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WORK PLAN FOR TASK-SPECIFIC SITE SAFETY AND HEALTH PLAN FOR INTERIM
MEASURES CLEANUP SOLID WASTE MANAGEMENT UNITS 23/00M 25/07D AND 26/08D
NSWC CRANE IN
8/25/1995
MORRISON KNUDSEN CORPORATION

WORK PLAN
AND
TASK-SPECIFIC SITE SAFETY AND HEALTH PLAN
FOR
INTERIM MEASURES CLEANUP
AT
SOLID WASTE MANAGEMENT UNITS
#23/00, #25/07D, and #26/08D

NSWC CRANE
Crane, Indiana

CONTRACT #N62467-93-D-1106
DELIVERY ORDER #0009
STATEMENT OF WORK #007

August 25, 1995
Revision B

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**WORK PLAN
FOR
INTERIM MEASURES CLEANUP
AT
SOLID WASTE MANAGEMENT UNITS
#23/00, #25/07D, and #26/08D**

NSWC CRANE
Crane, Indiana

REVISION B
AUGUST 25, 1995

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12

NAVAL SURFACE WARFARE CENTER
CRANE WORK PLAN

SOLID WASTE MANAGEMENT UNITS
#23/00, #25/07D, AND #26/08D

NSWC CRANE
CRANE, INDIANA

August 25, 1995
Revision B

CONTRACT N62467-93-D-1106
DELIVERY ORDER #0009
STATEMENT OF WORK #0007

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CRANE WORK PLAN

for
**Solid Waste Management Units
#23/00, #25/07D and #26/08D**

**NSWC CRANE
Crane, Indiana**

**Contract No. N62467-93-D-1106
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1.0 INTRODUCTION

The Naval Surface Warfare Center (NSWC) Crane is located in southwestern Indiana, as shown in Figure 1-1, and provides support for equipment, shipboard weapons systems, and ordnance. In addition, NSWC supports the Crane Army Ammunition Activity (CAAA) including production and renovation of conventional ammunition, storage, shipment, and demilitarization and disposal of conventional ammunition.

This Work Plan has been prepared by Morrison Knudsen (MK) for the Naval Facilities Engineering Command (NAVFACENGCOM), Southern Division pursuant to the scope of work defined in Delivery Order #0009, under Contract #N62467-93-D-1106. This Work Plan describes the methods to be used to perform interim measures cleanup activities required at three Solid Waste Management Units (SWMUs): Battery Shop (SWMU #23/00), Highway 58 Dump Site A (SWMU #25/07D), and Highway 58 Dump Site B (SWMU #26/08D).

The Battery Shop is located in north-central NSWC Crane. Each year from 1940 to 1975 about 2,000 gallons of battery acid were discharged onto a bank behind the Battery Shop, Building B-36. Miscellaneous debris and waste oils containing lead, sulfates, and oily water were also discharged in the same area (NEESA 1983). This dump area north of B-36, shown in Figure 1-2, is rugged and wooded, and much of the debris is on steep slopes. Rock formations protrude from the slopes, causing sudden elevation changes of 12 to 14 feet. The dump site is accessible only on foot. The dump area is discontinuous, with debris unevenly scattered throughout the site. The debris generally consists of construction debris such as large sections of preformed concrete slabs, 55-gallon drums, cans, oil filters, and tires. Fallen leaves and brush may cover much of the debris. A small stream flows through the ravine.

Highway 58 Dump Site A is located west of the NSWC Crane Salvage Yard, across the road from Building 2167 near the guardrail. The site is shown in Figure 1-3. Disposal was apparently along the hillside. An intermittent stream is located at the base of the hill. Access to the site is via H-58 above or a trail below. The disposal areas are located on the slopes between the road and the trail. The debris may consist of paper, cardboard containers, paints, thinners, lubrication and hydraulic fluids, scrap metal, concrete block, and pipe. Fallen leaves and brush may cover much of the debris. Drums containing unknown materials may be present. Additionally, the soil on the bank and the creek bed may be contaminated (MK 1994). The dump area is discontinuous, with debris unevenly scattered throughout the site. Two primary dump areas are noted on Figure 1-3. The larger site is approximately 39 feet by 150 feet. The smaller area to the southeast contains primarily transite (asbestos) tiles and is approximately 25 feet by 10 feet (Brent 1994).

