location 16SO0601 for the source delineation of PAH constituents. A 75- by 75-foot sampling grid was set up around the location of the original sample with sample locations on 25-foot centers. Additionally, four samples were collected from 10-foot centers immediately surrounding the original Phase IIB sample location. Figure 1-6 presents the grid layout for Site 16. Initially only the four samples immediately surrounding the original location were analyzed for PAHs. The decision on whether to proceed with analyzing the grid samples for PAHs was based on the analytical results of the initial samples.

Over the course of investigations at this site, USEPA Region IV has switched the criteria they use for hazardous waste related site evaluations from USEPA Region III RBCs to USEPA Region IX PRGs. Therefore, analytical results were compared to the USEPA Region IX PRGs and the FDEP SCTLs. Of the four initial samples collected and analyzed for PAHs, the two southernmost samples (16SO3601 and 16SO3701) exhibited benzo(a)pyrene concentrations above the associated industrial USEPA Region IX PRGs and the FDEP residential SCTL. One sample (16SO3601) was also above the FDEP industrial SCTL. The southeastern sample (16SO3601) exhibited dibenz(a,h)anthracene above the USEPA residential criteria but below industrial criteria. Based on these preliminary analytical results, seven additional samples were analyzed. The results of these additional samples indicated two of the seven samples exhibited concentrations of benzo(a)pyrene above residential criteria but below the industrial criteria. The duplicate from one of these two sample locations (16SO2701D) exceeded industrial criteria. No other samples exceeded the associated criteria. Since the goal of the investigation was to determine the extent of contamination above industrial criteria, no other sampling or analysis was performed.

In the vicinity of RI Phase IIB surface soil sample location 16SO0601, four of the 11 additional surface soil samples analyzed for PAHs exhibited benzo(a)pyrene concentrations above the associated USEPA Region IX residential PRG of 62 µg/kg. Three of the four exceeded the USEPA Region IX industrial PRG of 290 µg/kg. One of these four sample results also exceeded the FDEP industrial SCTL of 500 µg/kg.

Based on the results of the RI and the additional soil investigation conducted in August 2001, PAH contamination above residential criteria extends over an area measuring 45 by 20 feet and approximately 2 feet deep around former Phase IIB sample location 16SO0601. Approximately 67 cubic yards of soil will be excavated as part of the interim removal action at Site 16.

1.2.3 Site 38 Golf Course Maintenance Building 2877

Site 38 is located in the northern portion of NAS Whiting Field, immediately west of the 7th hole fairway on the NAS Whiting Field Golf Course. Refer to Figure 1-1 for the site location.

LEGEND

- Phase IIB surface soil sample and designation 16SO0601 
- Additional grid surface soil sample and designation 16SO3401 

Notes:

1. EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for benzo(a)pyrene and dibenz(a,h)anthracene are 62 µg/kg and 290 µg/kg, respectively.
2. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for benzo(a)pyrene and dibenz(a,h)anthracene are 100 µg/kg and 500 µg/kg respectively.
3. NE = No exceedance of applicable criteria
ND = Non-detect

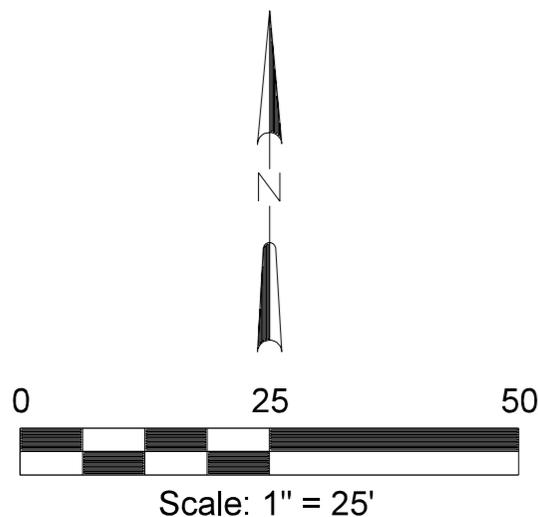
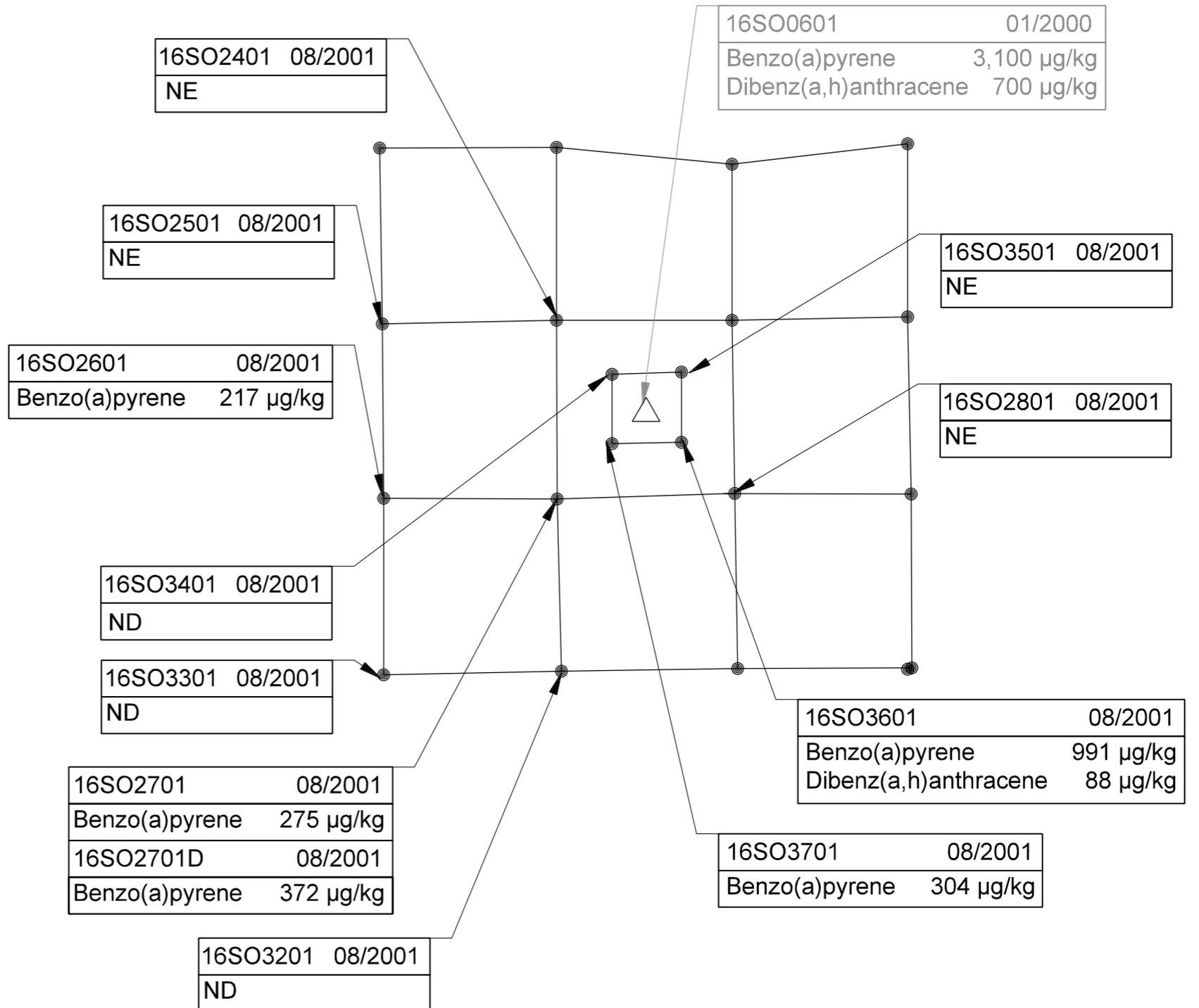


FIGURE 1-6
Grid Layout Surrounding Phase IIB Soil Sample 16SO0601
Site 16, NAS Whiting Field

The site includes the area of former Building 2877, which was located approximately 276 feet west of the patrol road and 860 feet north of the white lattice fence associated with the pistol firing range. Building 2877 was formerly the golf course maintenance building and was used as a storage facility for pesticides and for battery reconditioning. A 1-acre area north of the building was used to rinse trucks after they were used to spray pesticides. The pesticides stored in Building 2877 included organophosphates, herbicides, fungicides, chlordane, heptachlor epoxide, and some hydrocarbon pesticides. Pesticide storage was discontinued in 1983 after the completion of a new pesticide facility.

Battery acid from golf cart batteries was reportedly drained into a sink inside Building 2877, which in turn drained into a tank consisting of an underground concrete culvert open at one end. The tank retained approximately 50 gallons of liquid before draining to the subsurface. The tank was filled with rock sometime between 1974 and 1979, and battery acid draining was discontinued. Building 2877 was demolished in 1993 during an upgrading and reconstruction project at the NAS Whiting Field Golf Course. The concrete building foundation is believed to still be present; however, it is unknown if the former drainage tank is still present (TtNUS, 2000).

In March 1996, during the Navy's relative risk ranking for the site, Brown & Root Environmental Services, Inc. collected a single surface soil sample (0- to 1-foot sample depth) at Site 38. The soil sample was analyzed for the target compound list VOCs, SVOCs, pesticides, PCBs, and target analyte list (TAL) inorganic compounds. No organic compounds were detected above analytical method detection limits.

In May 2000, TtNUS collected 19 surface soil samples (38SS01 through 38SS19) and 10 subsurface soil samples (38SB10 through 38SB19) during the Remedial Investigation/ Feasibility Study (RI/FS) of Site 38 (Figure 1-7). Surface soil samples were collected from 0 to 1 feet bls and subsurface soil samples were collected from 9 to 11 feet bls. The subsurface soil samples exhibited concentrations of various metals. Except for vanadium, all concentrations were below the associated USEPA Region IX PRGs and FDEP residential and industrial SCTLs from Chapter 62-777, FAC. In two samples collected at locations below 8 feet bls, vanadium levels were above FDEP residential direct exposure criteria but below industrial direct exposure levels.

The surface soil samples exhibited concentrations of various pesticides, metals, and TRPH. USEPA Region IV Risk Assessment Guidance Recommended Ecological Screening Values (ESVs) were exceeded in six locations. However, two samples, 38SS11 and 38SS12, exceeded either FDEP SCTLs for residential direct exposure, FDEP leachability standards, or USEPA Region IX residential PRGs.

Surface soil sample 38SS11/38SS11D exhibited pesticide concentrations of 4,4'-DDE and 4,4'-DDT above the EPA Region IV recommended ESVs and alpha-Chlordane, gamma-Chlordane, and heptachlor epoxide above the FDEP SCTLs and USEPA Region IX PRGs for residential direct exposure. The TRPH concentration in sample 38SS11D also exceeded FDEP leachability and direct exposure residential standards.

Surface soil sample 38SS12 exhibited concentrations of 4,4'-DDE, 4,4'-DDT, and dieldrin above USEPA Region IV ESVs and concentrations of dieldrin and heptachlor epoxide above the Region IX PRG residential standard. Surface soil samples 38SS13, 38SS14, 38SS15, and

LEGEND

RI surface soil sample and designation ▲ 38SS01

Notes:

1. All units are mg/kg.
2. TRPH = Total Recoverable Petroleum Hydrocarbons
3. The applicable residential/industrial soil criteria for Site 38 are:

	EPA PRG	FDEP SCTL	EPA ESV
alpha-Chlordane	1.6/11	3.1/12	NA
gamma-Chlordane	1.6/11	3.1/12	NA
4,4'-DDE	1.7/12	3.3/13	0.0025
4,4'-DDT	1.7/12	3.3/13	0.0025
Dieldrin	0.03/0.15	0.07/0.3	0.0005
Heptachlor Epoxide	0.053/0.27	0.1/0.4	NA
TRPH	NA/NA	340/2500	NA

4. PRG = EPA Region IX Preliminary Remedial Goal
5. SCTL = Soil Cleanup Target Level
6. ESV = EPA Region IV Recommended Ecological Screening Value
7. NA = Not Available
8. NE = No exceedance of applicable criteria
9. J = Estimated Value

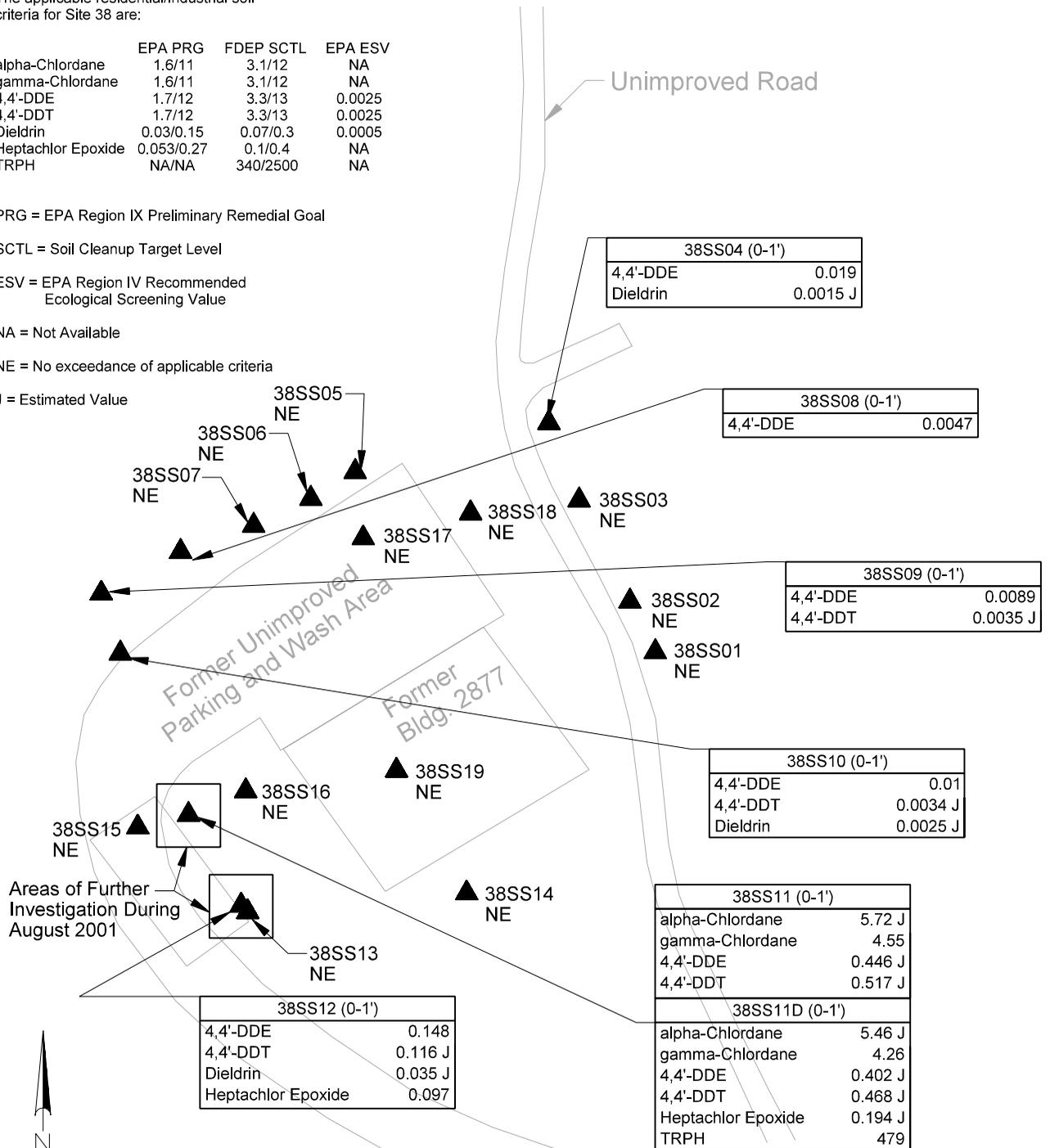


FIGURE 1-7
 RI Surface Soil Sample Locations
 and Soil Criteria Exceedances (May 2000)
Site 38, NAS Whiting Field

38SS16 were collected following the 38SS11/38SS11D and 38SS12 sampling event. These sample results were below regulatory guidelines.

Discussions with TtNUS personnel indicate risk assessments have been performed and the ESV exceedances have been determined to not pose an ecological risk. Therefore, sample locations with only ESV exceedances were not further investigated.

On August 10, 2001, CCI personnel collected surface soil samples at Site 38 to delineate the extent of the COCs, which include pesticide and TRPH constituents in surface soil in the vicinity of RI/FS samples 38SS11 and 38SS12.

Seven surface soil samples and associated QA/QC samples were collected in the vicinities of RI/FS samples 38SS11 and 38SS12. Four samples were collected in the vicinity of sample 38SS11, and three samples were collected in the vicinity of sample 38SS12. A 20- by 20-foot sampling grid with 10-foot centers was set up around the location of each original sample (as identified by the land surveyor). Initially, samples were collected on 10-foot centers immediately surrounding the original RI/FS sample locations. The decision on whether to continue collecting samples from the larger grid areas was based on analytical results of the initial samples. Figures 1-8 and 1-9 present the grid layouts for Site 38.

In the area of 38SS11, four initial surface samples were collected on 10-foot centers around the original sample location. Due to the analytical results of RI/FS sample 38SS13 located just a few feet southeast of sample 38SS12, samples were not collected in the southeast corner of the sampling grid around former sample location 38SS12. However, three initial samples were collected on 10-foot centers around the former sample location 38SS12. The surface samples were collected from 0 to 2 feet bls using decontaminated stainless steel hand augers. The samples were analyzed for the COCs associated with samples 38SS11 and 38SS12, respectively.

During the RI, subsurface samples were collected from 9 to 11 feet bls. Therefore, on September 19, 2001, four subsurface samples were collected directly beneath former RI surface samples 38SS11 and 38SS12 in an effort to find clean soil at shallower depths thus decreasing the volume of soil to be removed. Samples were collected from 2 to 3 feet and 5 to 6 feet bls. The 2- to 3-foot samples were analyzed first while the deeper, 5- to 6-foot samples were held pending the results of the 2- to 3-foot samples.

Analytical results were compared to the USEPA Region IX PRGs and the FDEP SCTLs. Of the initial seven surface and two 2- to 3-foot subsurface soil samples collected and analyzed for pesticides in the vicinity of surface soil samples 38SS11 and 38SS12, none exhibited concentrations above the associated residential or industrial USEPA Region IX PRGs or FDEP SCTLs. Additionally, there were no TRPH exceedances from the surface and subsurface samples collected in the vicinity of 38SS11. Although below both residential and industrial USEPA Region IX PRGs and FDEP SCTLs, it should be noted dieldrin exceeded the USEPA Region IV ESV threshold of 0.5 µg/kg in sample 38SS38 at 0.85 µg/kg.

Based on the results of the May 2000 RI/FS investigations and the delineation provided by the August and September 2001 investigations, areas measuring approximately 10 by 10 feet and 2 feet deep will be excavated from the immediate vicinity of both sample locations 38SS11 and 38SS12. The total combined volume recommended for excavation from the two areas is approximately 15 cubic yards.