Highway 58 Dump Site B is located east of the NSWC Salvage Yard as shown in Figure 1-4. The dump site is at the bottom of a stone cliff. The debris may consist of

paper, cardboard containers, paints, thinners, lubrication and hydraulic fluids, scrap metal, containers and drums, and corrugated pipe. The soil at the base of the hill may be contaminated (MK 1994). The debris is confined primarily within the area indicated on Figure 1-4, mostly continuous, and covers an area approximately 160 feet by 43 feet. The site is accessible off Highway 58 by a gravel lane off which extends down to the bottom of the cliff structure (Brent 1994).

1.1 OBJECTIVES

MK's goal is to cost-effectively and efficiently execute the work in accordance with the Delivery Order requirements, while meeting or exceeding all site-specific, local, state, and federal requirements. The primary work objectives are to:

- Perform all work in a manner that maximizes worker safety and minimizes environmental impacts.
- Remove debris at the Battery Shop, dispose of the debris and any incidental soil excavated with the debris either on site or off site (depending on contaminant concentrations), and backfill the excavated areas to original grade.
- Remove debris at Dump Sites A and B, dispose of the debris and any incidental soil excavated with the debris either on site or off site (depending upon contaminant concentrations), and backfill the excavated areas to original grade.

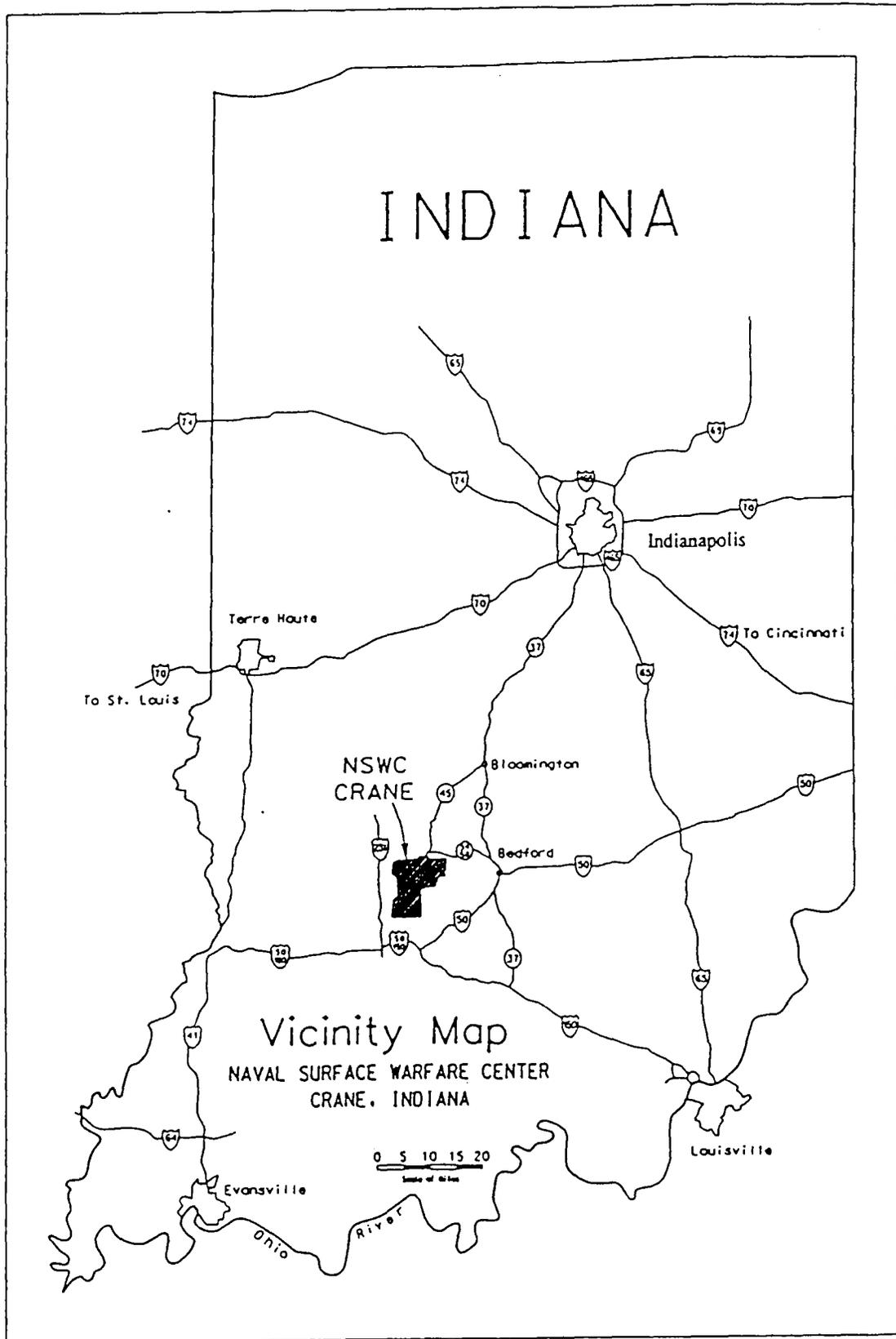


Figure 1-1
Vicinity Map of NSWCR Crane, Indiana

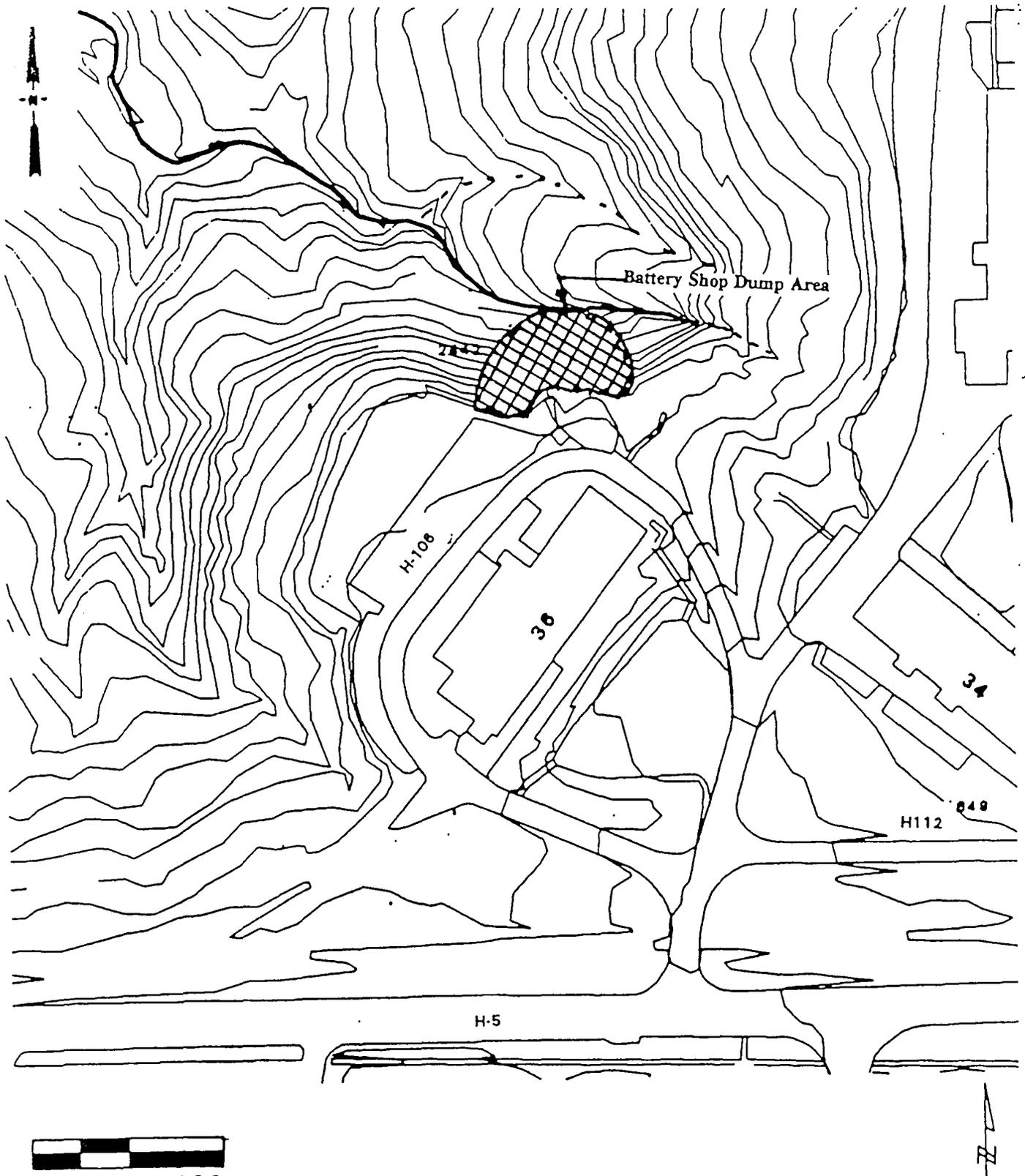


Figure 1-2
 SWMU #23/00 Battery Shop Debris Removal Area

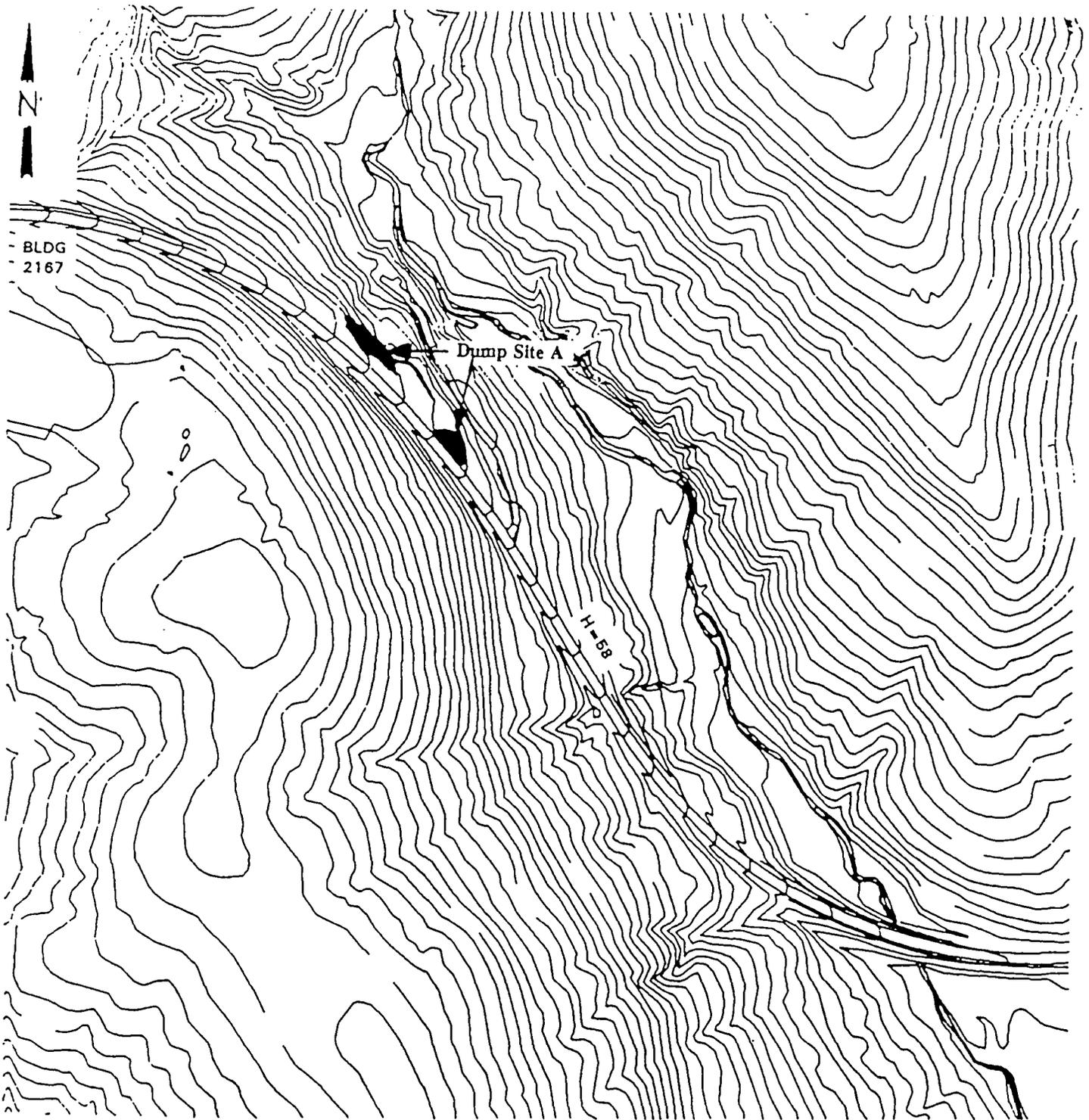


Figure 1-3
SWMU #25/07D Highway 58 Dump Site A Debris Removal Area