LEGEND

RI surface soil sample (0-1') and additional subsurface soil sample (2'-3') and designation (May 2000 and September 2001, respectively) ▲ 38SS11

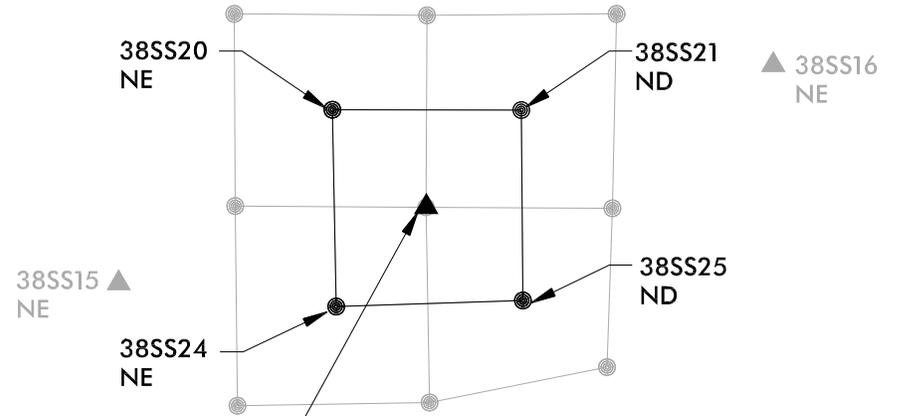
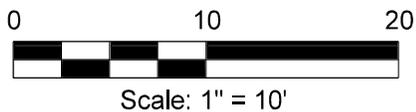
Additional grid surface soil sample (0-2') and designation (August 2001) ● 38SS20

Notes:

1. All units are mg/kg.
2. TRPH = Total Recoverable Petroleum Hydrocarbons
3. The applicable residential/industrial soil criteria for Site 38 are:

	EPA PRG	FDEP SCTL	EPA ESV
alpha-Chlordane	1.6/11	3.1/12	NA
gamma-Chlordane	1.6/11	3.1/12	NA
4,4'-DDE	1.7/12	3.3/13	0.0025
4,4'-DDT	1.7/12	3.3/13	0.0025
Heptachlor Epoxide	0.053/0.27	0.1/0.4	NA
TRPH	NA/NA	340/2500	NA

4. PRG = EPA Region IX Preliminary Remedial Goal
5. SCTL = Soil Cleanup Target Level
6. ESV = EPA Region IV Recommended Ecological Screening Value
7. NA = Not Available
8. NE = No exceedance of applicable criteria
9. ND = Non-detect
10. J = Estimated Value



38SS11 (0-1') (May 2000)	
alpha-Chlordane	5.72 J
gamma-Chlordane	4.55
4,4'-DDE	0.446 J
4,4'-DDT	0.517 J
38SS11D (0-1') (May 2000)	
alpha-Chlordane	5.46 J
gamma-Chlordane	4.26
4,4'-DDE	0.402 J
4,4'-DDT	0.468 J
Heptachlor Epoxide	0.194 J
TRPH	479
38SO11 (2'-3') (September 2001)	
TRPH	ND
alpha-Chlordane	NE
gamma-Chlordane	NE
Heptachlor Epoxide	NE

FIGURE 1-8
 Surface Soil Sample Exceedances
 Grid for 38SS11
 Site 38, NAS Whiting Field

LEGEND

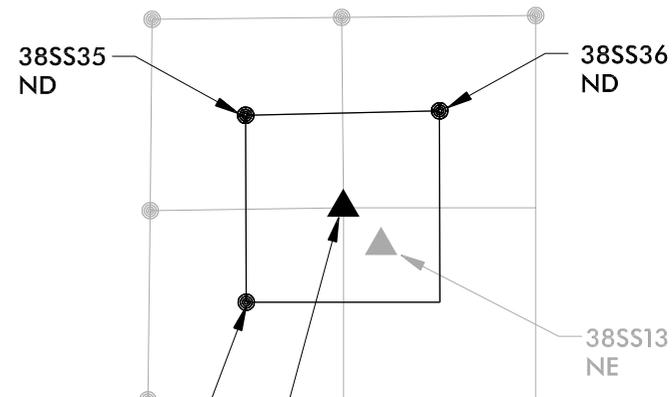
RI surface soil sample (0-1') and additional subsurface soil sample (2'-3') and designation (May 2000 and September 2001, respectively) ▲ 38SS12

Additional grid surface soil sample (0-2') and designation (August 2001) ● 38SS35

Notes:

1. All units are mg/kg.
2. The applicable residential/industrial soil criteria for Site 38 are:

	EPA PRG	FDEP SCTL	EPA ESV
4,4'-DDE	1.7/12	3.3/13	0.0025
4,4'-DDT	1.7/12	3.3/13	0.0025
Dieldrin	0.03/0.15	0.07/0.3	0.0005
Heptachlor Epoxide	0.053/0.27	0.1/0.4	NA
3. PRG = EPA Region IX Preliminary Remedial Goal
4. SCTL = Soil Cleanup Target Level
5. ESV = EPA Region IV Recommended Ecological Screening Value
6. NE = No exceedance of applicable criteria
7. ND = Non-detect
8. J = Estimated Value



38SS38 (0-2') (August 2001)	
Dieldrin	0.00085 J

38SS12 (0-1') (May 2000)	
4,4'-DDE	0.148
4,4'-DDT	0.116 J
Dieldrin	0.035 J
Heptachlor Epoxide	0.097
38SO12 (2'-3') (September 2001)	
Dieldrin	ND
Heptachlor Epoxide	ND

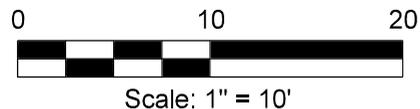


FIGURE 1-9
Surface Soil Sample Exceedances
Grid for 38SS12
Site 38, NAS Whiting Field

2.0 Execution Plan

This section includes a description of the Scope of Work tasks and communications plan. The project schedule is provided in Appendix B.

2.1 Scope of Work Tasks

The components of the work to be performed under this CTO for NAS Whiting Field include the following:

- Mobilization and setup
- Site utility clearance
- Pre-excavation survey
- Excavation of contaminated soil
- Post excavation survey
- Site restoration
- Waste management and disposal
- Decontamination and demobilization
- Semi-annual groundwater monitoring well sampling

Since soil sampling was previously conducted, no confirmation samples are required from sidewalls or excavation floors with the exception of Site 16. Sidewall samples are not necessary; however, bottom samples will be collected from the excavation at Site 16 to determine the soil concentrations left in place after the soil removal activities.

2.1.1 Mobilization and Site Setup

This task includes mobilizing personnel, equipment, subcontractors, and materials to NAS Whiting Field and establishing temporary facilities to conduct the remedial activities. For work to be performed under this CTO, it is anticipated that the Navy will provide office space and utilities. CCI will review all Navy rules, regulations, and standard operating procedures regarding vehicle movement and control inside the facility. All location provisions will be observed, to include notifications and communication requirements. CCI will minimize disturbance to any operations during project activities. CCI will consult with onsite Navy personnel to evaluate area access, placement of equipment, and traffic flow to minimize the impact of this work to facility operations.

Prior to the commencement of activities and as needed, construction fence, signs, and barricades will be placed to prohibit access to the work area.

A laydown/decontamination area will be mutually agreed upon and established in an area adjacent to the each of the sites. ■

2.1.2 Site Utilities Clearance

A thorough utility survey will be conducted and coordinated through Public Works, NAS Whiting Field. The survey will include the location of all underground utilities (i.e.,

fiber optics cable, electric wires, telephone and / or communications leads, sanitary and storm sewer piping, water lines, natural gas pipelines, etc.) Any underground utilities identified in the excavation areas will be clearly delineated and NAS Whiting Field Public Works notified.

2.1.3 Pre-excavation Survey

Two areas at Site 6, one area at Site 16 and two areas at Site 38 are proposed for soil excavations. Figures 2-1 through 2-5 show the proposed excavations for each site. A Florida-licensed professional land surveyor will locate each proposed excavation area by their state plain coordinates, as well as collect surrounding topographic data.

2.1.4 Excavation of Contaminated Soil

Based on the exceedances found during the RI activities and the delineation established by the current investigations of Site 6, an area measuring 10 by 10 feet and approximately 5 feet deep will be excavated in each of the former Phase IIA sample locations 6SB03 and 6SB04. The combined soil volume from the two areas proposed for excavation is approximately 37 cubic yards. Since the extent of the excavation both vertically and horizontally has been determined, no confirmation samples will be collected from the sidewalls or bottom of the excavation at Site 6.

Based on the results of the RI and the additional soil investigation of Site 16, PAH contamination above residential extends over an area measuring 45 by 20 feet and approximately 2 feet deep around former Phase IIB sample location 16SO0601. The total combined volume proposed for excavation is approximately 67 cubic yards. Additionally, any solid waste debris (i.e., concrete or steel) larger than can be practicably removed by the excavation equipment will remain in place. Subsequent to completing the excavation at Site 16, two subsurface soil samples will be collected at the bottom of the excavation and analyzed for the associated COCs to determine the levels of contamination remaining in the subsurface soil in the excavation area at the site. Since the horizontal extent of the excavation has been determined, no confirmation samples will be collected from the sidewalls of the excavation at Site 16. Two bottom samples will be collected subsequent to removing the upper 2 feet of soil to determine the soil concentrations left in place. The excavation depth will not exceed 2 feet.

Based on the results of the May 2000 RI/FS investigations and the delineation provided by the August and September 2001 investigations of Site 38, areas measuring approximately 10 feet by 10 feet and 2 feet deep will be excavated from the immediate vicinity of both sample locations 38SS11 and 38SS12. The total combined volume recommended for excavation from the two areas is approximately 15 cubic yards. Since the extent of the excavation both vertically and horizontally has been determined, no confirmation samples will be collected from the sidewalls or bottom of the excavation at Site 38.

Either rubber-tired or rubber-tracked excavation equipment will be used to perform the work at each of the sites. Disturbance of the areas surrounding the actual excavation will be minimized.

Soil will be directly loaded into transport vehicles as it is being excavated. The soil will be transported to the approved disposal facility. Disposable poly sheeting will be spread in the

LEGEND

Phase IIA surface soil sample and designation

6SB03
▲

Additional grid surface soil sample and designation

6SS13
●

Notes:

1. EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for benzo(a)pyrene are 62 µg/kg and 290 µg/kg, respectively.
2. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for benzo(a)pyrene are 100 µg/kg and 500 µg/kg, respectively.
3. ND = Non-detect

6SS15 (0-2')	08/2001
Benzo(a)pyrene	ND
6SB15 (5'-7')	08/2001
Benzo(a)pyrene	ND

6SS13 (0-2')	08/2001
Benzo(a)pyrene	ND
6SB13 (5'-7')	08/2001
Benzo(a)pyrene	ND

6SS16 (0-2')	08/2001
Benzo(a)pyrene	ND
6SB16 (5'-7')	08/2001
Benzo(a)pyrene	ND

6SB03 (0-2')	12/1994
Benzo(a)pyrene	1,600 µg/kg
6SB03D (0-2')	12/1994
Benzo(a)pyrene	1,900 µg/kg
6SB03 (5'-7')	12/1994
Benzo(a)pyrene	290 µg/kg
6SB03 (5'-7')	08/2001
Benzo(a)pyrene	ND

6SS14 (0-2')	08/2001
Benzo(a)pyrene	ND
6SB14 (5'-7')	08/2001
Benzo(a)pyrene	ND

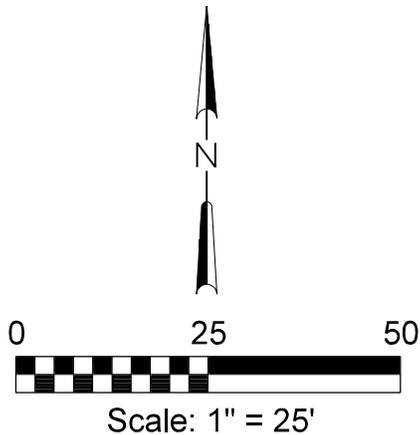
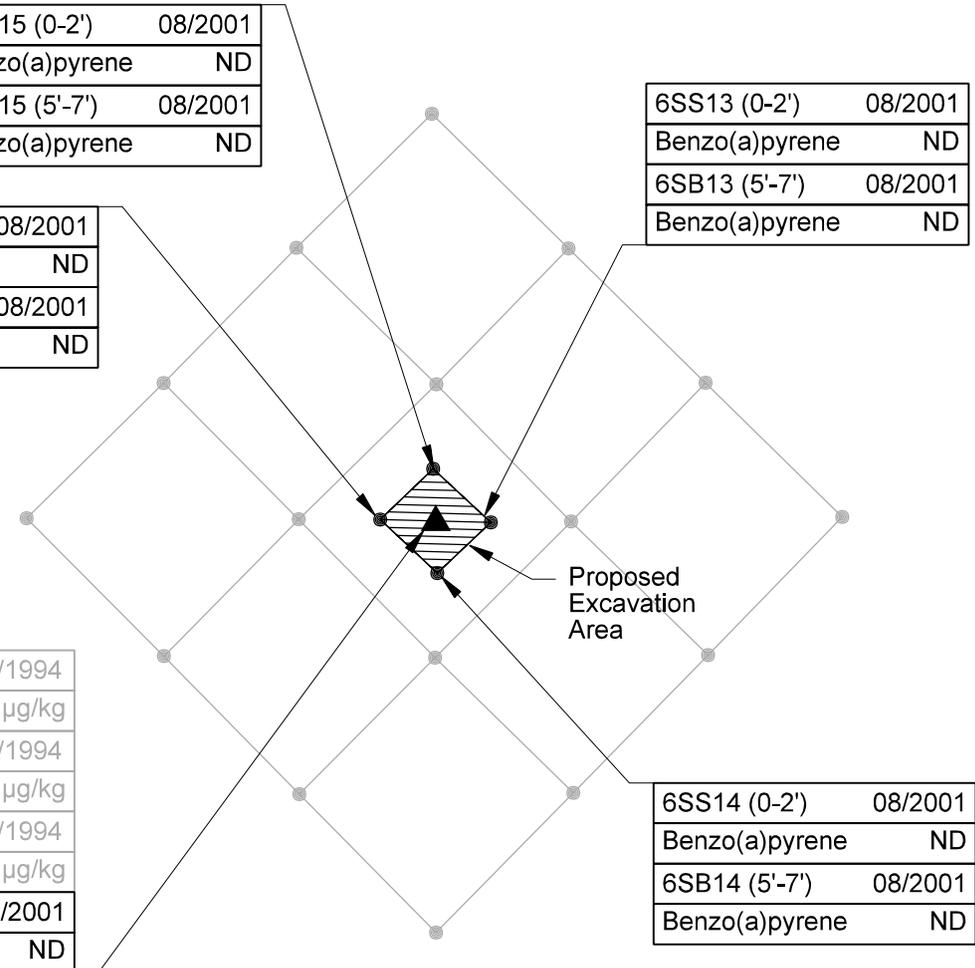


FIGURE 2-1

Proposed Excavation for 6SB03
Site 6, NAS Whiting Field

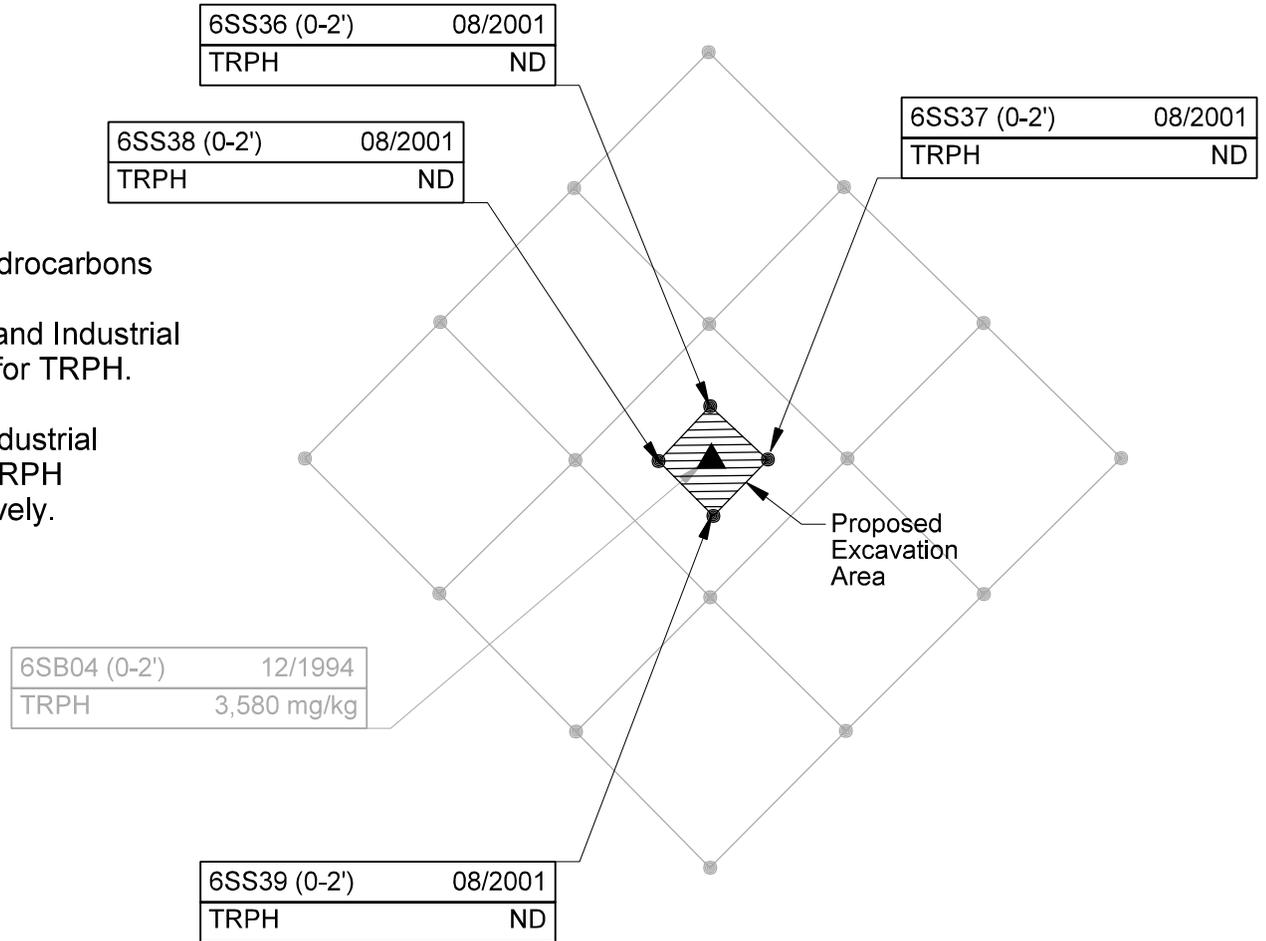
LEGEND

Phase IIA surface soil sample and designation 6SB04 ▲

Additional grid surface soil sample and designation 6SS36 ●

Notes:

1. TRPH = Total Recoverable Petroleum Hydrocarbons
2. There are no EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for TRPH.
3. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for TRPH are 340 mg/kg and 2,500 mg/kg, respectively.
4. ND = Non-detect



Proposed Excavation Area



Scale: 1" = 25'

FIGURE 2-2
Proposed Excavation for 6SB04
Site 6, NAS Whiting Field

LEGEND

Phase IIB surface soil sample and designation

16SO0601
△

Additional grid surface soil sample and designation

16SO3401
●

Notes:

1. EPA Region IX Residential and Industrial Soil Preliminary Remedial Goals (PRGs) for benzo(a)pyrene and dibenz(a,h)anthracene are 62 µg/kg and 290 µg/kg, respectively.
2. FDEP Direct Exposure Residential and Industrial Soil Cleanup Target Levels (SCTLs) for benzo(a)pyrene and dibenz(a,h)anthracene are 100 µg/kg and 500 µg/kg respectively.
3. NE = No exceedance of applicable criteria
ND = Non-detect

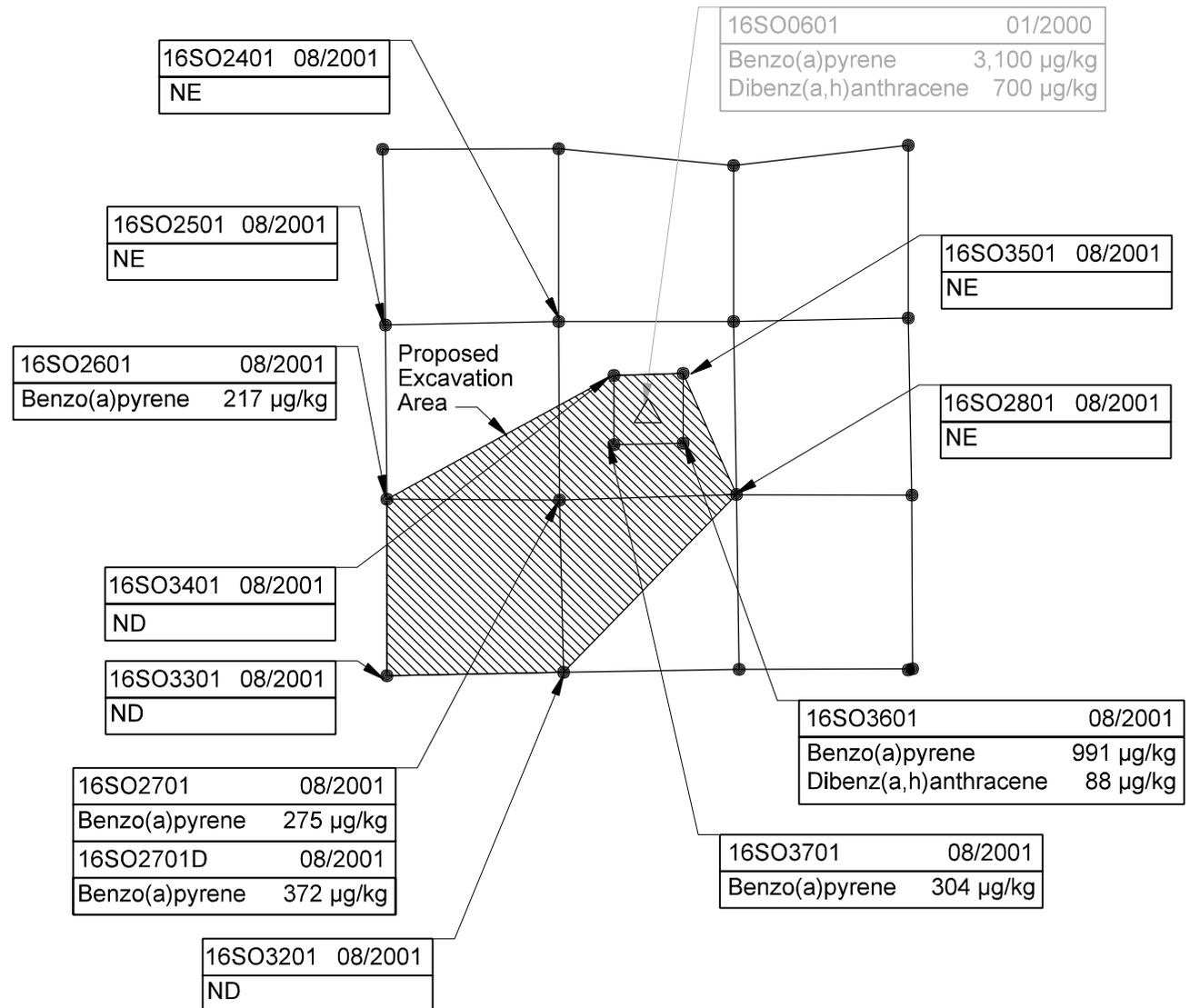
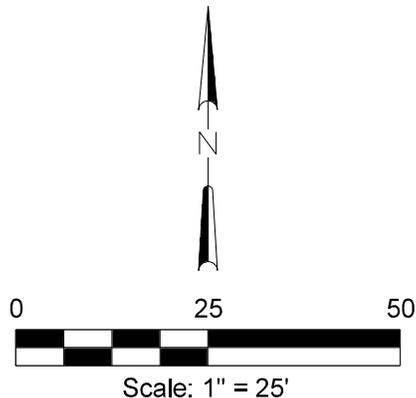


FIGURE 2-3

Proposed Excavation Area
Site 16, NAS Whiting Field



LEGEND

RI surface soil sample (0-1') and additional subsurface soil sample (2'-3') and designation (May 2000 and September 2001, respectively) ▲ 38SS11

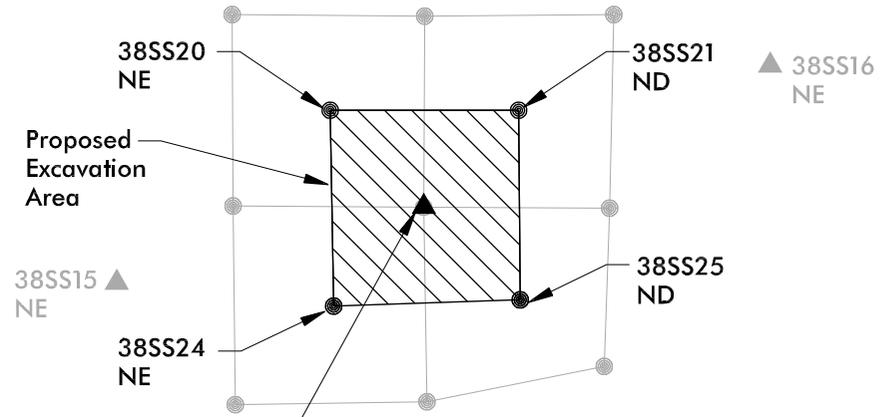
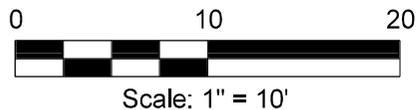
Additional grid surface soil sample (0-2') and designation (August 2001) ● 38SS20

Notes:

1. All units are mg/kg.
2. TRPH = Total Recoverable Petroleum Hydrocarbons
3. The applicable residential/industrial soil criteria for Site 38 are:

	EPA PRG	FDEP SCTL	EPA ESV
alpha-Chlordane	1.6/11	3.1/12	NA
gamma-Chlordane	1.6/11	3.1/12	NA
4,4'-DDE	1.7/12	3.3/13	0.0025
4,4'-DDT	1.7/12	3.3/13	0.0025
Heptachlor Epoxide	0.053/0.27	0.1/0.4	NA
TRPH	NA/NA	340/2500	NA

4. PRG = EPA Region IX Preliminary Remedial Goal
5. SCTL = Soil Cleanup Target Level
6. ESV = EPA Region IV Recommended Ecological Screening Value
7. NA = Not Available
8. NE = No exceedance of applicable criteria
9. ND = Non-detect
10. J = Estimated Value



38SS11 (0-1') (May 2000)	
alpha-Chlordane	5.72 J
gamma-Chlordane	4.55
4,4'-DDE	0.446 J
4,4'-DDT	0.517 J
38SS11D (0-1') (May 2000)	
alpha-Chlordane	5.46 J
gamma-Chlordane	4.26
4,4'-DDE	0.402 J
4,4'-DDT	0.468 J
Heptachlor Epoxide	0.194 J
TRPH	479
38SO11 (2'-3') (September 2001)	
TRPH	ND
alpha-Chlordane	NE
gamma-Chlordane	NE
Heptachlor Epoxide	NE

FIGURE 2-4
Proposed Excavation for 38SS11
Site 38, NAS Whiting Field

LEGEND

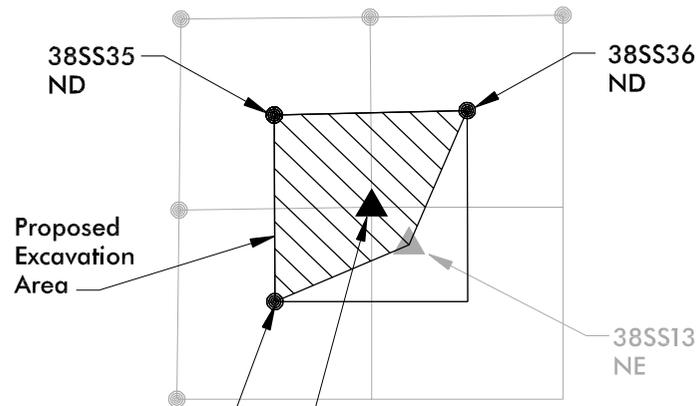
RI surface soil sample (0-1') and additional subsurface soil sample (2'-3') and designation (May 2000 and September 2001, respectively) ▲ 38SS12

Additional grid surface soil sample (0-2') and designation (August 2001) ● 38SS35

Notes:

1. All units are mg/kg.
2. The applicable residential/industrial soil criteria for Site 38 are:

	EPA PRG	FDEP SCTL	EPA ESV
4,4'-DDE	1.7/12	3.3/13	0.0025
4,4'-DDT	1.7/12	3.3/13	0.0025
Dieldrin	0.03/0.15	0.07/0.3	0.0005
Heptachlor Epoxide	0.053/0.27	0.1/0.4	NA
3. PRG = EPA Region IX Preliminary Remedial Goal
4. SCTL = Soil Cleanup Target Level
5. ESV = EPA Region IV Recommended Ecological Screening Value
6. NE = No exceedance of applicable criteria
7. ND = Non-detect
8. J = Estimated Value



38SS38 (0-2') (August 2001)	
Dieldrin	0.00085 J

38SS12 (0-1') (May 2000)	
4,4'-DDE	0.148
4,4'-DDT	0.116 J
Dieldrin	0.035 J
Heptachlor Epoxide	0.097
38SO12 (2'-3') (September 2001)	
Dieldrin	ND
Heptachlor Epoxide	ND



FIGURE 2-5
Proposed Excavation for 38SS12
Site 38, NAS Whiting Field

area where the transport vehicles are being loaded to prevent migration of contaminants. Once either the transport vehicle is full or the excavation is complete, the poly sheeting will be folded and placed in the vehicle with the soil.

Since the excavations are expected to be small and open only a short time, in the event that an excavation(s) remains open overnight or during a rain event it will be covered with poly sheeting. Poly sheeting that comes in contact with contaminated or potentially contaminated material will be folded and disposed of with the soil.

All open excavations will be barricaded with high visibility construction fence and “Danger Stay Out” or similar signs will be posted. Upon completion of excavation operations any utilities affected by operations will be replaced or repaired to original or surrounding conditions as directed by NAS Whiting Field.

2.1.5 Post Excavation Survey

Upon completion of the excavation activities at each site, the excavations will be surveyed to ensure that both the horizontal and vertical boundaries of the delineated area are reached. The survey will be completed by a Florida-registered professional land surveyor.

2.1.6 Site Restoration

Each excavation will be backfilled immediately after the post excavation survey has been completed. The backfill will be placed in the excavation in 1-foot loose lifts and properly compacted. All of the excavation areas will be finish-graded to ensure proper drainage, while meeting existing grades/ contours. Special precautions will be taken at Site 6 to return the drainage ditch to its original flow pattern.

All backfill soil will be imported from either a site on the Base or an offsite barrow source that has been both analytically and physically proven suitable. The facades of all excavation areas will be restored with like or similar surfacing as currently exists.

2.1.7 Waste Management and Disposal

CCI will contain, store, maintain, and properly dispose of wastes generated during this work including construction debris, contaminated solid waste of the shape and size which can be managed by excavation and transport vehicles, and contaminated liquid waste. Although none of the waste is expected to be hazardous, it will be managed in accordance with applicable state and federal regulations, as outline in Section 4.0 Waste Management Plan of this Work Plan Addendum. Thorough daily inspections of the work area and waste storage areas will be conducted while personnel are onsite. Specifically, inspections will ensure that no potential or offsite migration of contaminates is allowed to occur.

Pre-excavation disposal profile samples will be collected from each excavation area at each of the three sites. One representative homogenized sample will be analyzed and will represent each site. Section 3.0 Sampling and Analysis Plan outlines the samples and analysis required. Upon receipt of the disposal profile results, the material will be profiled for offsite disposal. Waste manifest will be generated for each load of material transported offsite. Section 4.0 Waste Management Plan describes waste disposal tracking procedures.

2.1.8 Decontamination and Demobilization

Prior to leaving the exclusion zone area (i.e., before crossing out of the excavation areas), personnel and equipment will be decontaminated after coming in contact with contaminated material. All debris and/or rinsate generated during decontamination activities will remain inside the exclusion zone until it can be containerized and stored properly for legal disposal.

Equipment will be thoroughly decontaminated to remove any contamination adhering to the component surfaces. A low volume high-pressure washer will be used to accomplish equipment decontamination prior to equipment leaving the project.

Decontamination of personnel and personal protective equipment (PPE) will be performed in accordance with the Health and Safety Plan (HSP) provided in Appendix A and applicable provisions of 29 Code of Federal Regulation (CFR) 1910.120.

Prior to traveling from an exclusion zone to a clean area, all decontaminated equipment will be inspected and documented by the Site Health and Safety Specialist (SHSS), Site Quality Control Manager, or Site Superintendent.

2.2 Communications Plan

A communication matrix outlining the lines of communication for the Southern Division NAVFAC and CCI personnel is presented in Table 2-1. Table 2-2 provides a project personnel directory.

TABLE 2-1
Communications Matrix

CCI Position	Navy Direct Report
Scott Newman, Program Manager	Shirley Berry, Administrative Contracting Officer
Philip Altman, Senior Project Manager	Jimmy Jones, Contracting Officer's Technical Representation
Amy Twitty, CTO Project Manager	Linda Martin, Remedial Project Manager
	Jim Holland, Base Environmental Engineer –Public Works, NAS Whiting Field

TABLE 2-2
Project Personnel Directory

Contact	Company
Scott Newman, Program Manager	CH2M HILL Constructors, Inc.
Flip Altman	115 Perimeter Center Place, N.E.
Marsha Robinson	Suite 700
Theresa Rojas	Atlanta, GA 30346-1278
Scott Dunbar, Site Superintendent	770/604-9182
Rich Rathnow, Corporate Health and Safety	151 Lafayette Drive, Suite 110
	Oak Ridge, TN 37830
	865/483-9032

TABLE 2-2
Project Personnel Directory

Contact	Company
Amy Twitty, Project Manager Ryan Bitely, Project QC Manager	CH2M HILL 1766 Sea Lark lane Navarre, FL 32566 850/939-8300 ext. 17
Shirley Berry	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5916
Jimmy Jones	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5544
Linda Martin	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5574
Jim Holland	NAS Whiting Field 7151 USS Wasp Street Milton, Florida 32570-6159 850-452-4616, x129

3.0 Sampling and Analysis Plan

This Sampling and Analysis Plan (SAP) outlines the required sampling activities associated with the remediation activities at Sites 6, 16 and 38 at NAS Whiting Field. The scope of work will consist of surface soil excavations of PAH, TRPH and pesticide impacted soil. Subsequent to attainment of soil remediation cleanup goals, the site will be restored to meet surrounding conditions and specifications. In addition, this SAP provides the required analyses for disposal characterization for wastes generated during remedial activities.

The Basewide Work Plan (CCI, 1999) provides sample collection frequency and sampling methodology for waste characterization and incidental samples collected during the removal and characterization phase of the project completed under this contract; sample QA/QC procedures to be maintained during all sample collection activities; and sample equipment decontamination procedures.

Samples will be collected in accordance with the FDEP Standard Operating Procedures, Department of Environmental Regulation QA-001/92, and the EPA, Region IV Environmental Investigation Standard Operating Procedures and Quality Assurance Manual (EISOPQAM, dated May 1996 and revisions, 1997). The sampling team will meet qualifications as described in the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM).

3.1 Data Quality Objectives for Measurement Data

The data quality objectives for each sampling task described above are listed in Table 3-1. The sampling and analytical requirements, along with the required level of quality and data packages are listed in Table 3-2.

PEL Laboratories in Tampa, Florida (a Navy-approved laboratory) will be used for all sample analyses. The laboratory will be certified by Florida through National Environmental Laboratory Accreditation Conference (NELAC).

TABLE 3-1
Data Quality Objectives

Sampling Activity	Data Quality Objective Category
Soil confirmation sampling (offsite laboratory analyses)	Definitive
Backfill analyses (offsite laboratory analyses)	Definitive
Waste characterization of the contaminated soils and aqueous waste (offsite laboratory analyses)	Definitive

TABLE 3-2
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
Site 16 Confirmation Sampling													
Site 16 Confirmation Sampling	Floor of Excavation	Soil	Once	2 samples + 1 MS/MSD Total = 4	Grab	Auger, SS spoon, SS bowl, Encore samplers	2 days	DQO Level III, CCI Level C	PAHs	8270C	14-day extr; 40-day analysis	Cool to 4°C	(1) 8 oz glass
	Pre-Equipment Rinsate Blank	Water	1 per set of pre-cleaned equipment	1	Prepared in Field	Analyte-free water, SS funnel	3 days	DQO Level III, CCI Level C	PAHs	8270C	14-day extra; 40-day analysis	Cool to 4°C	(2) Liter Amber Glass
	Post-Equipment Rinsate Blank	Water	1 per set of field-cleaned equipment	1	Prepared in Field	Analyte-free water, SS funnel	3 days	DQO Level III, CCI Level C	PAHs	8270C	14-day extra; 40-day analysis	Cool to 4°C	(2) Liter Amber Glass
(if equipment is decontaminated in the field)													
Soil Waste Characterization													
Soil Characterization Sampling	Within areas to be excavated	Soil	Once	1 sample per approx. 100 cy	Auger down to various depths within area to be excavated (DO NOT COMPOSITE VOCs)	SS Auger, SS Spoons, SS Bowl	7 days	DQO Level III, CCI Level B	TCLP Volatiles	1311/8260B	14-day TCLP extra; 14-day analysis	Cool to 4°C	(1) 4 oz glass
									TCLP Semi-Volatiles	1311/8270C	14-day TCLP extra; 7-day extra; 40-day analysis	Cool to 4°C	(1) 16 oz glass
									TCLP Pesticides	1311/8081A	14-day TCLP extra; 7-day extra; 40-day analysis		
									TCLP Herbicides	1311/8151A	14-day TCLP extra; 7-day extra; 40-day analysis		

TABLE 3-2 CONTINUED
 Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approximate Number of Samples	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers			
Aqueous Waste Characterization continued																
Soil Characterization Sampling	Within areas to be excavated	Soil	Once	1 sample per approx. 100 cy	Auger down to various depths within area to be excavated (DO NOT COMPOSITE VOCs)	SS Auger, SS Spoons, SS Bowl	7 days	DQO Level III, CCI Level B	TCLP Metals	1311/6010B, 7470A	6 month TCLP extra; 6 month analysis Hg: 28-day TCLP extra; 28-day analysis	Cool to 4°C	(2) 16 oz glass			
									TPH	FL-PRO				7-day extra; 40-day analysis		
									PCBs	8082				7-day extra; 40-day analysis		
									Ignitability	1030				ASAP		
									Corrosivity	9045A				ASAP		
									Reactivity	Chapter 7.3				ASAP		
Aqueous Waste Characterization																
Disposal of Aqueous Waste	Drums/tanks	Water	Once	1 per 6 drums or 1 per large container	Grab	Drum thief or dip jar	7 days	DQO Level III, CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial			
									TCL Semi-volatiles	8270C				14 days ext; 40-days analysis	Cool to 4°C	(4) L amber glass
									TCL Pesticides	8081A				14 days ext; 40-days analysis		
									Herbicides	8151A				14 days ext; 40-days analysis		
									TCL PCBs	8082				14 days ext; 40-days analysis		
									TPH	FL-PRO				7-day extra; 40-day analysis	HCl pH< 2; Cool to 4°C	(1) L glass
									TAL Metals	6010B/7470A				180 days; Hg = 28 days	HNO3 pH< 2; Cool to 4°C	(1) 500ml HDPE
									Cyanide	335.3				14 days	Cool to 4°C NaOH pH>12	(1) 200ml glass

TABLE 3-2 CONTINUED
 Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approximate Number of Samples	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers	
Aqueous Waste Characterization continued														
Disposal of Aqueous Waste	Drums/tanks	Water	Once	1 per 6 drums or 1 per large container	Grab	Drum thief or dip jar	7 days	DQO Level III, CCI Level B	Reactivity	Chapter 7.3	ASAP	Cool to 4°C	(1) L amber glass	
										Ignitability	1010/1020A	ASAP		
										Corrosivity	9040B	ASAP		
Fill Sources														
Characterization of Fill Material	Once per Offsite Source per Material	Soil	1 composite sample of 4 grabs	1	Composite 5 random grabs into 1 sample	SS spoon, SS bowl, Encore samplers	7 day	DQO Level III, CCI Level C	TCL Volatiles	5035/8260B	14-day	Cool to 4°C	(3) 5g Encore Samplers	
			(1 grab for volatiles)		(1 grab for volatiles)				TCL Semi-Volatiles	8270C	14-day extra; 40-day analysis	Cool to 4°C	(2) 16 oz glass	
										TCL Pesticides	8081A	14-day extra; 40-day analysis		
										Herbicides	8151A	14-day extra; 40-day analysis		
										PCBs	8082	14-day extra; 40-day analysis		
										TPH	FL-PRO	14-day extra; 40-day analysis		
										TAL Metals	6010A/7471	6 month; Hg 28 days	Cool to 4°C	(1) 16 oz glass
										pH	9045B	ASAP		
FID = flame ionization detector				PCB = polychlorinated biphenyl				ppm = parts per million						
°C = degrees Celsius				MTBE = methyl tertiary butyl ether				MS/MSD = matrix spike/matrix spike duplicate						
PAH = polycyclic aromatic hydrocarbon				FL-PRO = Florida Residual Petroleum Organic										
TRPH = total recoverable petroleum hydrocarbon				SS = stainless steel										
TAL = target analyte list				DQO = data quality objective										

3.2 Soil Confirmation Sampling and Analyses

Confirmation samples were collected at the boundaries of the proposed excavation during the delineation process at Sites 6, 16, and 38.

3.2.1 Confirmation Sampling Methodology

Two samples will be collected from the floor of the excavation (approximately 2 feet bls) at Site 16 to determine the subsurface soil concentrations remaining subsequent to the soil removal activities. Figure 2-2 shows the proposed excavation area for Site 16. Samples will be analyzed for benzo(a)pyrene and dibenz(a,h)anthracene (refer to Table 3-2). Results will be compared to leachability criteria as outlined in Chapter 62-777, FAC and USEPA Region IX PRGs. The results of the confirmation sampling will not dictate additional soil removal. The depth of the excavation will be approximately 2 feet bls.

3.2.2 Confirmation Sampling Collection Procedures

Soil confirmation samples will be collected in accordance with the FDEP Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, DEP-QA-001/92, which were adopted as part of CCI's FDEP-approved CompQAP and analyzed in accordance with Table 3-2. Generally samples will be collected as follows:

Procedure for Collecting Volatile Soil Samples

1. Remove the top 6 inches of soil using a stainless spoon.
2. Open the Encore reusable package and remove the core device and cap.
3. Place into the T-handle and core the sample.
4. Remove from the soil, brush off the sides, and put the cap seal onto the sampler.
5. Label and reseal in the original package.
6. Place into cooler for shipment.

Procedure for Collecting Non-Volatile Samples

1. Within the area as the volatile sample was collected, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the sample by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars approximately three-fourths full with the homogenized sample
4. Close the jar, label, and package the sample for shipment to the laboratory.

A CCI Level C data package will be required along with appropriate QC samples for the required analyses. All analytical data will be submitted by both hard copy and electronic files.

3.2.3 Soil Characterization

Waste characterization samples will be collected to evaluate the handling, transportation, and disposal requirements of any contaminated soil accumulated during soil removal activities. Soil samples will be collected as follows, delivered to PEL Laboratories in Tampa, Florida (a Navy-approved laboratory) and analyzed for the parameters listed in Table 3-2.

Soil characterization samples will be collected in-situ from the planned excavation area prior to excavation and disposal. One composite sample will be collected per site or as required by the disposal facility. A minimum of five grabs will be required per composite sample. The five locations will be selected such that each location is representative of approximately one-fifth of the volume to be disposed. The samples will be collected as follows:

1. Choose five random points within the in-situ soil area(s) prior to sampling.
2. At each of the five points, auger down at 2-foot intervals to a depth that is approximately the expected depth of the in-situ soil.
3. At each interval, collect the soil into a stainless steel bowl. *Do not composite volatiles samples.* Collect volatiles as a single grab sample from one single interval into a 4-ounce container.
4. Homogenize the five grab samples by the quartering techniques using the stainless steel spoon.
5. Fill the appropriate sample jars approximately three-fourths full with the homogenized sample
6. Close the jars, label, and package the sample for shipment to the laboratory.

A CCI Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. All analytical data will be submitted by both hard copy and electronic files.