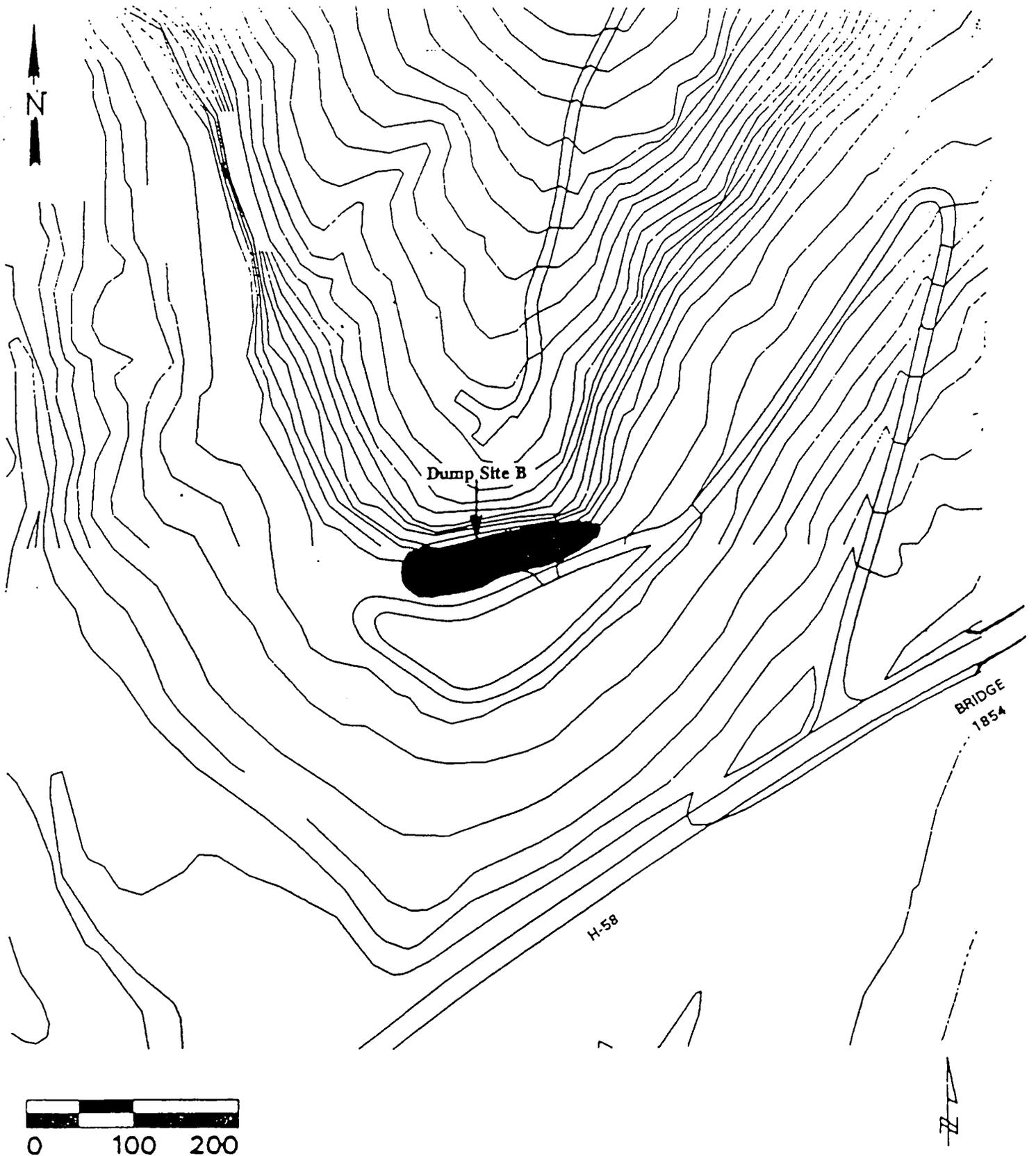


Figure 1-4
SWMU #26/08D Highway 58 Dump Site B Debris Removal Area

2.0 ENVIRONMENTAL COMPLIANCE

Promulgation of the Environmental Protection Agency's (EPA's) regulatory program under the Resource Conservation and Recovery Act (RCRA) provided the impetus to identify and control environmental contamination from past practices at NSWC Crane. On December 23, 1989 the EPA issued the federal portion of the final RCRA permit for NSWC Crane to the U.S. Navy. This permit established the Hazardous and Solid Waste Amendment (HSWA) Corrective Action Requirements and Compliance Schedules obligating the U.S. Navy to perform a RCRA Facility Investigation (RFI) at 30 SWMUs, to conduct Corrective Measures Studies, and to implement corrective measures if needed.

2.1 REGULATORY COMPLIANCE

The following regulations, guidance, and procedures may affect the work at SWMUs #23/00, #25/07D, and #26/08D.