3.2.4 Liquid Characterization

Waste characterization samples will be collected to evaluate the handling, transportation, and disposal requirements of generated decontamination water or water recovered from the excavation. Decontamination water will be segregated for analyses. It is anticipated that the aqueous waste from decontamination activities, sampling events and water collected from the excavated areas as well as collected product will be containerized in drums or portable tanks. Liquid samples will be collected as follows and delivered to PEL Laboratories in Tampa, Florida (a Navy-approved laboratory) and analyzed for the parameters listed on Table 3-2.

A sample will be collected from the drums (one sample per six drums) or tanks (one per container) using either a dip jar or bailer. The sample containers for volatiles analyses will be filled first. The 40-milliliter (ml) vials will be filled so that there is no headspace in each vial. The sample containers for the remaining analyses will then be filled.

A CCI Level B package will be required along with appropriate QC samples for the required waste characterization and incidental wastestream samples. All analytical data will be submitted by both hard copy and electronic files.

3.3 Backfill Sampling and Analyses

If no data are provided by the vendor providing the backfill material (sand, topsoil, clay, etc.), then one sample will be collected per source and material. The samples will be collected using the procedures described below and delivered to PEL Laboratories in

Tampa, Florida (a Navy-approved laboratory) and analyzed for the parameters listed on Table 3-2.

Procedure for Collecting Volatile Soil Samples

1. From either the floor of the excavation or the side-wall or the trackhoe bucket, remove the top 6 inches of soil using a stainless spoon.
2. Open the Encore reusable package and remove the core device and cap.
3. Place into the T-handle and core the sample.
4. Remove from the soil, brush off the sides, and put the cap seal onto the sampler.
5. Label and reseal in the original package.
6. Place into cooler for shipment.

Procedure for Collecting Non-Volatile Samples

1. Within the area as the volatile sample was collected, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the sample by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars approximately three-fourths full with the homogenized sample
4. Close the jar, label, and package the sample for shipment to the laboratory.

3.4 Field Activities

Field activities will be performed as listed in Table 3-3.

TABLE 3-3
Field Activities

Field Activity	Frequency	Equipment
Confirmation Soil Sampling	Two samples from bottom of Site 16 excavation.	Offsite laboratory (See Table 3-2)
Backfill sampling	Once per source	Offsite laboratory (See Table 3-2)
Characterization sampling	Soil: One composite per 100 cubic yards; Water: One sample per six drums or one per large container	Offsite laboratory (See Table 3-2)
Solid and Aqueous Disposal Sampling (from roll-off containers)	Once per container	Offsite laboratory (See Table 3-2)

3.5 Field Quality Control for Confirmation Sampling

Field duplicate samples will be collected at a minimum frequency of 10 percent times the total number of samples collected for an analysis for each site and rounded to the nearest

whole number. Pre-cleaned equipment blank samples will be collected at a minimum frequency of 5 percent times the total number of samples collected for an analysis for each site and rounded to the nearest whole number. Field-cleaned equipment blank samples will be collected at a minimum frequency of 5 percent times the total number of samples collected for an analysis for each site and rounded to the nearest whole number. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. Matrix spike/matrix spike duplicates (MS/MSD) will be required at a maximum frequency of one per sample event or a minimum frequency of one per twenty samples.

3.6 Analytical Methods

Samples will be collected for analytical methods summarized in Table 3-2. Preliminary analytical results will be faxed to Bonnie Hogue at the following fax number per the turnaround times listed in Table 3-2 from day of sample receipt. The final hardcopy data and electronic file will be delivered to Tatiana Romanova within 14 days of sample receipt.

Bonnie Hogue/Tatiana Romanova
CCI
115 Perimeter Center Place, Ste 700
Atlanta, GA 30346
(770) 604-9182 x562
(678) 604-9282 (fax)
bhogue@ch2m.com/ tromanov@ch2m.com

4.0 Waste Management Plan

The Waste Management Plan describes the waste management requirements and procedures for remediation activities at Site 15, NAS Whiting Field. Wastes generated from these activities shall be managed and disposed in accordance with the Florida and the federal hazardous and solid waste regulations.

The wastestreams associated with this scope of work may include:

- Clean and contaminated soil and debris
- Aqueous wastes, including decontamination water, water accumulated in excavations or secondary containment
- PPE
- Contaminated and uncontaminated general construction debris (such as caution tapes, barricades, signs, packing materials).

4.1 Waste Characterization

Section 3.0 Sampling and Analysis Plan provides detailed information on the waste sampling requirements. However, in some cases, offsite facilities may require additional analyses to evaluate the wastestream prior to acceptance. All wastes will be classified per 40 CFR 261 to determine if they are hazardous.

The source of dieldrin contamination at Site 38 is a result of releases during the storage and use of this pesticide at the golf course maintenance facility and normal application. Because the specific source of dieldrin cannot be determined (i.e., normal application v. discarded chemical product) and because of its low concentrations (i.e., more indicative of normal use), it is assumed that dieldrin contained in soil is not a listed hazardous waste.

Additionally, if soil stains, free liquid, or other signs of contamination are observed during soil excavation, those soils or wastes will be segregated. These wastes will be sampled and analyzed as described in Section 3.0 Sampling and Analysis Plan.

Typically, uncontaminated wastes such as general construction debris will be characterized using process knowledge and generally will be classified as municipal solid waste. Waste characterization information for wastes will be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. An approved copy of the waste profile will be received prior to offsite transportation of the material. If generator certification and/or signature are required, Navy personnel will provide them. The profile typically requires the following information:

- Generator (Navy) information including name, address, contact, and phone number
- Site name including street/ mailing address
- Activity generating waste (soil remediation)
- Source of contamination (e.g., pesticide storage and use)
- Historical chemical use for area
- Physical state of waste (e.g., soil)

4.2 Waste Management

4.2.1 Waste Storage Time Limit

It is CCI policy that hazardous wastes be removed from NAS Whiting Field within 60 days from the date of generation. In any case, hazardous wastes shall be removed within 90 days from generation and other wastes shall be removed from the site as soon as possible. The date of generation is the day that a waste is first placed in a container, tank, roll-off box, or stockpile.

4.2.2 Labels

Labels will include the type of waste, location from which the waste was generated, and accumulation start date. In specific, containers, transport vehicles, and tanks used to store/accumulate waste (including soil and groundwater) shall include one of the following labels:

- “Analysis Pending” or “Waste Material” Pre-printed labels to be used until analytical results are received and reviewed, and a waste designation determined. This label will include the accumulation start date.
- “Hazardous Waste” - Pre-printed hazardous waste labels that include the following information:
 - Accumulation start date
 - Generator Name: U.S. Navy
 - Site USEPA ID number
 - Hazardous waste codes

For containers of less than 110 gallons, the manifest number must be on the label before transporting.

- “Non-Hazardous Waste” - Preprinted labels with the following information:
 - Accumulation start date
 - Generator Name: U.S. Navy
 - Site USEPA ID Number
 - Waste-specific information (e.g., contaminated soil)

Where applicable, also include the major hazards on the label (e.g., flammable, oxidizer, and carcinogen) on the label.

4.2.3 General Waste Management Requirements

All wastes will be contained. Hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes will be segregated.

Soil from excavations will be direct-loaded in transport vehicles as described below. Soil with observed staining, free liquid, or other signs of contamination will be segregated and characterized for disposal.

Discharge of wastewater to the ground is prohibited unless approved by the CCI Compliance Coordinator, the Project Manager, and the Navy. The following sources of aqueous wastes will be contained in either drums or tanks:

- Decontamination water,
- Water accumulated in open excavations (assumed contaminated until analytical data indicate otherwise)
- Contaminated water accumulated in secondary containment

4.2.3.1 Accumulation Area Location and Security Requirements

Wastes will be stored in an area identified or approved by the Navy. Security will be provided for these areas according to the risks associated with the wastes' hazard and the proximity or accessibility of the public. In general, a barrier will be provided for hazardous waste accumulation areas and for accumulation areas that are accessible to the general public.

4.2.3.2 Waste Storage Areas

Containers and tanks of hazardous wastes will be stored in a temporary accumulation area designated by the Navy. If the Navy has not designated an accumulation area, CCI will temporarily store hazardous wastes in a secure area.

Hazardous waste storage areas will contain emergency equipment including fire extinguishers, decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in storage area). Spill control equipment (e.g., sorbent pads) will be available in all waste storage areas, and where liquids are transferred from one vessel to another.

NAS Whiting Field wastes will be stored in one of the following settings and according to the following requirements:

Drums/Small Containers

- Drums and small containers of hazardous waste will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic bonding.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Drums may not be stacked more than two high.
- Each drum will be provided with its own label.
- Drums will remain covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.

- Drums will be disposed of with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.
- Secondary containment will be provided for drums of liquid hazardous waste or hazardous wastes that are incompatible with other wastes or materials stored nearby.

Portable Tanks

- Only non-stationary tanks (such as cargo tank or other wheeled tank) will be used to accumulate hazardous waste.
- Tanks will be provided with secondary containment.
- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents shall be rejected.
- Tanks will be provided with covers.
- Each tank will be labeled.

Stockpiles

Stockpiling hazardous waste is not anticipated; however, prior to using stockpiles for hazardous waste, CCI will obtain approval from the Navy. The following procedures will be followed when stockpiling soils:

- Stockpiles will be located near the excavation areas and within an area of existing contamination.
- Stockpiles will be provided with a liner, cover, and perimeter berm to prevent release or infiltration of liquids.
- The perimeter berm, typically hay bales placed beneath the liner, will be constructed to allow for collection of any free liquids draining from the stockpile.
- Accumulated free liquids will be pumped (or otherwise removed) to a container.
- Covers will be provided as necessary to prevent wind dispersion or run-on/run-off from precipitation events.
- Minimum 6-mil polyethylene sheeting will be used for liners and covers.
- The liner must be placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure.
- Covers and perimeter berms will be secured in-place when not in use and at the end of each workday.
- Construction materials for the stockpiles that contact waste will be disposed of as contaminated debris.
- Accumulation start dates will be recorded on a log or a sign located at the stockpile

Transport Vehicles

- Transport vehicles will be inspected upon arrival onsite. Any transport vehicle arriving with contents will be rejected.
- All transport vehicles will be provided with covers and disposable liners. Liners will be disposed of as contaminated debris.
- When not in use, securely fastened covers will be installed on all roll-off boxes.
- Old labels will be removed.
- Transport vehicles will be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure.

4.2.3.3 Waste/Fuel Storage Area Inspections

Areas used for waste accumulation and fuel storage will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- At least weekly inspection of containers, tanks and roll-off boxes (for leaks, signs of corrosion, or signs of general deterioration)
- At least weekly inspection of stockpiles (for liner and berm integrity)
- At least weekly inspection of fuel storage areas (e.g., look for eroding containment systems and rusting tanks/ancillary equipment)

If operations will suspend for more than 7 days, alternate inspection arrangements will be made. Prior to demobilization, all hazardous wastes or materials will be removed from the site.

Inspections will be recorded in the Contractor Quality Control Report, and copies of the report will be maintained onsite, and available for review.

4.3 Transportation

Each transportation vehicle and load of waste shall be inspected before leaving the site. The quantities of waste leaving the site shall be recorded. A contractor licensed for commercial transportation shall transport non-hazardous wastes. For hazardous waste, the transporter shall have an EPA Identification number, and will comply with transportation requirements of 49 CFR 171-179 (Department of Transportation) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has appropriate licenses and identification numbers will be received prior to transport of any waste material.

4.3.1 Manifests/Shipping Documentation

Each load of waste material shall be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Transporter information including name, address, contact and phone number
- Generator information including name, address, contact, and phone number
- Site name including street/ mailing address
- Description of waste (e.g.: hazardous waste, liquid)
- Type of container
- Quantity of waste (volumetric estimate)

Additionally, each shipment of waste will also have a waste profile, a Land Disposal Restriction Notification/Certification for hazardous wastes, and a haul ticket.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, CCI will contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, CCI will prepare an "Exception Report" for the Navy to submit to the State of Florida, as required under 40 CFR 262.42.

4.3.2 Transporter Responsibilities

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container, dump truck, or tanker truck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets with the final manifest to CCI.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic
- Repair road damage caused by construction and/or hauling traffic
- Clean-up material spilled in transit
- Line and cover trucks/trailers used for hauling contaminated materials to prevent releases and contamination
- Decontaminate vehicles prior to re-use, other than hauling contaminated material
- Seal trucks transporting liquids

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the Health and Safety Plan. No materials from other projects will be combined with materials from NAS Whiting Field.

In the event of a spill or release of hazardous wastes, the transporter must immediately notify CCI and local authorities. The transporter must clean up any hazardous waste spill or release that occurs during transportation, or take such action as may be required or approved by Federal, State, or local officials.

The transporter will report any spill or release of hazardous waste, if required by 49 CFR 171.15, to the National Response Center (NRC) at 800-424-8802 or 202-426-2675. The transporter must also report in writing, as required by 49 CFR 171.16, to the Director, Office

of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, DC 20590.

For any spill of hazardous waste water from a bulk shipment (e.g., tanker), the transporter will immediately notify the NRC (800-424-8802 or 202 - 267-2675), as required in 40 CFR 263.30.

4.3.3 Transportation and Disposal Log

Transportation of wastes shall be inventoried the day of transportation from the site using the Transportation and Disposal Log. A carbon copy of the initial manifest form for each load will be retained onsite and attached to the daily Production Report. All required transportation manifests will be prepared by CCI and signed by an NAS Whiting Field representative.

4.4 Disposal of Wastestreams

Offsite treatment or disposal facilities will use the waste profile and supporting documentation (e.g., analytical data) to determine if they will accept a waste. Hazardous wastes will be sent to the appropriate, permitted Resource Conservation and Recovery Act (RCRA) Subtitle C treatment, storage, or disposal facility. Non-hazardous wastes will be disposed at a Subtitle D facility or a municipal landfill, as appropriate. The treatment or disposal facility will be responsible for providing a copy of the final waste manifest and for a certificate of treatment or disposal for each load of waste received.

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Offsite Policy (58 FR 49200, September 22, 1993), hazardous wastes treated or disposed at an offsite facility determined acceptable by the USEPA Regional Off-Site Contact (i.e., offsite facility approval). According to 40 CFR 300.400(b), the Regional Contact determines that the facility has no significant violations, and has no releases of hazardous substances (for RCRA Subtitle C facilities). CCI will obtain a record of the facility's approval under this policy.

5.0 Quality Control Plan

The Quality Control Plan provided in the Basewide Work Plan details the quality administrators, the project organization for the work to be completed at NAS Whiting Field, and the definable features of work for each project site.

The Submittal Register, included in Appendix C of this Work Plan Addendum, documents submittals in accordance with Appendix B of CCI's Contract Management Plan (dated July 1998). CCI, the Navy, or others will approve submittals as identified in the Submittal Register. All approved submittals will be distributed by CCI to the appropriate Navy personnel (Contracting Officer [CO], Resident Officer in Charge of Construction [ROICC] [in duplicate], etc.), the project site, and to the job file.

The site-specific project organization chart, included in this section of the work plan addendum as Figure 5-1, depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated. Roles and responsibilities are summarized in Table 5-1.

5.1 Project QC Manager

Mr. Ryan Bitely will perform the duties and responsibilities of the Project QC Manager. His appointing letter is provided in Appendix C.

5.2 Testing Requirements

Construction testing and environmental analysis laboratories and their certifications; construction testing and environmental sampling and analysis; and test control are described in this section. The Testing Plan and Log is provided in Appendix C.

5.2.1 Identification and Certification of Testing Laboratories

The construction testing and environmental testing laboratories utilized for this CTO project will function as a subcontractor or a lower tier subcontractor, and have not yet been identified.

5.2.2 Construction

No construction testing is anticipated for work performed under this CTO.

5.2.3 Environmental

Laboratories performing analysis of environmental samples will be Navy- and FDEP-approved, and also have an FDEP-approved CompQAP.

5.2.4 Testing and Sampling

Soil and water will be sampled by CCI or its subcontractors. Soil will be tested by CCI or its subcontractors. Confirmatory samples and waste characterization samples will be taken.

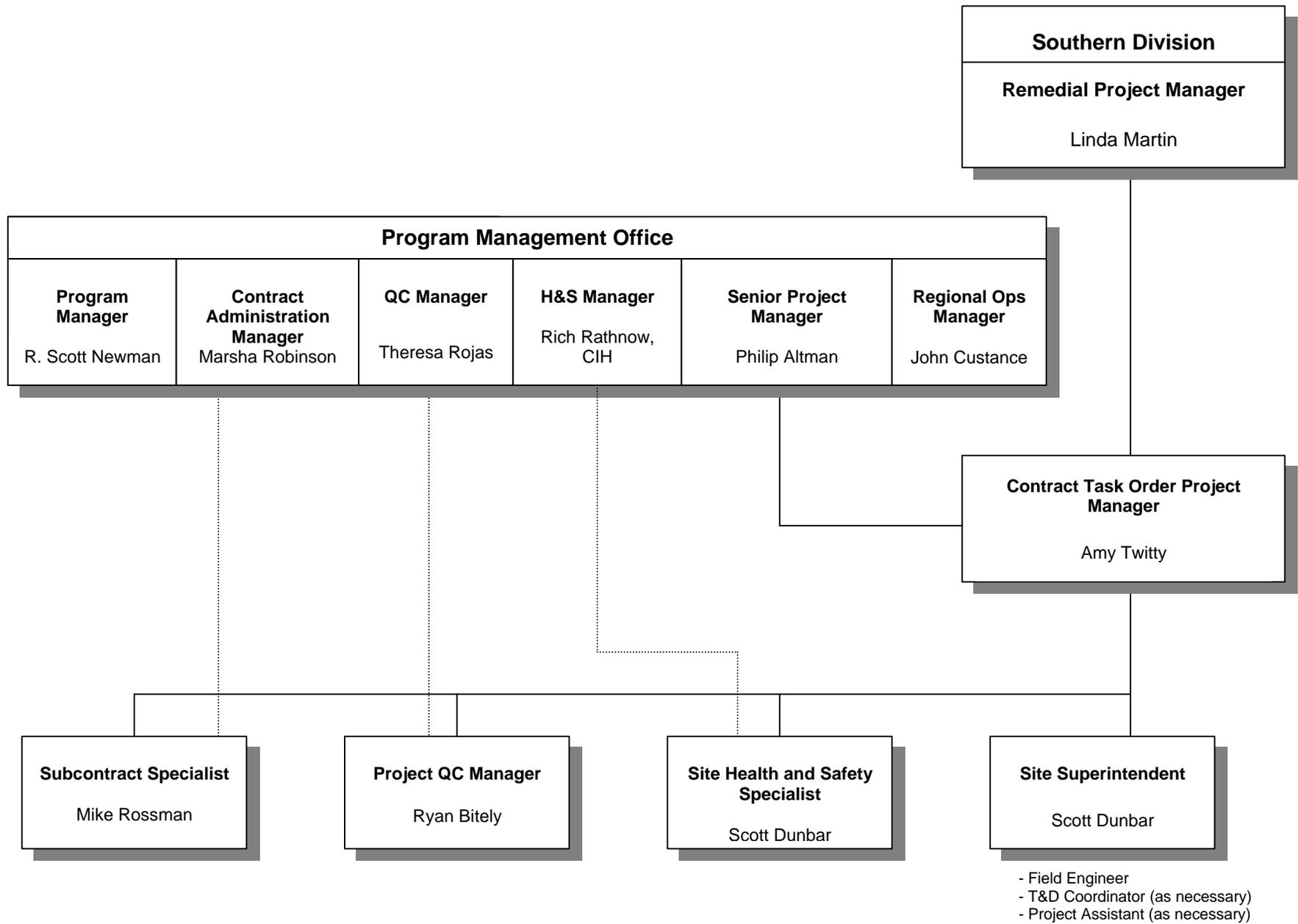


TABLE 5-1
Roles, Responsibilities, and Authorities of Individuals Assigned to a CTO

Role	Responsibility	Authority
Project Manager	<ul style="list-style-type: none"> • Management and Technical Direction of work • Communication with Southern Division RPM and NTR • Overview subcontractor performance • Select CTO staff • Develop CTO Work Plan and supporting plans • Meet CTO Performance Objectives • Prepare status reports • Prepare Field Change Requests 	<ul style="list-style-type: none"> • Approve subcontractor selection • Approve invoices to Southern Division • Approve CTO baseline schedule • Stop work at the site for any reason • Approve payment to vendors and suppliers • Approve payment to subcontractors • Review technical qualifications of subcontractors • Respond to Design Change Notices
Site Superintendent	<ul style="list-style-type: none"> • Responsible for all site activities • Provide direction to subcontractors • Act for Project Manager • Provide daily status reports • Prepare CTO Work Plan • Conduct daily safety meetings • Review subcontractor qualifications • Stop work for unsafe conditions or practices 	<ul style="list-style-type: none"> • Stop work for subcontractors • Approve corrective action for site work-arounds • Approve materials and labor costs for site operations • Resolve subcontractor interface issues • Approve daily and weekly status reports
Resident Engineer	<ul style="list-style-type: none"> • Monitor and oversee subcontractor compliance with scope of work • Review requests for changes in scope of work • Recommend work-around to Site Superintendent • Monitor and report on subcontractor quality and quantities • Audit subcontractors offsite fabrication • Maintain Submittal Register • Participate in Incident-Free Operations conference call 	<ul style="list-style-type: none"> • Complete daily compliance report • Monitor and report on subcontractor quality and quantities • Audit subcontractors offsite fabrication • Maintain Submittal Register • Stop work for non-compliant operations
Site Health and Safety Specialist	<ul style="list-style-type: none"> • Monitor and report on subcontractor safety and health performance • Record and report safety statistics • Conduct needed site safety and health orientation • Maintain Environmental Log • Stop work for unsafe practices or conditions 	<ul style="list-style-type: none"> • Stop work for unsafe practices or conditions • Approve subcontractor site specific health and safety plan • Set weekly safety objectives • Approve resumption of work for resolved safety issues
Subcontract Specialist	<ul style="list-style-type: none"> • Prepare bid packages • Purchase disposable materials • Maintain subcontract log • Approve payables for disposable items • Maintain government property records 	<ul style="list-style-type: none"> • Provide project scheduling coordination • Responsible for site cost tracking and reporting • Maintain record of site purchases

5.2.5 Environmental Sampling and Analysis

Environmental sampling and analysis, including QC sampling and analysis, is specified in Section 3.0 Sampling and Analysis Plan. Samples will be collected in accordance with EPA methods and industry standards of practice. Additionally, personnel that perform sampling will meet the requirements stated in the Navy IRCDQM.

5.2.6 Test Control

Environmental samples will be collected in accordance with USEPA Methods and procedures. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; and the use of qualified laboratories.

5.3 CTO Support Organizations

The supporting organizations are yet to be determined.

6.0 References

CH2M HILL Constructors, Inc. 1999. *Basewide Work Plan, NAS Whiting Field, Milton, Florida.*

CH2M HILL Constructors, Inc. 2001. *Soil Sampling and Analysis Plan, Site 38- Former Golf Course Maintenance Building 2877, NAS Whiting Field, Milton, Florida.*

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Geraghty & Miller. 1986. *Verification Study. NAS Whiting Field, Milton, Florida.*

Harding Lawson Associates. January 2000. *Remedial Investigation Report, Site 16, Open Disposal and Burning Area, Naval Air Station Whiting Field, Milton, Florida.*

Harding Lawson Associates. March 2001. *Feasibility Study Report, Site 16 Open Disposal and Burning Area, Naval Air Station Whiting Field, Milton, Florida.*

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Tetra Tech NUS, Inc. March 2001. *Feasibility Study for Surface and Subsurface Soil at Sites 3, 4, 6, 30, 32 and 33, Naval Air Station Whiting Field, Milton, Florida.*

U.S. Environmental Protection Agency. May 1996. *EPA Region IX Environmental Investigation Standard Operating Procedures and Quality Assurance Manual.*

Appendix A

Health and Safety Plan

Health and Safety Plan Interim Removal Action at Sites 6, 16 and 38

Naval Air Station Whiting Field
Milton, Florida

Revision No. 00

Contract No. N62467-98-D-0995

Contract Task Order No. 0011

Submitted to:

**U.S. Naval Facilities
Engineering Command
Southern Division**

Prepared by:



115 Perimeter Center Place, N.E.
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Atlanta, GA 30346

November 2001

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Attachments

1	Employee Signoff Form
2	Emergency Contacts
3	Activity Hazard Analysis Form
4	Chemical-Specific Training Form
5	Project-Specific Chemical Product Hazard Communication Form
6	Material Safety Data Sheets
7	Health and Safety Self-Assessment Checklists

Acronyms

°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ALARA	as low as reasonably achievable
APC	Alternative Procedure Certificate
APR	air-purifying respirator
ATL	Atlanta, Georgia
AVGAS	aviation gasoline
CCI	CH2M HILL Constructors, Inc.
CGI	combustible gas indicator
CNS	central nervous system
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CSEP	Confined Space Entry Permit
CTO	Contract Task Order
dba	decibel A-rated
DOT	Department of Transportation
FA	first aid
FID	flame ionization detector
GFCI	ground fault circuit interrupter
GPS	Global Positioning System
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
IRF	Incident Reporting Form
lb	Pound
LEL	lower explosive limit
mg/m ³	milligrams per cubic meter
MSDS	Material Safety Data Sheet
mW/cm ²	milliwatt per square centimeter

NAS	Naval Air Station
NDG	nuclear density gauge
NPC	Nonpermit Certificate
NWF	North West Florida
ORO	Oak Ridge, Tennessee
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
PCBs	polychlorinated biphenyls
PDF	personal flotation device
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
RI	Remedial Investigation
RMSF	Rocky Mountain Spotted Fever
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	standard of practice
STEL	short-term exposure limit
SZ	support zone
TBD	to be determined
TMCC	truck-mounted crash cushion
TRPH	total recoverable petroleum hydrocarbon
TSDF	treatment, storage, and disposal facility
UST	underground storage tank

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual*, as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Site Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the contents of this plan. CH2M HILL Constructors Inc.'s (CCI's) personnel and subcontractors must sign Attachment 1.

1.0 Project Information and Description

Contract Task Order No. : 0011

Client: Southern Division, Naval Facilities Engineering Command (NAVFAC)

Project/Site Name: Sites 6, 38 and 16 Soil Sampling and Excavation

Site Address: NAS Whiting Field, Milton, Florida

CCI Project Manager: Amy Twitty

CCI Office: North West (Navarre) Florida (NWF)

Date Health and Safety Plan Prepared: November 20, 2001

Date(s) of Site Work: December 1, 2001 through February 28, 2002

Site Background and Setting:

Site 6 is the South Transformer Oil Disposal Area and is located in the southeast area of NAS Whiting Field in the Midfield area, southeast of the Midfield Maintenance Hangar, Building 1454. Transformers were reportedly drained into the grassed ditch (0- to 2-inch depth) east of Building 1454 from the 1940s until 1964. Polychlorinated biphenyls (PCBs) may have been present in the dielectric fluid drained from the transformers. Runoff from the grassed ditch drains in a northeasterly direction eventually into Big Coldwater Creek located approximately 2.3 miles east of the disposal site. A former aviation gasoline (AVGAS) storage tank area is adjacent to Site 6 to the northwest. PCBs, benzo(a)pyrene, vanadium, and total recoverable petroleum hydrocarbons (TRPH) were identified as Contaminants of Concern (COCs) during the Remedial Investigation (RI).

Site 38 is the Former Golf Course Maintenance Building 2874 located in the northern portion of NAS Whiting Field, immediately west of the 7th hole fairway on the NAS Whiting Field Golf Course. The site includes the former Building 2877, which was located approximately 276 feet west of the patrol road and 860 feet north of the white lattice fence associated with the pistol firing range. Building 2877 was formerly the golf course maintenance building and used as a storage facility for pesticides and battery reconditioning. A 1-acre area north of the building was used to rinse trucks after they were used to spray pesticides. The pesticides stored in Building 2877 included organophosphates, herbicides, fungicides, chlordane, heptachlor epoxide and some hydrocarbon pesticides. Pesticide storage was discontinued in 1983 after the completion of a new pesticide facility.

Battery acid from golf cart batteries was reportedly drained into a sink inside Building 2877, which in turn drained into a tank that consisted of an underground concrete culvert open at one end. The tank retained approximately 50 gallons of liquid before draining to the subsurface. The tank was filled with rock sometime between 1974 and 1979 and battery acid draining was discontinued. Building 2877 was destroyed in 1993 during an upgrading and reconstruction project at the NAS Whiting Field Golf Course. The concrete building foundation is believed to still be present; however, it is unknown if the former drainage tank

is still present. During the RI, chlordane, DDT, and TRPH were designated as COCs for soils at this site.

Site 16 is the Open Disposal and Burning Area located in the southwest area of NAS Whiting Field, directly west of the South Air Field. The site is rectangular in shape, currently forested with planted pine trees, and covers approximately twelve acres. The site was used as the primary waste disposal area for NAS Whiting Field from 1943 to 1965. Two large pits were located on this site into which general refuse plus waste from aircraft operations and maintenance were disposed of at an estimated annual disposal volume of 3,000 and 4,000 tons. To reduce the volume, diesel fuel was used to ignite the waste, which included paints, solvents, waste oil, hydraulic fluid, and wastewater from paint stripping and other operations. Dielectric fluids containing PCBs may also have been disposed of at this site. A small, shallow ephemeral wetland (less than 0.1 acre and less than 2 feet deep) is located along the site's eastern boundary. The land surface slopes to the west at an average grade of five- percent. Two PAHs (benzo(a)pyrene and dibenz(a,h)anthracene) were identified as COCs for soils at this site.

Description of Specific Tasks to be Performed: An initial site survey was performed establishing the site boundaries and high visibility construction fence/silt fence will be used to further delineate the excavation areas. Soil will be excavated and directly loaded or transferred into transport vehicles. Surface, subsurface, and disposal profile samples will be collected using hand augers. Finally, site restoration activities and decontamination of equipment will be performed.

2.0 Tasks to be Performed Under this Plan

Refer to project documents (i.e., Work Plan) for detailed task information. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to Section 8.2 for procedures related to “clean” tasks that do not involve hazardous waste operations and emergency response (Hazwoper).

2.1 Hazwoper-Regulated Tasks

- Survey (the actual person [rod-man] exposed to contaminated surface)
- Soil Excavation
- Surface, subsurface, and disposal profile sampling using hand augars.
- Investigation-derived waste (drum) sampling and disposal
- Loading for offsite disposal

2.2 Non-Hazwoper-Regulated Tasks

Pre-excavation and post excavation surveying will involve Florida Licensed Surveyors who are not Hazwoper trained. However, those individuals will be restricted from entry into the excavation/exclusion zone areas and will be supported by CCI or subcontractor personnel that are hazwoper trained. The CCI or subcontractor personnel will actually perform the duties that require entry into the excavation/exclusion zone areas.

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites. Task hazard analysis is presented in Table 2-1.

TABLE 2-1
Hazard Analysis

Potential Hazards	Project Activities				
	Surface/ subsurface/ disposal profile/ soil sampling using hand augers	Soil Excavation HS-32	IDW drum sampling and disposal	Loading material for offsite disposal	Pre- Excavation and Post Excavation Surveying
Fire Prevention (HS-22)	X	X	X	X	X
Electrical Safety (HS-23)		X		X	X
Lockout /Tagout (HS-33)					
Ladders & Stairs(HS-25)					
Compressed Gas Cylinders (HS-63)					
Buried Utilities	X	X			X
Excavations (HS-32)	X	X		X	x
Fall Protection (HS-31)	X	X		X	X
Heavy Equipment (HS-27)	X	X		X	X
Confined Space Entry (HS-17)					
Process Safety (HS-38)					
Concrete & Masonry Work (HS-43)					
Cranes and Hoisting (HS-44)					
Demolition (HS-45)					
Scaffolding(HS-73)					
Steel erection (HS-62)					
Traffic Control(HS-24)	X	X		X	X
Welding and cutting (HS-22)					
Tunneling/shaft operations (HS-26)					
Aerial Lifts (HS-41)					
Hand & Power Tools (HS-50)	X	X	X	X	
Forklifts (HS-48)				X	
Drilling (HS-35)					
Haz Material Handling (HS-27)	X		X	X	X
Motor Vehicles (HS-47)				X	
Noise (HS-39)		X		X	
Crane-suspend Platforms(HS-75)					
Diving (HS-53)					

3.0 Hazard Control

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CCI employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CCI employees and subcontractors who do not understand any of these provisions should contact the SHSS for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and is provided in the Hazard Analysis Table (Table 2.1) in this section. Hazard control measures for project-specific and general H&S hazards are provided in 2.1 and 2.2 of this section.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 3 as a guide. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

In addition to the controls specified in this section, Project-Activity Self-Assessment Checklists are contained in Attachment 4. These checklists are to be used to assess the adequacy of CCI and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the HSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Project-activity self-assessments checklist shall be completed weekly by the SHSS during the course of the project, completing the applicable checklist depending on the work performed at the time on the project.

3.1 Project-Specific Physical (Safety) Hazards

Also review Master Health and Safety Plan Sections 2.1 Project Specific and 2.2 General Hazards.

3.1.1 General Hazards

- Site work will be performed during daylight hours whenever possible. Work conducted during hours of darkness will require enough illumination intensity to read a newspaper without difficulty.

- Hearing protection worn in areas where you need to shout to hear someone within 3 feet.
- Good housekeeping must be maintained at all times in project work areas.
- Common paths of travel established and kept free from accumulation of materials.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies will be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers provided for collecting trash/debris and will be removed at regular intervals.
- Spills will be cleaned up.

3.1.2 Hazard Communication

- Complete and inventory of chemicals brought onsite by CCI using the Project-Specific Chemical Hazard Communication Form provided in Attachment 5.
- Confirm inventory of chemicals brought on site by CCI subcontractors is available.
- Confirm locations of Material Safety Data Sheets (MSDSs) from client, contractors, and subcontractors for chemicals to which CCI employees potentially are exposed.
- Before or as the chemicals arrive onsite, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using the Chemical-Specific Training Form provided in Attachment 3.

3.1.3 Heat Stress

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.

- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SHSS/DSC to avoid progression of heat-related illness.

TABLE 3-1
Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 80°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress. The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest

period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

3.1.4 Lifting

(Reference CH2M HILL-SOP HS-29, *Lifting*)

- Proper lifting techniques must be used when lifting any object.
 - Plan storage and staging to minimize lifting or carrying distances.
 - Split heavy loads into smaller loads.
 - Use mechanical lifting aids whenever possible.
 - Have someone assist with the lift, especially for heavy or awkward loads.
 - Make sure the path of travel is clear prior to the lift.

3.1.5 Fire Prevention

(Reference CH2M HILL- SOP HS-22, *Fire Prevention*)

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
 - be maintained in a fully charged and operable condition,
 - be visually inspected each month, and
 - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.

Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

3.1.6 Electrical

(Reference CH2M HILL-SOP HS-23, *Electrical*)

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.

- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
 - equipped with third-wire grounding.
 - covered, elevated, or protected from damage when passing through work areas.
 - protected from pinching if routed through doorways.
 - not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

3.1.7 Excavation Activities

(Reference CH2M HILL, SOP HS-32, *Excavation and Trenching*)

- CCI personnel must notify and be granted authorization from the excavation competent person prior to entering any excavation. CH2M HILL personnel must follow all excavation requirements established by the competent person.
- The competent person must inspect the trench and/or excavation everyday and after everyday hazard increasing event. Documentation of this inspection must be maintained onsite at all times.
- Excavations must be protected from cave-ins by adequate protective systems unless the excavation is less than 5 feet in depth and a competent person determines there is no indication of cave-in or the excavation is made entirely in stable rock that is not fractured.
- Prior to excavating at a location, buried utilities in the area must be identified; refer to Section 3.2.8 “Procedures for locating buried utilities”.
- CCI personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions.

- Refer to CH2M HILL SOP HS-32 “Excavations and Trenching” for more specific details on excavation requirements.

3.1.8 Operating Heavy Equipment

(Reference CH2M HILL, SOP HS-27, *Earthmoving Equipment*)

- CCI authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized powerlines, the closest part of the equipment must be at least 10 feet from the powerlines < 50 kV. Provide an additional 4 feet for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead powerlines must be considered to be an energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins; refer to Section 3.1.9 Procedures for Locating Buried Utilities.
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake shall be set whenever equipment is parked, wheels must be chocked when parked on inclines.
- When not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed and shift lever in neutral.

3.1.9 Procedures for Locating Buried Utilities

- NAS Whiting Field has an in depth excavation permit process that is coordinated by Mr. Danny Cook, NAS Whiting Field Public Works Engineering Manager and Mr. Jim Holland, NAS Whiting Field Public Works Environmental Manager. A request for an excavation permit will be routed to Mr. Cook, which he provided CCI a blank permit that lists the required authorities to contact for location and marking their specific buried utilities. CCI will be required to have each party sign the permit after their utility is located and marked. Upon completion of that portion of the permit the will be returned to Mr. Cook for engineering review and Mr. Holland for archeological/environmental review. Both their approvals and signatures are required for the permit to be validated.
- Once the excavation permit is validated excavation may begin and the permit must be readily available at the excavation location.
- If any significant changes occur during the excavation or if the excavation extends beyond the boundaries out-lined in the permit. Mr. Cook and Mr. Holland must be notified and their additional approval secured in order proceed.

3.1.10 Noise

(Reference CH2M HILL-SOP HS-39, *Noise*)

- Noise areas will be evaluated at the start of the project and at any time new machinery is added to the process.
- Hearing protection will be worn whenever levels in excess of 85 dBA are exceeded as in areas where you must raise your voice to communicate at a distance of 3 feet or less.
- Personnel will be trained in the proper installation for ear protection that fits in the ear canal.
- Hearing protective devices will be kept clean and sanitary between uses.
- Noise measurements may be required by the SHSS to determine protection areas. These areas need to be posted with appropriate warning signs.

3.1.11 Traffic Control

(Reference CH2M HILL-SOP HS-24, *Traffic Control*)

- Exercise caution when exiting traveled way or parking along street: avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.

- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight distance, hills, curves, guardrails, width of shoulder (i.e. breakdown lanes), etc.
- Always remain aware of an escape route – behind and established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you.

3.2 Project-Specific Chemical (Health) Hazards

Also review Master Health and Safety Plan and following Contaminants of Concern (Table 3-2) and routes of exposure.

The following contaminants of concern were identified at maximum soil concentrations at the following sites and pose potential chemical hazards during soil sampling activities:

3.2.1 Site 6

- PCB at 33 micrograms per kilogram ($\mu\text{g}/\text{kg}$)
- Benz(a)pyrene at 1900 $\mu\text{g}/\text{kg}$
- Vanadium at 489 mg/kg
- TRPH at 3,580 mg/kg

3.2.2 Site 38

- DDE/DDT at .5 mg/kg
- Chlordane at 4.2 mg/kg
- TRPH at 479 mg/kg

3.2.3 Site 16

- Benz(a)pyrene at 3100 $\mu\text{g}/\text{kg}$
- Dibenzo (a,h) anthracene at 700 $\mu\text{g}/\text{kg}$

TABLE 3-2
Contaminants of Concern

Contaminant	Location and Maximum ^a Concentration (ppm)	Exposure Limit ^b	IDLH ^c	Symptoms and Effects of Exposure	PIP ^d (eV)
Benzene	GW: SB: SS:	1 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Chlordane	GW: SB:4.2 SS:	0.5 mg/m ³	100 Ca	Blurred vision, confusion, ataxia, delirium, coughing, abdominal pain, nausea, vomiting, diarrhea, irritability, tremors anuria	UK
DDT	GW: SB:.50 SS:	0.5 mg/m ³	500 Ca	Paresthesia of tongue, lips, hand, and face; tremors; dizziness; confusion; headache; fatigue; convulsion; eye and skin irritation; vomiting	UK
Ethyl Benzene	GW: SB: SS:	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
PCBs (Limits as Aroclor 1254)	GW: SB:33 µg/kg SS:	0.5 mg/m ³	5 Ca	Eye and skin irritation, acne-form dermatitis, liver damage, reproductive effects	UK
Polyaromatic Hydrocarbons -PAHs (Limits as Coal Tar Pitch)	GW: SB:1900 µg/kg SS:	02 mg/m ³	80 Ca	Dermatitis and bronchitis; PAHs are a NIOSH Appendix A carcinogen.	UK
Toluene	GW: SB: SS:	50 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
Xylenes	GW: SB: SS:	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56
Petroleum Hydrocarbons	GW: SB:3580 SS:	300 ppm as gasoline	Ca	Petroleum products can cause dry skin, irritation, anesthetic effects, loss of coordination, central nervous system depression, and death. Overexposure may cause an exaggerated sense of well being, excitement, headache, dizziness, incoherent speech, narcosis, central nervous system stimulation and then depression, respiratory paralysis, respiratory irritation, vomiting, skin cancer, and death. Fuels have been associated with skin and kidney cancer.	UK
Vanadium	GW: SB:489 SS:	0.05 mg/m3 Ceiling	35 mg/m3	Vanadium dust causes irritation to the eyes, skin and throat. Symptoms of overexposure include metallic taste, green tongue, eczema, coughing and wheezing.	NA

^a Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).

^b Appropriate value of PEL, REL, or TLV listed.

^c IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.

^d PIP = photoionization potential; NA = Not applicable; UK = Unknown.

3.3 Potential Routes of Exposure

Dermal: Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.

Inhalation: Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 4 and 5, respectively.

Other: Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

3.4 Hazards Posed by Chemicals Brought on the Site

3.4.1 Hazard Communication

Reference CH2M HILL Hazard Communication Manual

CH2M HILL's *Hazard Communication Program Manual*, which is available from area or regional offices and from the Corporate Human Resources Department in Denver, Colorado. The project manager is to request MSDSs from the client or from the contractors and the subcontractors for chemicals to which CCI employees potentially are exposed. The SHSS is to do the following:

- Give employees required site-specific hazard communication (HAZCOM) training.
- Confirm that inventory of chemicals brought on the site by subcontractors is available.
- Before or as chemicals arrive on the site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with identity of chemical and with hazard warnings, if any.

Chemical products listed in Table 3-3 will be used on site. Refer to Attachment 6 for MSDSs.

TABLE 3-3
Chemical Hazards

Chemical	Quantity	Location
Methanol (decontamination)	4 liters, flammable	Support/Decontamination Zone
Alconox/Liquinox (detergent)	< 1 liter, powder/liquid	Support/Decontamination Zone

3.4.2 Shipping and Transportation of Chemical Products

Reference CH2M HILL's Procedures for Shipping and Transporting Dangerous Goods

Nearly all chemicals brought to the site are considered hazardous materials by the DOT. All staff who ship the materials or transport them by road must receive the CH2M HILL training in shipping dangerous goods. Hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

3.5 Biological Hazards and Controls

Biological hazards and controls are listed in Table 3-4.