- U.S. Navy or NSWC Crane guidance
- U.S. Occupational Safety and Health Administration
29 CFR 1910, Occupational Safety and Health Standards
29 CFR 1926, Safety and Health Regulations for Construction
- U.S. Army Corps of Engineers
EM-385-1-1, Safety and Health Manual
- U.S. Environmental Protection Agency
40 CFR 261, Identification and Listing of Hazardous Waste. Compliance will be required to characterize the waste.

40 CFR 262, Regulations for Hazardous Waste Generators. Compliance may be required with Subpart C for accumulation, packaging, labeling, marking, and placarding requirements and with Subpart B for manifest requirements.

40 CFR 264, Regulations for Owners and Operators of Permitted Hazardous Waste Facilities. Compliance with the following Subpart may be required:

Subpart I, Use and Management of Containers. Compliance with this subpart may be required for management of all hazardous waste containers.

40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. Compliance will be required for any PCB-contaminated soils and capacitors. In particular, Subpart C, Marking, and Subpart D, Storage and Disposal, must be followed in handling the PCB soils and capacitors.

Indiana Department of Environmental Management

329 IAC 3.1-6, Identification and Listing of Hazardous Waste. This regulation incorporates by reference the federal regulations with a few additions.

329 IAC 3.1-7, Standards Applicable to Generators of Hazardous Waste. This regulation incorporates by reference the federal regulations with a few changes and additions.

329 IAC 3.1-9, Final Permit Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities. This regulation incorporates by reference the federal regulations with a few changes and additions.