TABLE 3-4
Biological Hazards and Controls

Hazard and Location	Control Measures
Snakes typically are found in underbrush and tall grassy areas.	If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. DO NOT apply ice, cut the wound, or apply a tourniquet. Carry the victim or have him/her walk slowly if the victim must be moved. Try to identify the type of snake: note color, size, patterns, and markings.
Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas.	Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.
Exposure to bloodborne pathogens may occur when rendering first aid/CPR, when coming into contact with medical or other potentially infectious material, or coming into contact with landfill waste or waste streams containing infectious material.	Training is required before a task involving potential exposure is performed. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, <i>Bloodborne Pathogens</i> . Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

3.6 Tick Bites

Reference CH2M HILL HS-03, Tick Bites

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size.

Prevention against tick bites includes avoiding tick areas; wearing tightly woven light-colored clothing with long sleeves and wearing pant legs tucked into boots or socks; spraying only outside of clothing with insect repellent containing permethrin or permethrin, and spraying skin with DEET; and checking yourself frequently for ticks and showering as soon as possible. To prevent chemical repellents from interfering with sample analyses, exercise care while using repellents during the collection and handling of environmental samples.

If bitten by a tick, carefully remove the tick with tweezers, grasping the tick as close as possible to the point of attachment while being careful not to crush the tick. After removing the tick, wash your hands and disinfect and press the bite area. The removed tick should be saved. Report the bite to human resources personnel.

Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF): Lyme - a rash that looks like a bullseye with a small welt in the center; RMSF - a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, bone pain may develop. If symptoms appear, seek medical attention.

3.7 Radiological Hazards and Controls

Refer to CH2M HILL's Corporate Health and Safety Program, Program and Training Manual, and Corporate Health and Safety Program, Radiation Protection Program Manual, for standards of practice for operating in contaminated areas. There are no known radiological hazards associated with this project.

4.0 Project Organization and Personnel

4.1 CCI Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HS-01, *Medical Surveillance*, and HS-02, *Health and Safety Training*)

The employees listed meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated SHSS have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated “FA-CPR” are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. The employees listed in Table 4-1 are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL-SOP HS-04, *Reproduction Protection*, including obtaining a physician’s statement of the employee’s ability to perform hazardous activities before being assigned fieldwork.

TABLE 4-1
Project Personnel H&S Certifications

Employee Name	Office	Responsibility	H&S Certification
Amy Twitty	NWF	Project Manager	
Scott Dunbar	ATL	Site Supervisor	SHSS

4.2 CCI Subcontractors

(Reference CH2M HILL- SOP HS-55, *Subcontractor, Contractor, and Owner*)

Certain subcontractors (drilling, remedial and construction contractors) are required to be pre-qualified for safety by completing the Subcontractor Safety Performance Questionnaire. The subcontractors listed above are covered by this HSP. However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., drilling, excavation work, electrical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to CCI for review before the start of field work by following the Subcontractor Safety Procedure Criteria specific to their work.

Subcontractors are also required to prepare Activity Hazard Analysis before beginning each activity posing H&S hazards to their personnel using the AHA form provided in

Attachment 3 as a guide. The AHA shall identify the principle steps of the activity, potential H&S hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

Subcontractors must comply with the established health and safety plan(s). The CCI SHSS should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). CCI oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CCI should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. CCI is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SHSS is responsible for confirming CCI subcontractor performance against both the subcontractor's safety plan and applicable self-assessment checklists. Self-assessment checklists contained in Attachment 7 are to be used by the SHSS to review subcontractor performance.

Health and safety related communications with CCI subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected CH2M HILL employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented. Notify the Project Manager and HSM as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.

5.0 Personal Protective Equipment (PPE)

(Reference CH2M HILL- SOP HS-07, *Personal Protective Equipment*, HS-08, *Respiratory Protection*)

Personal protective equipment (PPE) is listed in Table 5-1.

TABLE 5-1
PPE Specifications ^a

Task	Level	Body	Head	Respirator ^b
General site entry Surveying Observation of material loading for offsite disposal Oversight of remediation and construction	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat ^c Safety glasses Ear protection ^d	None required
Surface soil sampling Hand augering Investigation-derived waste (drum) sampling and disposal Soil excavation and loadout Equipment and personnel decontamination Site restoration	Modified D	Work clothes or cotton coveralls Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Safety glasses Ear protection ^d	None required
Tasks requiring upgrade	C	Coveralls: Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Ear protection ^d Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent ^e .

^a Modifications are as indicated. CCI will provide PPE only to CCI employees.

^b No facial hair that would interfere with respirator fit is permitted.

^c Hardhat and splash-shield areas are to be determined by the SHSS.

^d Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

^e Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM.

Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SHSS qualified at that level is present. PPE levels may be upgraded for the following reasons:

- Request from individual performing tasks
- Change in work tasks that will increase contact or potential contact with hazardous materials
- Occurrence or likely occurrence of gas or vapor emission
- Known or suspected presence of dermal hazards
- Instrument action levels (Section 6) exceeded

PPE levels may be downgraded for the following reasons:

- New information indicating that situation is less hazardous than originally thought
- Change in site conditions that decreases the hazard
- Change in work task that will reduce contact with hazardous materials

6.0 Air Monitoring/Sampling

(Reference CH2M HILL- SOP HS-06, *Air Monitoring*)

6.1 Air Monitoring Specifications

Air monitoring specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specification

Instrument	Tasks	Action Levels ^a		Frequency ^b	Calibration
FID: OVA model 128 or equivalent	Surface/subsurface soil sampling	< 10 ppm 10-25 ppm	Level D Level C with Benzene detector tube monitoring or Suspend operations and allow vapors to dissipate to < 10 before continuing in Level D	Initially and periodically during task	Daily
	SRS Unit O&M activities	>25 ppm	Suspend operations and allow vapors to dissipate to < 25 ppm before continuing in Level C with benzene monitoring		
PID: OVM with 10.6eV lamp or equivalent	Surface/subsurface soil sampling	< 10 ppm 10-25 ppm	Level D Level C with Benzene detector tube monitoring or Suspend operations and allow vapors to dissipate to < 10 before continuing in Level D	Initially and periodically during task	Daily
	SRS Unit O&M activities	>25 ppm	Suspend operations and allow vapors to dissipate to < 25 ppm before continuing in Level C with benzene monitoring		
Dust Monitor – Visual Observation	All dust producing activities	No visible dust Visible Dust	Level D Use dust suppression measures.		
CGI: MSA model 260 or 261 or equivalent	SRS Unit O&M activities	0-10% : 10-25% LEL: >25% LEL:	No explosion hazard Potential explosion hazard Explosion hazard; evacuate or vent	Continuous during advancement of boring or trench	Daily
O ₂ Meter: MSA model 260 or 261 or equivalent	SRS Unit O&M activities	>25% ^c O ₂ : 20.9% ^c O ₂ : <19.5% ^c O ₂ :	Explosion hazard; evacuate or vent Normal O ₂ O ₂ deficient; vent or use SCBA	Continuous during advancement of boring or trench	Daily
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	PID/FID reading > 10 ppm	<0.5 ppm 0.5-10 ppm	Level D Level C with continued benzene monitoring or Suspend operations and allow vapors to dissipate to < .5 ppm before continuing in Level D	Initially and periodically when PID/FIB >1 ppm	Not applicable
		>10 ppm	Suspend operations and allow vapors to dissipate to < 10 ppm before continuing in Level C with benzene monitoring		

^a Action levels apply to sustained breathing-zone measurements above background.

^b The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).

^c If the measured percent of O₂ is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O₂ action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O₂ action levels are required for confined-space entry (refer to Section 2).

6.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Air monitoring equipment calibration specifications are listed in Table 6-2.

TABLE 6-2
Air Monitoring Equipment Calibration Specifications

Instrument	Gas	Span	Reading	Method
PID: OVM, 10.6 or 11.8 eV bulb	100 ppm isobutylene	RF = 1.0	100 ppm	1.5 lpm reg T-tubing
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF = 100	100 ppm	1.5 lpm reg T-tubing
PID: TVA 1000	100 ppm isobutylene	CF = 1.0	100 ppm	1.5 lpm reg T-tubing
FID: OVA	100 ppm methane	3.0 ± 1.5	100 ppm	1.5 lpm reg T-tubing
FID: TVA 1000	100 ppm methane	NA	100 ppm	2.5 lpm reg T-tubing
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 lpm reg direct tubing

PID – photoionization detector
FID – flame ionization detector
CGI – combustible gas indicator

7.0 Decontamination

Reference CH2M HILL SOP HS-13, Decontamination

The SHSS must monitor the effectiveness of the decontamination procedures. Decontamination procedures found to be ineffective will be modified by the SHSS.

7.1 Decontamination Specifications

Decontamination specifications are listed in Table 7-1.

TABLE 7-1
Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none"> • Boot wash/rinse • Glove wash/rinse • Body-suit removal • Hand wash/rinse • Face wash/rinse • Shower ASAP • PPE-disposal method Dispose in drums • Water-disposal method Dispose in drums 	<ul style="list-style-type: none"> • Wash/rinse equipment • Solvent-rinse equipment • Solvent-disposal method • Dispose in drums 	<ul style="list-style-type: none"> • Power wash • Steam clean • Water-disposal method • Dispose in drums

7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a typical establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.

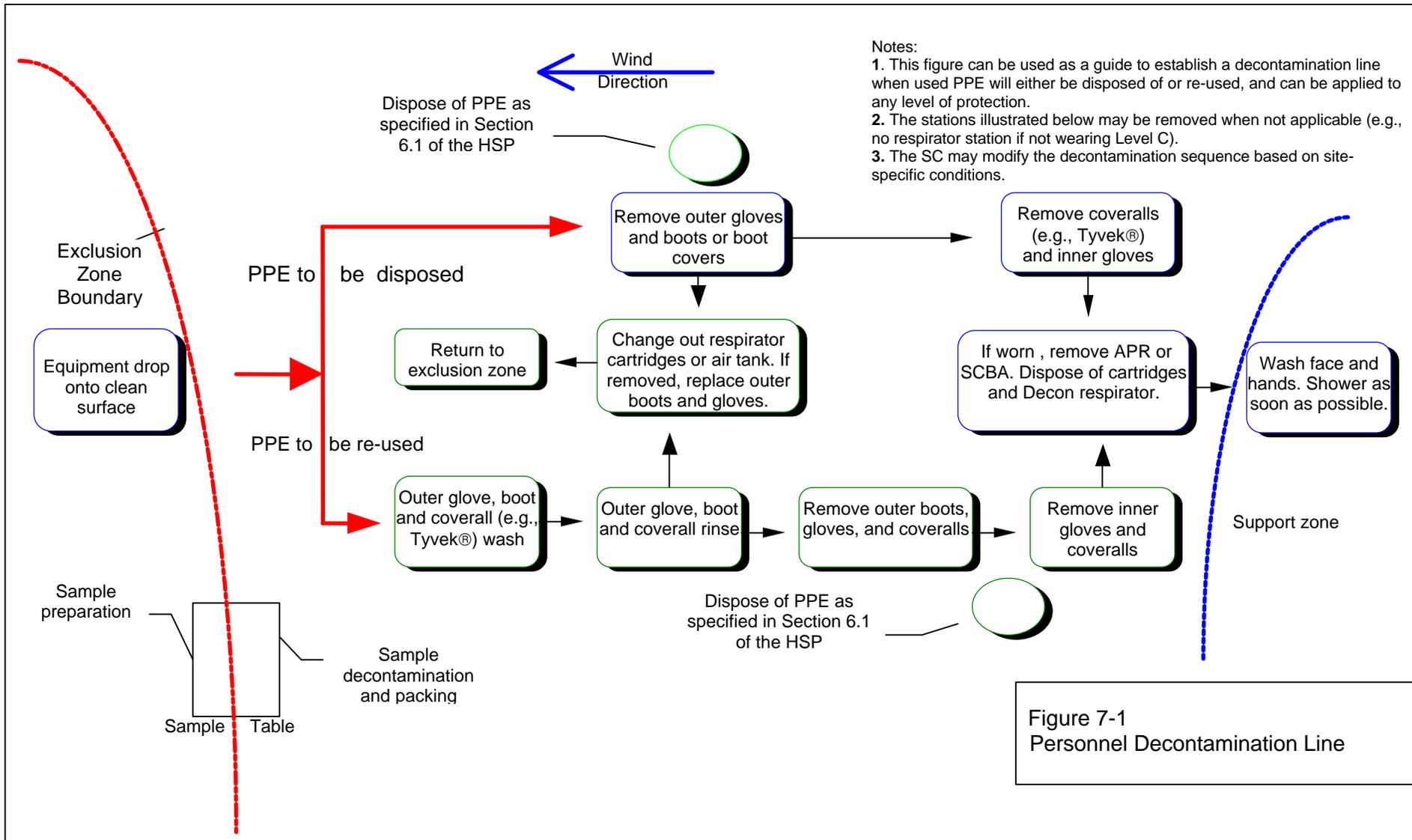


Figure 7-1
Personnel Decontamination Line

8.0 Spill Prevention and Control Plan

This Spill Prevention and Control Plan establishes minimum site requirements. Subcontractors are responsible for spill prevention and control related to their operations. Subcontractors written spill prevention and control procedures must be consistent with this plan. Spills must be reported to your supervisor, the site manager, and the Contract Manager.

8.1 Spill Prevention

Fuel and chemical storage areas will be properly protected from onsite and offsite vehicle traffic. Fuel storage tanks must be equipped with secondary containment. Fuel tanks must be inspected daily for signs of leaks. Accumulated water must be inspected for signs of product before discharge.

Incidental chemical products must be properly stored, transferred, and used in a safe manner. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials must be maintained.

8.2 Spill Containment and Control

Spill control materials will be maintained in the support zone and at fuel storage and dispensing locations. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby personnel and notify the work supervisor.
- Assess the spill area to ensure that it is safe to approach.
- Activate site evacuation signal if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- If it can be done safely, stop the source of the spill.
- Establish site control for the spill area.
- Use proper PPE in responding to the spill.
- Contain and control spilled material through the use of sorbent booms, pads, or other materials.

8.3 Spill Cleanup and Removal

Spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated material will be disposed of according to applicable federal, state, and local requirements. Contact the regulatory compliance person for the project or the program for assistance.

9.0 Confined-Space Entry

Reference CH2M HILL SOP HS-17, Confined Space Entry

Confined-space entry requires health and safety procedures, training, and a permit. When planned activities include confined-space entry, permit-required confined spaces accessible to CCI personnel are to be identified before the task begins. The SHSS will confirm that permit spaces are properly posted or that employees are informed of their locations and informed of their hazards. When confined space entry is required, the SSHS will maintain a copy of SOP HS-17 onsite.

10.0 Site Control Plan

10.1 Site Control Procedures

The following site control procedures will be implemented for this CTO:

- SHSS will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of health and safety plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- SHSS records attendance at safety briefings in logbook and documents topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location at sites where project field offices, trailers, or equipment storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Determine wind direction.
- Establish work zones: support, decontamination, exclusion zones. Delineate work zones with flags or cones as appropriate. The support zone (SZ) should be upwind of the site.
- Establish decontamination procedures, including respirator-decontamination procedures, and test the procedures.
- Use access control at the entry and exit from each work zone.
- Store chemicals in appropriate containers.
- Make MSDSs available for onsite chemicals to which employees are exposed.
- Establish onsite communication consisting of the following:
 - Line-of-sight and hand signals
 - Air horn
 - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the “buddy system.”
- Establish procedures for disposing of material generated on the site.
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.
- SHSS is to conduct periodic inspections of work practices to determine the effectiveness of this plan -- refer to CH2M HILL SOP 18, *Health and Safety Checklist*. Deficiencies are to be noted, reported to the HSM, and corrected.

10.2 HAZWOPER Compliance Plan

Reference CH2M HILL SOP HS-17, Health and Safety Plans

The following procedures are to be followed when certain activities do not require 24- or 40-hour training. Note that prior approval from the HSM is required before these tasks are conducted on regulated hazardous waste sites.

- Certain parts of the site work may be covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated tasks must be included in Section 1.1.1.
- Air sampling must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are allowed on the site. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to Sections 2.3 and 5.1 for contaminant data and air sampling requirements, respectively.
- Non-HAZWOPER-trained personnel must be informed of the nature of the existing contamination and its locations, the limits of their access, and the emergency action plan for the site. Non-HAZWOPER-trained personnel also must be trained in accordance with other state and federal OSHA requirements, including 29 CFR 1910.1200 (HAZCOM). Refer to Section 2.1.2 for hazard communication requirements.
- Air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to volatile contaminants. Non-HAZWOPER-trained personnel should be monitored whenever the belief is that there may be a possibility of exposure (e.g., change in site conditions), or at some reasonable frequency to confirm that there is no exposure. Refer to Section 5.1 for air monitoring requirements.
- Treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the HAZWOPER standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only HAZWOPER-trained personnel (minimum of 24 hours of training) will be permitted to enter the site. All non-HAZWOPER-trained personnel must leave the site.

If HAZWOPER-regulated tasks are conducted concurrently with nonregulated tasks, non-HAZWOPER-trained subcontractors must be removed from areas of exposure. If non-HAZWOPER-trained personnel remain on the site while a HAZWOPER-regulated task is conducted, the contaminant/exposure area (exclusion zone) must be posted, non-HAZWOPER-trained personnel must be reminded of the locations of restricted areas and the limits of their access, and real-time monitoring must be conducted. Non-HAZWOPER-trained personnel at risk of exposure must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

11.0 Emergency Response Plan

Reference CH2M HILL SOP HS-12, Emergency Response

11.1 Pre-Emergency Planning

SHSS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with the facility and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Locate the nearest telephone; determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Identify and communicate chemical, safety, radiological, and biological hazards.
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Post site map marked with locations of emergency equipment and supplies, and post OSHA job-site poster. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Evaluate capabilities of local response teams where applicable.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases.
- Review notification procedures for contacting CCI's medical consultant and team member's occupational physician.
- Rehearse the emergency response plan once before site activities begin, including driving the route to the hospital.

- Brief new workers on the emergency response plan.
- The SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

11.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and should post the map. Emergency equipment and its location are listed in Table 11-1.

TABLE 11-1
Emergency Equipment

Emergency Equipment and Supplies	Location
20-lb (or two 10-lb) fire extinguisher (A, B, and C classes)	In Field Vehicle
First aid kit	In Field Vehicle
Eye wash	In Field Vehicle
Potable water	In Field Vehicle
Bloodborne-pathogen kit	In Field Vehicle
Additional equipment (specify)	

11.3 Incident Reporting, Investigation and Response

Emergency medical treatment procedures are as follows:

- Notify appropriate emergency response authorities listed in Sections 10.9 and 10.11 (e.g., 911).
- During a time of no emergency, contact CCI's medical consultant for advice and guidance on medical treatment.
- The SHSS will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Notify the field team leader and the project manager of the injury.
- Make certain that the injured person is accompanied to the emergency room.

According to Southern Division, NAVFAC Incident Reporting requirements, all incidents involving personal injury, and property damage greater than \$1,000 incidents involving CCI or subcontractor project personnel must be reported to Southern Division, NAVFAC within

24 hours of incident occurrence. As such, the Site Manager must report the following incident information to the HSM immediately after incident occurrence:

- Date and time of mishap
- Project name and project number
- Name and worker classification
- Extent of known injuries
- Level of medical attention
- Injury cause

According to CCI requirements, all personal injuries, near-misses, or property damage incidents requiring involving CCI or subcontractor project personnel must be reported immediately to the HSM. An incident investigation shall be performed and submitted to the HSM within 24 hours of incident occurrence by the completing the Incident Report, Near Loss Investigation and Root Cause Analysis provided in Attachment 7.

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

11.4 Non-emergency Procedures

The procedures listed above may be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CCI medical consultant.

When contacting the medical consultant, state that the situation is a CCI matter, and give your name, your telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken. Follow these procedures as appropriate.

11.5 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Notify appropriate response personnel.
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

11.6 Evacuation

Evacuation procedures are as follows:

- Evacuation routes will be designated by the SHSS before work begins.
- Onsite and offsite assembly points will be designated before work begins.
- Personnel will leave the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.
- SHSS and a "buddy" will remain on the site after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- SHSS accounts for all personnel in the onsite assembly zone.
- A person designated by the SHSS before work begins will account for personnel at the offsite assembly area.
- The SHSS will write up the incident as soon as possible after it occurs and will submit a report to the corporate director of health and safety.

11.7 Evacuation Routes and Assembly Points

Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map posted at the site.

11.8 Evacuation Signals

Evacuation signals are listed in Table 11-2.

TABLE 11-2
Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency—help me
Thumbs up	OK; understood
Grasping buddy's wrist	Leave area now
Continuous sounding of horn	Emergency; leave site now

11.9 Emergency Response Telephone Numbers

Emergency response telephone numbers are listed in Table 11-3.

TABLE 11-3
Emergency Response Telephone Numbers

Site Address:	Phone: Cellular Phone:
Police: Base Security	Phone: 850-623-7431
Fire: NAS Whiting Field Fire Department	Phone: 850-623-7193
Ambulance: NAS Whiting Field Emergency Services	Phone: 850-623-7333
Hospital: Santa Rosa Medical Center	Phone: 850-626-7762
Address: 1450 Berryhill Road, Milton, Fl.	

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should connect the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activate 911.

Route to Hospital: From the Main Gate (West Gate) proceed west 1 mile (traffic light) to the intersection of State Highway 89 & 87 (Turn Left) travel approximately 3 miles to the division Highways 89 & 87 turn to the right on Highway 89 south and continue through the (first traffic light) intersection of Highway 89 and Willard Norris Road until the (second traffic light) intersection of Highway 89 and Berryhill Road (Turn Right) travel through the (first traffic light) intersection and the Hospital is on the right at the top of the hill.

A hospital location map is provided in Attachment 2.

11.10 Government Agencies Involved in Project

Federal Agency and Contact Name: Southern Division, NAVFAC

Contact the project manager. Generally, the project manager will contact relevant government agencies.

11.11 Emergency Contacts

If an incident occurs, notify the person's personnel office, the Navy RAC Program Manager, the Navy RAC Health and Safety Manager, and if neither is available contact the Southern Division, NAVFAC Field Safety Office, as soon as possible after obtaining medical attention for the injured person. Notification **MUST** be made within 24 hours of the incident. Notification is for injuries or property damage greater than \$1,000. Emergency contacts listed in Table 11-4.

TABLE 11-4
Emergency Contacts

<p>CCI Medical Consultant Dr. Jerry H. Berke, M.D., M.P.H. Health Resources 600 West Cummings Park, Suite 3400 Woburn, MA 01801-6350 1-781-938-4653 1-800-350-4511</p>	<p>SouthDiv Field Safety Contact: Mr. Fletcher Ballzigler; 843/820-5666 1st Alternate: Mr. David Driggers; 843/820-7466 2nd Alternate: Ms. Dolores Chester; 843/820-7462</p>
<p>CCI Drug-Free Workplace Program Administrator Alicia Sweeney/ORL 407/423-0001</p>	<p>Site Safety and Health Specialist (SHSS) TBD</p>
<p>Navy RAC Program Manager Scott Newman/ATL 770/604-9095; Cell phone: 678/488-5988</p>	<p>Project Manager Amy Twitty 850-939-8300 ext. 17 or 850-803-1533</p>
<p>Navy RAC Health and Safety Manager (HSM) Rich Rathnow/ORO 865/483-9005 ext. 572 Cell: 865/607-6734 Home 865/531-2933</p>	<p>Human Resources Manager Nancy Orr /DEN 303/771-0925</p>
<p>Client Eva Clements Naval Facilities Engineering Command Jim Holland, NAS Whiting Field, 850-623-7181, ext. 49</p>	<p>Corporate Human Resources Department Julie Zimmerman/COR 303/771-0900</p>
<p>Federal Express Dangerous Goods Shipping 800/238-5355 CH2M HILL Emergency Number for Shipping Dangerous Goods 800/255-3924</p>	<p>Worker's Compensation and Auto Claims Sterling Administrative Services 800/420-8926 After hours 800/497-4566 Report fatalities and vehicular accidents involving pedestrians, motorcycles, or more than two cars.</p>

Attachment 1

Employee Signoff Form

Attachment 2

Emergency Contacts

Emergency Contacts

24-hour CCI Emergency Beeper – 888/444-1226

Medical Emergency – 911

Facility Medical Response #:
Local Ambulance #: 850-623-7333

CH2M HILL- Medical Consultant

Dr. Peter Greaney
GMG WorkCare, Orange, CA
800/455-6155
(After hours calls will be returned within 20 minutes)

Fire/Spill Emergency – 911

Facility Fire Response #:
Local Fire Dept #: 850-623-7193

Local Occupational Physician

Security & Police – 911

Facility Security #:
Local Police #: 850-623-7431

NavyRac Program Manager

Name: Scott Newman/ATL
Phone: 770/604/9182

Utilities Emergency

Water:
Gas:
Electric:

CCI Health and Safety Manager (HSM)

Name: Rich Rathnow/ORO
Phone: 865/483-9005 ext. 572(Office);
865/607-6734(Cell)
865/531-2933 (Home)

Designated Safety Coordinator (SSC)

Name: Scott Dunbar
Phone: 678-427-2559

CCI Regional Human Resources Department

Name: Nancy Orr/COR
Phone: 303/771-0900

NavyRac Project Manager

Name: Amy Twitty
Phone: 850/939-8300

CH2M HILL Corporate Human Resources Department

Name: John Monark/COR
Phone: 303/771-0900

Federal Express Dangerous Goods Shipping

Phone: 800/238-5355

Emergency Number for Shipping Dangerous Goods

Phone: 800/255-3924

CH2M HILL Worker's Compensation and Auto Claims

Sterling Administration Services
Phone: 800/420-8926
After hours: 800/497-4566

Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

Facility Alarms:

Evacuation Assembly Area(s):

Facility/Site Evacuation Route(s):

Hospital Name/Address:

Hospital Phone #:

Directions to Hospital

From the Main Gate (West Gate) proceed west 1 mile (traffic light) to the intersection of State Highway 89 & 87 (Turn Left) travel approximately 3 miles to the division Highways 89 & 87 turn to the right on Highway 89 south and continue through the (first traffic light) intersection of Highway 89 and Willard Norris Road until the (second traffic light) intersection of Highway 89 and Berryhill Road (Turn Right) travel through the (first traffic light) intersection and the Hospital is on the right at the top of the hill.



Attachment 3

Activity Hazard Analysis Form

PRINT

SIGNATURE

Supervisor Name:

Date/Time:

Safety Officer Name:

Date/Time:

Employee Name(s):

Date/Time:

Attachment 4

Chemical-Specific Training Form

CCI CHEMICAL-SPECIFIC TRAINING FORM

Location:	NAS Pensacola	Project # :	
SSHS:		Trainer:	

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC will use the product MSDS to provide the following information concerning each of the products listed above.

- Physical and health hazards
- Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program will be made available for employee review in the facility/project hazard communication file.

Attachment 5

Project-Specific Chemical Product Hazard Communication Form

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SC will verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: NAS Pensacola

Project Number:

**MSDSs will be maintained
at the following
location(s):**

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard
Nitric acid	< 500 ml	Support Zone / sample bottles			
Methanol	< 1 Gallon	Support/Decon Zones			
Hexane	< 1 Gallon	Support/Decon Zones			
Alconox/Liquinox	< 1liter	Support/Decon Zones			

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 6

Material Safety Data Sheets

Alconox®

MATERIAL SAFETY DATA SHEET

Alconox, Inc.

9 East 40th Street, Suite 200

New York, NY 10016

I. IDENTIFICATION

Product Name (as appears on label)	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 1998
Chemical Family:	Anionic Powdered Detergent

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Melting Point:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.

IV. FIRE AND EXPLOSION DATA

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO ₂ , foam
Special Firefighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. REACTIVITY DATA

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO ₂ on burning

VI. HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs readminister fluids. See a physician for discomfort.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VIII. CONTROL MEASURES

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH BUT NO WARRANTY IS EXPRESSED OR IMPLIED.

ALDRICH CHEMICAL -- NITRIC ACID, 90% ACS REAGENT, 25812-1
MATERIAL SAFETY DATA SHEET
NSN: 681000N073464
Manufacturer's CAGE: 60928
Part No. Indicator: A
Part Number/Trade Name: NITRIC ACID, 90% ACS REAGENT, 25812-1

=====
General Information
=====

Company's Name: ALDRICH CHEMICAL CO INC
Company's P. O. Box: 355
Company's City: MILWAUKEE
Company's State: WI
Company's Country: US
Company's Zip Code: 53201
Company's Emerg Ph #: 414-273-3850
Company's Info Ph #: 414-273-3850
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 10MAY96
Safety Data Review Date: 01OCT96
MSDS Serial Number: CCRN

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: NITRIC ACID (SARA 302/313) (CERCLA)
Ingredient Sequence Number: 01
Percent: 90
NIOSH (RTECS) Number: QU5775000
CAS Number: 7697-37-2
OSHA PEL: 2 PPM
ACGIH TLV: 2 PPM/4 STEL

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: PALE-YELLOW LIQUID
Vapor Pressure (MM Hg/70 F): 6.6 @ 20C
Vapor Density (Air=1): 1.3
Specific Gravity: 1.490

=====
Fire and Explosion Hazard Data
=====

Flash Point: NONE
Extinguishing Media: NON-COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS. DO NOT USE WATER.
Special Fire Fighting Proc: WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). PREVENT CONTACT WITH SKIN AND EYES. REACTS VIOLENTLY WITH WATER.
Unusual Fire And Expl Hazrds: STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: BASES, REDUCING AGENTS, ALCOHOLS, ALKALI METALS, BRASS, COPPER, COPPER ALLOYS, GALVANIZED IRON, ALUMINUM. (SUP DAT)
Hazardous Decomp Products: TOXIC FUMES OF NITROGEN OXIDES.

Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

=====
Health Hazard Data
=====

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: MAY BE FATAL IF INHALED, SWALLOWED,
OR ABSORBED THROUGH SKIN. CAUSES BURNS. MATERIAL IS EXTREMELY DESTRUCTIVE
TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND
SKIN. INHALATION MAY BE FATAL AS A RESULT OF SPASM, INFLAMMATION AND EDEMA
OF THE LARYNX AND BRONCHI, CHEMICAL (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: HLTH HAZ: PNEUMONITIS AND PULMONARY EDEMA.
SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING,
LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES/SKIN: IMMED FLUSH W/COPIOUS AMOUNTS OF
WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAM CLOTHING & SHOES.
REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF
BREATHING IS DIFFICULT, GIVE OXYGEN. INGEST: WASH OUT MOUTH W/WATER
PROVIDED PERSON IS CONSCIOUS. CALL MD IMMED. DISCARD CONTAM CLTHG & SHOES.

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: WEAR NIOSH APPROVED SCBA, RUBBER BOOTS AND
HEAVY RUBBER GLOVES. ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED
CONTAINERS FOR DISPOSAL. VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL
PICKUP IS COMPLETE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: FOR SML QTYS: CAUTIOUSLY ADD TO LGE STIRRED EXCESS
OF WATER. ADJUST PH TO NEUT. SEPARATE ANY INSOL SOLIDS/LIQS & PACKAGE THEM
FOR HAZ WASTE DISP. FLUSH AQUEOUS SOLN DOWN DRAIN W/PLENTY OF WATER. THE
HYDROLYSIS & NEUT RXNS MAY GENERATE HEAT (SUP DAT)
Precautions-Handling/Storing: AVOID CONTACT AND INHALATION. AVOID
PROLONGED OR REPEATED EXPOSURE. POISON. CORROSIVE. DO NOT ALLOW CONTACT
WITH WATER.
Other Precautions: KEEP TIGHTLY CLOSED. DO NOT STORE NEAR, NOR ALLOW
CONTACT WITH, CLOTHING AND OTHER COMBUSTIBLE MATERIAL. REFRIGERATE.

=====
Control Measures
=====

Respiratory Protection: NIOSH APPROVED RESPIRATOR.
Ventilation: MECHANICAL EXHAUST REQUIRED.
Protective Gloves: WEAR HEAVY RUBBER GLOVES.
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS (SUP DAT)
Other Protective Equipment: EMERGENCY EYEWASH & DELUGE SHOWER MEETING ANSI
DESIGN CRITERIA (FP N). RUBBER APRON.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: MATLS TO AVOID: CORRODES STEEL. ORG MATLS,
AMINES. MAY DISCOLOR ON EXPOS TO LIGHT. REACTS VIOLENTLY W/WATER. WASTE
DISP METH: & FUMES WHICH CAN BE CONTROLLED BY RATE OF ADDN. OBSERVE ALL
FED, STATE & LOC ENVIRON REGS. EYE PROT: & FULL LENGTH FACESHIELD (FP N).

=====
Transportation Data
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Disposal Data
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=====
=====
Label Data
=====

Label Required: YES
Technical Review Date: 01OCT96
Label Date: 01OCT96
Label Status: G
Common Name: NITRIC ACID, 90% ACS REAGENT, 25812-1
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Severe: X
Fire Hazard-Slight: X
Reactivity Hazard-Moderate: X
Special Hazard Precautions: CORROSIVE. ACUTE: MAY BE FATAL IF INHALED,
SWALLOWED, OR ABSORBED THROUGH SKIN. CAUSES BURNS. MATERIAL IS EXTREMELY
DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT,
EYES AND SKIN. INHALATION MAY BE FATAL AS A RESULT OF SPASM, INFLAMMATION
AND EDEMA OF THE LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY
EDEMA. SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING,
WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.
CHRONIC: NONE SPECIFIED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ALDRICH CHEMICAL CO INC
Label P.O. Box: 355
Label City: MILWAUKEE
Label State: WI
Label Zip Code: 53201
Label Country: US
Label Emergency Number: 414-273-3850

ALDRICH CHEMICAL SUB OF SIGMA-ALDRICH -- 65550 METHANOL
MATERIAL SAFETY DATA SHEET
NSN: 681000F030311
Manufacturer's CAGE: 60928
Part No. Indicator: A
Part Number/Trade Name: 65550 METHANOL

=====
General Information
=====

Company's Name: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Company's Street: 1001 W ST PAUL AVE
Company's P. O. Box: 355
Company's City: MILWAUKEE
Company's State: WI
Company's Country: US
Company's Zip Code: 53233
Company's Emerg Ph #: 800-325-5832-S/800-231-8327-A
Company's Info Ph #: 800-325-5832-S/800-231-8327-A
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01APR92
Safety Data Review Date: 30SEP93
Preparer's Company: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Preparer's St Or P. O. Box: 1001 W ST PAUL AVE
Preparer's City: MILWAUKEE
Preparer's State: WI
Preparer's Zip Code: 53233
MSDS Serial Number: BRXZV

=====
Ingredients/Identity Information
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Proprietary: NO
Ingredient: METHANOL (METHYL ALCOHOL), COLUMBIAN SPIRITS
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S,200PPM/250STEL
ACGIH TLV: S,200PPM/250STEL; 93
Other Recommended Limit: 200 PPM

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Physical/Chemical Characteristics
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Appearance And Odor: COLORLESS LIQUID
Boiling Point: 64.6C
Melting Point: -98C
Vapor Pressure (MM Hg/70 F): 97.68
Vapor Density (Air=1): 1.1
Specific Gravity: 0.791

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Fire and Explosion Hazard Data
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Flash Point: 52F
Lower Explosive Limit: 6%
Upper Explosive Limit: 36%
Extinguishing Media: CO2, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS & FULL PROTECTIVE CLOTHING.
Unusual Fire And Expl Hazrds: VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO 725F.

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Reactivity Data
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Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS, OPEN FLAME OR OTHER SOURCES OF IGNITION.
Materials To Avoid: ACIDS, ACID CHLORIDES, ACID ANHYDRIDES, OXIDIZING/REDUCING AGENTS, ALKALI METALS.
Hazardous Decomp Products: CO, CO2
Hazardous Poly Occur: NO
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Health Hazard Data
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LD50-LC50 Mixture: ORAL LD50 (RAT): 5628 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR OR MIST IS IRRITATING TO THEY EYES, MUCOUS MEMBRANES, SKIN, & UPPER RESPIRATORY TRACT. CAN CAUSE DAMAGE TO THE EYES, LIVER, HEART, KIDNEYS. GASTROINTESTINAL DISTURBANCES & CONVULSIONS. MAY CAUSE BLINDNESS IF INGESTED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: OPTIC NERVE NEUROPATHY, VISUAL FIELD CHANGES, HEADACHE, DYSPNEA, NAUSEA, VOMITING.
Med Cond Aggravated By Exp: CUTS, SCRATCHES
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MINS WHILE REMOVING CONTAMINATED CLOTHING & SHOES. INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGESTION: WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. DISCARD CONTAMINATED CLOTHING & SHOES. OBTAIN MEDICAL ATTENTION IN ALL CASES.
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Precautions for Safe Handling and Use
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Steps If Matl Released/Spill: EVACUATE AREA. SHUT OFF ALL IGNITION SOURCES. USE PROTECTIVE EQUIP. COVER W/DRY-LIME, SAND OR SODA ASH. PLACE IN COVERED CONTAINERS USING NON-SPARKING TOOLS & TRANSPORT OUTDOORS. VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
Neutralizing Agent: DRY LIME, SAND OR SODA ASH
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL FEDERAL, STATE & LOCAL LAWS. UN1230.
Precautions-Handling/Storing: KEEP TIGHTLY CLOSED & AWAY FROM HEAT, SPARKS & OPEN FLAME. PRODUCT IS HYGROSCOPIC. STORE IN A COOL DRY PLACE. NO SMOKING. CANNOT BE MADE NON-POISONOUS
Other Precautions: AVOID CONTACT W/EYES, SKIN, CLOTHING & BREATHING OF VAPORS. DON'T USE IF SKIN IS CUT OR SCRATCHED.
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Control Measures
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Respiratory Protection: WEAR AN APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: MECHANICAL EXHAUST
Protective Gloves: CHEMICAL RESISTANT
Eye Protection: SAFETY GOGGLES
Other Protective Equipment: RUBBER BOOTS, SAFETY SHOWER, EYE BATH

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

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Transportation Data
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Disposal Data
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Label Data
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Label Required: YES
Technical Review Date: 30SEP93
Label Date: 17SEP93
Label Status: F
Common Name: 65550 METHANOL
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Severe: X
Fire Hazard-Severe: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED
OR ABSORBED THROUGH SKIN. VAPOR OR MIST IS IRRITATING TO THEY EYES, MUCOUS
MEMBRANES, SKIN, & UPPER RESPIRATORY TRACT. CAN CAUSE DAMAGE TO THE EYES,
LIVER, HEART, KIDNEYS. GASTROINTESTINAL DISTURBANCES & CONVULSIONS. MAY
CAUSE BLINDNESS IF INGESTED. TARGET ORGANS: EYES, SKIN, LIVER, HEART,
KIDNEYS, RESPIRATORY & DIGESTIVE TRACTS. DIGESTIVE TRACTS, LIVER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Label Street: 1001 W ST PAUL AVE
Label P.O. Box: 355
Label City: MILWAUKEE
Label State: WI
Label Zip Code: 53233
Label Country: US
Label Emergency Number: 800-325-5832-S/800-231-8327-A
Year Procured: UNK

ALDRICH CHEMICAL -- HEXANE ACS GRADE - N-HEXANE
MATERIAL SAFETY DATA SHEET
NSN: 681000N040300
Manufacturer's CAGE: 60928
Part No. Indicator: A
Part Number/Trade Name: HEXANE ACS GRADE

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General Information
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Item Name: N-HEXANE
Company's Name: ALDRICH CHEMICAL CO
Company's P. O. Box: 355
Company's City: MILWAUKEE
Company's State: WI
Company's Country: US
Company's Zip Code: 53201
Company's Emerg Ph #: 414-273-3850
Company's Info Ph #: 414-273-3850
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 04AUG92
Safety Data Review Date: 03MAR93
MSDS Serial Number: BRZJT
Hazard Characteristic Code: NK

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: HEXANE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: MN9275000
CAS Number: 110-54-3
OSHA PEL: 500 PPM
ACGIH TLV: 50 PPM; 9293

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 154F,68C
Vapor Pressure (MM Hg/70 F): 132@20C
Vapor Density (Air=1): 3
Specific Gravity: 0.661

=====
Fire and Explosion Hazard Data
=====

Flash Point: -10F,-23C
Lower Explosive Limit: 1.2%
Upper Explosive Limit: 7.7%
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.
Unusual Fire And Expl Hazrds: VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASH BACK. CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS. EXTREMELY FLAMMABLE.

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Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS AND OPEN FLAME.
Materials To Avoid: OXIDIZING AGENTS. CHLORINE, FLUORINE, MAGNESIUM PERCHLORATGE.
Hazardous Decomp Products: TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

=====
Health Hazard Data
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LD50-LC50 Mixture: LD50:(ORAL,RAT)28710 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THRU SKIN. VAPOR OR MIST IS IRRITATING TO EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. CAUSES SKIN IRRITATION. MAY CAUSE NERVOUS SYSTEM DISTURBANCES. EXPOSURE CAN CAUSE: COUGHING, CHEST PAINS, DIFFICULTY IN BREATHING. LUNG IRRIT, CHEST PAIN (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZ: & EDEMA WHICH MAY BE FATAL. GI DISTURBANCES, NAUSEA, HEADACHE AND VOMITING.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES: IMMED FLUSH W/COPIOUS AMTS OF WATER FOR @ LST 15 MIN & SEEK MED ADVICE. SKIN: IMMED FLUSH W/COPIOUS AMTS OF WATER FOR @ LST 15 MIN WHILE REMOVING CONTAMD CLTHG & SHOES. WASH CONTAMD CLTHG BEFORE REUSE. INHAL: REMOVE TO FRESH AIR. IF NOT BRTHG GIVE ARTF RESP. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGEST: WASH OUT MOUTH W/ WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.

=====
Precautions for Safe Handling and Use
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Steps If Matl Released/Spill: EVAC AREA. SHUT OFF ALL SOURCES OF IGNIT. WEAR NIOSH/MSHA APPRVD SCBA, RUBB BOOTS & HEAVY RUBB GLOVES. COVER W/AN ACTIVATED CARBON ABSORB, TAKE UP & PLACE IN CLSD CONTRS. TRANSPORT OUTDOORS. VENT AREA & WASH SPILL SITE AFTER MATL PICKUP IS COMPLETE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.
Precautions-Handling/Storing: KEEP TIGHTLY CLSD. STORE IN A COOL DRY PLACE. DO NOT BREATHE VAP. AVOID CONT W/EYES/SKIN/CLTHG. IRRITANT. HARMFUL VAP. NEUROLOGICAL HAZARD.
Other Precautions: KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.

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Control Measures
=====

Respiratory Protection: WEAR APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: USE ONLY IN A CHEMICAL FUME HOOD.
Protective Gloves: CHEMICAL-RESISTANT GLOVES.
Eye Protection: CHEMICAL SAFETY GOGGLES.
Other Protective Equipment: OTHER PROTECTIVE CLOTHING, SAFETY SHOWER AND EYE BATH.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

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Transportation Data
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Disposal Data
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Label Data
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Label Required: YES
Technical Review Date: 03MAR93
Label Date: 03MAR93
Label Status: G
Common Name: HEXANE ACS GRADE
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: STORE IN A COOL DRY PLACE. DO NOT BREATHE
VAPOR. AVOID CONTACT W/EYES/SKIN/CLTHG. IRRITANT. HARMFUL VAPOR.
HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THRU SKIN. VAPOR/MIST IS
IRRITATING TO EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. CAUSES
COUGHING, CHEST PAINS, DIFFICULTY IN BREATHING, LUNG IRRITATION, CHEST PAIN
& EDEMA WHICH MAY BE FATAL. GI DISTURBANCES, NAUSEA, HEADACHE AND VOMITING.
CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ALDRICH CHEMICAL CO
Label P.O. Box: 355
Label City: MILWAUKEE
Label State: WI
Label Zip Code: 53201
Label Country: US
Label Emergency Number: 414-273-3850

Attachment 7

Self-Assessment Checklists

HS&E Self-Assessment Checklist - EXCAVATIONS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

SC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____	Project No.: _____
Location: _____	PM: _____
Auditor: _____	Title: _____ Date: _____
This specific checklist has been completed to:	
<input type="checkbox"/> Evaluate CH2M HILL employee exposures to excavation hazards <input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements Subcontractor Name: _____	

- Check "Yes" if an assessment item is complete/correct.
 - Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
 - Check "N/A" if an item is not applicable.
 - Check "N/O" if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-32.

SECTION 1

Yes No N/A N/O

PERSONNEL SAFE WORK PRACTICES (4.1)

1. Competent person has completed daily inspection and has authorized entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Personnel aware of entry requirements established by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Protective systems are free from damage and in stable condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Surface objects/structures secured from falling into excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Potential hazardous atmospheres have been tested and found to be at safe levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Precautions have been taken to prevent cave-in from water accumulation in the excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Personnel wearing appropriate PPE, per HSP/FSI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION 2

Yes No N/A N/O

GENERAL (4.2.1)

8. Daily safety briefing/meeting conducted with personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Excavation and protective systems adequately inspected by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Defective protective systems or other unsafe conditions corrected before entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Guardrails provided on walkways over excavation 6' or deeper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Barriers provided at excavations 6' or deeper when not readily visible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Barriers or covers provided for wells, pits, shafts, or similar excavation 6' or deeper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Excavating equipment operated safely (use earthmoving equipment checklist in HS-27)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION 2

	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
PRIOR TO EXCAVATING (4.2.2)				
15. Location of underground utilities and installations identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Soils characterized prior to excavation where contamination may be present	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Excavation area checked for wetlands, endangered species, cultural/historic resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Stockpile construction and management plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. ECC consulted and plan established for wastewater disposal from excavation dewatering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. SWPPP prepared for construction site 1-5 acres (depending on project location)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATING ACTIVITIES (4.2.3)				
21. Rocks, trees, and other unstable surface objects removed or supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Exposed underground utility lines supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Undermined surface structures supported or determined to be in safe condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Warning system used to remind equipment operators of excavation edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Stockpile, excavation covers, liners, silt fences in place, where required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Fugitive dust suppressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATION ENTRY (4.2.4)				
27. Trenches > 4' deep provided with safe means of egress within 25'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Structure ramps designed and approved by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Potential hazardous atmospheres tested prior to entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Rescue equipment provided where potential for hazardous atmospheres exists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Ventilation used to control hazardous atmospheres and air tested frequently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Appropriate respiratory protection used when ventilation does not control hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Precautions taken to prevent cave-in from water accumulation in the excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Precautions taken to prevent surface water from entering excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Protection provided from falling/rolling material from excavation face	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Spoil piles, equipment, materials restrained or kept at least 2' from excavation edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATION PROTECTIVE SYSTEMS (4.2.5)				
37. Protective systems used for excavations 5' or deeper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Protective systems for excavation deeper than 20' designed by registered PE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. If soil unclassified, maximum allowable slope is 34 degrees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Protective systems free from damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Protective system used according to manufacturer recommendations and not subjected to loads exceeding design limits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Protective system components securely connected to prevent movement or failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Cave-in protection provided while entering/exiting shielding systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Personnel removed from shielding systems when installed, removed, or vertical movement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROTECTIVE SYSTEM REMOVAL (4.2.6)				
45. Protective system removal starts and progresses from excavation bottom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Protective systems removed slowly and cautiously	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Temporary structure supports used if failure of remaining components observed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Backfilling taking place immediately after protective system removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXCAVATING AT HAZARDOUS WASTE SITES (4.2.7)				
49. Waste disposed of according to HSP and RCRA regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Appropriate decontamination procedures being followed, per HSP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BACKFILL (4.2.8)				
51. Backfill certified clean when required by client or local regulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FORMS/PERMITS (4.3)				
52. Waste discharge/NPDES permit obtained for excavation de-watering, where required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Dig permit obtained, where required by client/facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. USDA soil permit obtained (for south/southeast and coastal states)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

H&S Self-Assessment Checklist - EARTHMOVING EQUIPMENT

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to hazards associated with earthmoving equipment operations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of a earthmoving equipment subcontractor is required (complete entire checklist).

SSC/DSC may consult with earthmoving equipment subcontractors when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____	Project No.: _____
Location: _____	PM: _____
Auditor: _____	Title: _____ Date: _____
This specific checklist has been completed to:	
<input type="checkbox"/> Evaluate CH2M HILL employee exposures to earthmoving equipment hazards <input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with earthmoving equipment H&S requirements Subcontractors Name: _____	

- Check "Yes" if an assessment item is complete/correct.
 - Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the earthmoving equipment subcontractor. Section 3 must be completed for all items checked "No."
 - Check "N/A" if an item is not applicable.
 - Check "N/O" if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-27.

SECTION 1

Yes No N/A N/O

PERSONNEL SAFE WORK PRACTICES (3.1)

1. Only authorized personnel operating earthmoving equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Personnel maintaining safe distance from operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Personnel and equipment operator in close communication when personnel must be in proximity of operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Personnel approach operating equipment safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Personnel wearing high-visibility and/or reflective vests when close to operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Personnel riding only in seats of equipment cab and using seat belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Personnel not positioned under hoisted loads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Personnel not hoisted by equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Personnel instructed not to approach equipment that has become electrically energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Personnel wearing appropriate PPE, per HSP/FSI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION 2

Yes No N/A N/O

GENERAL (3.2.1)

- 11. Daily safety briefing/meeting conducted with crew Yes No N/A N/O
- 12. Daily inspection of equipment and equipment accessories conducted before use Yes No N/A N/O
- 13. At least one fire extinguisher available at the equipment operating area Yes No N/A N/O

EARTHMOVING EQUIPMENT COMPONENTS (3.2.2)

- 14. Backup alarm or spotter used when backing equipment Yes No N/A N/O
- 15. Operational horn provided on bi-directional equipment Yes No N/A N/O
- 16. Seat belts are provided and used Yes No N/A N/O
- 17. Rollover protective structures (ROPS) provided Yes No N/A N/O
- 18. Braking system capable of stopping full payload Yes No N/A N/O
- 19. Headlights and taillights operable when additional light required Yes No N/A N/O
- 20. Brake lights in operable condition Yes No N/A N/O
- 21. Cab glass provides no visible distortion to the operator Yes No N/A N/O
- 22. Hauling equipment (dump trucks) provided with cab shield or canopy Yes No N/A N/O
- 23. Dump truck beds provided with positive means of support during maintenance or inspection Yes No N/A N/O
- 24. Dump truck operating levers provided with latch to prevent accidental dumping Yes No N/A N/O

EARTHMOVING EQUIPMENT PLACEMENT (3.2.3)

- 25. Location of underground utilities identified Yes No N/A N/O
- 26. Safe clearance distance maintained while working under overhead powerlines Yes No N/A N/O
- 27. Safe distance is maintained while traveling under powerlines Yes No N/A N/O
- 28. Unattended equipment visibly marked at night Yes No N/A N/O
- 29. Parking brake set when equipment parked and equipment chocked when parked on incline Yes No N/A N/O

EARTHMOVING EQUIPMENT OPERATION (3.2.4)

- 30. Equipment operated on safe roadways and grades Yes No N/A N/O
- 31. Equipment operated at safe speed Yes No N/A N/O
- 32. Equipment not operated during inclement weather, lightning storms Yes No N/A N/O
- 33. Using equipment to lift loads, other than earth, done according to equipment manufacturer specifications Yes No N/A N/O
- 34. Lifting and hauling capacities are not exceeded Yes No N/A N/O
- 35. Equipment components lowered when not in use Yes No N/A N/O
- 36. All machine guards are in place Yes No N/A N/O
- 37. Air monitoring conducted per HSP/FSI for hazardous atmospheres Yes No N/A N/O

EARTHMOVING EQUIPMENT MAINTENANCE (3.2.5)

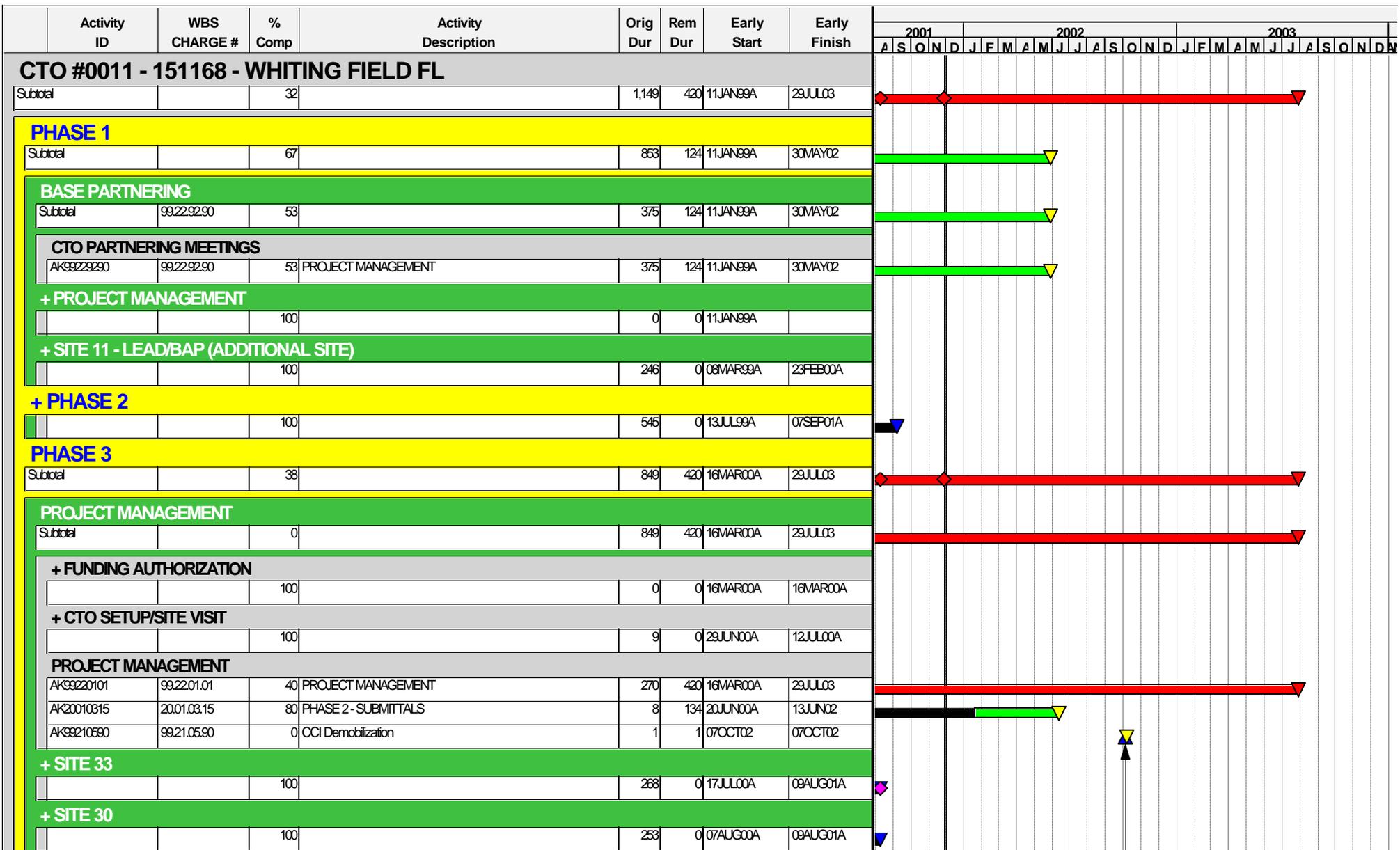
- 38. Defective components repaired immediately Yes No N/A N/O
- 39. Suspended equipment or equipment parts are supported prior to work under or between Yes No N/A N/O
- 40. Lockout/tagout procedures used prior to maintenance Yes No N/A N/O
- 41. Tires on split rims removed using safety tire rack or cage Yes No N/A N/O
- 42. Good housekeeping maintained on and around equipment Yes No N/A N/O

EXCAVATING AT HAZARDOUS WASTE SITES (3.2.6)

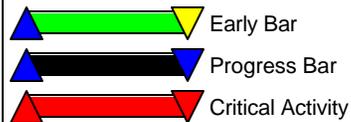
- 43. Waste disposed of according to HSP Yes No N/A N/O
- 44. Appropriate decontamination procedures being followed, per HSP Yes No N/A N/O

Appendix B

Project Schedule



Start Date 28AUG99
 Finish Date 29JUL03
 Data Date 30NOV01
 Run Date 03DEC01 11:08



NFAC - C011

Sheet 1 of 5

CTO #0011 - NAS, Whiting Field, FL
CTO COMPLETION SCHEDULE
NAVY RAC SOUTHERN DIVISION



Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	2001												2002												2003											
								A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D							
SITE 16 SAMPLING																																											
Subtotal		73		259	69	01MAR01A	13MAR02																																				
MOBILIZATION & PREPARATORY WORK																																											
AK16010303	16.01.03.01	100	Sampling & Analysis Plan	1	0	16APR01A	16APR01A																																				
AK16010313	16.01.03.13	98	IRA WORK PLAN	59	4	28SEP01A	03DEC01																																				
AK16010292	16.01.02.92	0	Subcontractor Mobilization	1	1	14JAN02	14JAN02																																				
AK16221209	16.22.12.09	0	Subcontractor Bonds	1	1	14JAN02	14JAN02																																				
AK99160290	99.01.02.90	0	CTO Kick-Off Meeting	1	1	14JAN02	14JAN02																																				
AK99160291	99.01.02.91	0	CCI Mobilization	1	1	14JAN02	14JAN02																																				
AK99160292	99.01.04.01	0	Initiate Job-Site Presence	2	2	15JAN02	16JAN02																																				
ENGINEERING, SURVEY & QC																																											
AK16220410	16.22.04.10	0	Surveying(As-Builts)	8	8	17JAN02*	23JAN02																																				
EXCAVATION																																											
AK16080191	16.08.01.91	0	Excavation of Contaminated Soil	8	8	16JAN02	28JAN02																																				
SAMPLING & ANALYSIS																																											
AK16020690	16.02.06.90	100	Survey Sample Grids	1	0	01MAR01A	01MAR01A																																				
AK16010301	16.01.03.01	100	SAMPLING & ANALYSIS	5	0	06AUG01A	09AUG01A																																				
AK16020602	16.02.06.02	100	DELINEATION SAMPLING	1	0	07AUG01A	07AUG01A																																				
AK16021490	16.02.14.90	100	INDEPENDENT DATA VAL	42	0	14SEP01A	30SEP01A																																				
AK16021491	16.02.14.91	100	Data Evaluation & Management	42	0	14SEP01A	30SEP01A																																				
AK16020903	16.02.09.03	0	Confirmatory Analysis	2	2	17JAN02*	18JAN02																																				
AK16020905	16.02.09.05	0	Hazardous Waste (RCRA) Analysis	2	2	17JAN02	18JAN02																																				
TRANSPORTATION AND DISPOSAL																																											
AK16192291	16.19.22.91	0	Disposal, Subtitle D	2	2	29JAN02	30JAN02																																				
SITE RESTORATION																																											
AK16200193	16.20.01.93	0	Backfill with Off-Site Material	7	7	29JAN02	06FEB02																																				
AK16200194	16.20.01.94	0	Backfill with On-Site Material	7	7	29JAN02	06FEB02																																				
AK16200390	16.20.03.90	0	Site Restoration	5	5	07FEB02	13FEB02																																				
POST CONSTRUCTION																																											
AK16210603	16.21.06.03	100	DELINEATION TECHNICA	22	0	30AUG01A	01OCT01A																																				
AK16210691	16.21.06.91	0	Subcontractor Demobilization	1	1	14FEB02	14FEB02																																				
AK99240690	99.21.06.90	0	CCI Demobilization	1	1	14FEB02	14FEB02																																				
AK16210607	16.21.06.07	0	IRA Completion Report	10	10	28FEB02	13MAR02																																				
SITE 6																																											
Subtotal		22		198	73	01JUN01A	19MAR02																																				
MOBILIZATION & PREPARATORY WORK																																											
AK06010301		100	SAMPLING & ANALYSIS	1	0	01JUN01A	02JUN01A																																				
AK35010301	35.01.03.01	100	SAMPLING & ANALYSIS	2	0	01JUN01A	02JUN01A																																				
AK35010313	35.01.03.13	0	IRA WORK PLAN	33	4	01OCT01A	03DEC01																																				
AK99020290	99.01.02.90	0	CTO Kick-Off Meeting	1	1	14JAN02	14JAN02																																				

Appendix C

Quality Control Attachments

- Submittal Register
- Testing Plan and Log
- Project QC Manager Appointing Letter



CH2M HILL
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA
30346-1278
Tel 770.604.9095
Fax 770.604.9282

November 29, 2001

Mr. Ryan Bitely
CH2M HILL
1766 Sea Lark Lane
Navarre, FL 32566-7472

RE: Contract No. N62467-98-D-0995
Contract Task Order No. 0011 – Naval Air Station (NAS) Whiting Field – Milton, Florida
Project Quality Control Manager Letter of Appointment

Dear Mr. Bitely:

This describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager on the NAS Whiting Field site, Contract Task Order (CTO) 0011 under the Navy RAC Contract # N62467-98-D-0995.

In this position, you assist and represent the Program QC Manager in continued implementation and enforcement of the Project QC Plans. Your primary role is to ensure all requirements of the contract are met. Consistent with this responsibility, you will: (i) implement the QC program as described in the Navy RAC contract; (ii) manage the site-specific QC requirements in accordance with the Project QC Plans; (iii) attend the coordination and mutual understanding meeting; (iv) conduct QC meetings; (v) oversee implementation of the three phases of control; (vi) perform submittal review and approval; (vii) ensure testing is performed; (viii) prepare QC certifications and documentation required in the Navy RAC Contract; and, (ix) furnish a Completion Certificate to the Contracting Officer or designated representative, upon completion of work under a contract task order, attesting that “the work has been completed, inspected, and tested, and is in compliance with the contract.”

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved. You have the authority to direct the correction of non-conforming work. All work requiring corrective action will be documented on daily reports, and, in the event non-conforming work is not immediately corrected you are required to submit a non-conformance report to the PM and copy the Program QC Manager. A status log will be kept of all non-conforming work. You shall immediately notify the Program QC Manager in the event of any stop work order.

It is imperative that you comply with all terms of the basic contract. In particular, Section C, Paragraph 6.5.2, which states:

"No work or testing may be performed unless the QC Program Manager or Project QC Manager is on the work site."

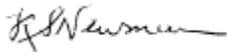
In the event that you are not able to be at the work site when work or testing is to be performed, it is your responsibility to inform the Program QC Manager and Project Manager, in advance, so that other arrangements can be made.

Further, if you are requested to perform the duties of the Site Supervisor, it is your responsibility to inform the Program QC Manager so that approval can be obtained in advance from the Contracting Officer or designated representative, in accordance with Section C Paragraph.6.2.1of the contract.

You a key member of the Project Manager's team and ensure that work meets the specific requirements and intent of the work plan, the Navy's scope of work and the basic contract. Should you have any questions regarding this role, you should immediately contact the Program QC Manager, Theresa Rojas. Your day-to-day activities on the site will be under the direction of the Site Supervisor or Project Manager. In event of any deficient items, the Superintendent and Project Manager should be advised immediately so they have opportunity to remedy the situation.

Sincerely,

CH2M HILL Constructors, Inc.



R. Scott Newman
Program Manager

cc: Amy Twitty/ATL
Theresa Rojas/ATL
CCI Project File No. 151168