U. S. Department of Transportation

49 CFR 172, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements. This part describes requirements for completing shipping papers; marking, labeling, and placarding; training; and emergency response.

49 CFR 173, General Requirements for Shipments and Packaging. This part describes classification and packaging of hazardous materials.

All waste products from the activities in this Work Plan will be disposed of as described in the Waste Management Plan (WMP) in compliance with federal and state hazardous waste regulations. The state regulations incorporate the federal regulations with few exceptions; however, particular attention should be paid to the state manifesting requirements.

Transite is exempt from the Indiana Special Waste regulations (329 IAC 2-21-5[a][2]) and can be managed as solid wastes and shall include a statement of "clearance for safe access" based on the removal or absence of unexploded ordnance in the work zone.

Off-site transportation of any hazardous waste or material requires compliance with the DOT hazardous material transportation rules. The particular requirements are listed in the WMP. The Site Shipping Officer (SSO) will coordinate the shipping effort. MK will not sign any manifests.

All excavations must comply with the NSWC Crane site requirements. MK subcontractors will notify MK, and MK will in turn notify the NSWC Crane Site Representative of all construction activities, as outlined in Section 2.2.

2.2 PERMITS, APPROVALS, AND NOTIFICATIONS

Several permits, approvals, and notifications will be required for implementing the Work Plan interim measures cleanup activities and are summarized in the following sections.

2.2.1 Construction Permits

The NSWC Crane facility requires issuance of construction permits before construction initiation. An Excavation and Trenching Permit will be required for each area. In addition, if any dredging or filling is required in the creek or in a wetlands area, the Army Corps of Engineers should be notified to determine if a permit is required. Also, any activity in the creek must not cause water quality standards for that creek to be exceeded. If activities in the stream could degrade water quality, the Indiana Department of Environmental Management should be contacted. The MK Project Manager (PM) will be responsible for obtaining this permit through the Public Works Department, Building 2516. Preparation of the application and associated drawings should be started as soon as possible to allow time for review and approval.

2.2.2 Notifications

All federal, state, and local agency notifications will be performed by the NSWC Crane Site Representative. All MK subcontractors will notify the PM, and the PM will in turn notify the NSWC Crane Environmental Protection Department of all interim measures cleanup activities. These notifications include, but are not limited to:

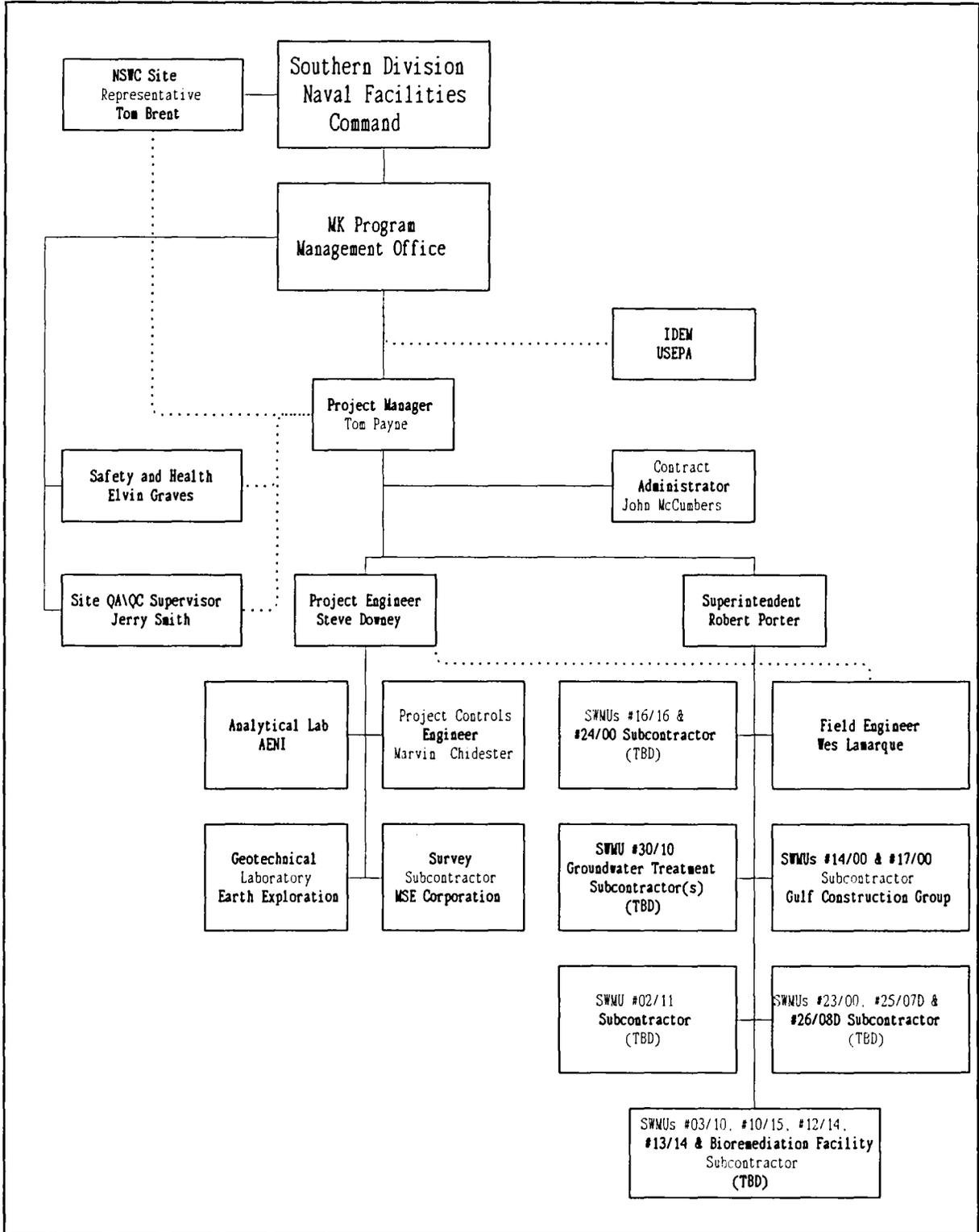
- Clearing and grubbing.
- Trenching and excavation.
- Backfilling and compaction.
- Storage and handling of hazardous materials.
- Inspection, manifesting, and shipping of hazardous materials.
- Construction activities.

During interim measures cleanup activities, as described in this Work Plan, emergency notifications will be required in case of fire, explosion, or spills. Notifications shall be made according to the Emergency Response Plan as described in the Task-Specific Site Safety and Health Plan (SSHP) for this Work Plan.

3.0 PROJECT ORGANIZATION

The project team organization for this Delivery Order is shown in Figure 3-1. The responsibilities of each team member are listed in Table 3-1.

The team is structured to provide the maximum flexibility and efficiency in the execution of this Delivery Order. This flexibility and efficiency will facilitate changes that may occur in the related scope of work.



**Figure 3-1
Organization Chart**

**Table 3-1
Project Responsibilities**

| TEAM MEMBERS | RESPONSIBILITIES |
|------------------------------------|--|
| NAVFACENGCOM Southern Division | Overview of project execution and coordination between Contractor, NSWC Crane, and other agencies. |
| Program Management Office (PMO) | Overall responsibility for all cleanup measures at all sites in the Southern Division of the Naval Facilities Engineering Command under Contract No. N62467-93-D-1106. The PMO is the point of contact for NAVFACENGCOM. |
| NSWC Site Representative | NAVFAC's on-site representative and is the liaison between NSWC officials and the Project Manager for the SWMUs at NSWC Crane. |
| Project Manager (PM) | <p>Overall responsibility for implementing this Work Plan and all other project activities. The PM will control all on-site forces to ensure completion of project tasks.</p> <ul style="list-style-type: none"> · Single point of contact for NAVFACENGCOM liaison. · Coordinates the project resources to ensure compliance with the appropriate plans, procedures, and regulatory requirements, · Oversees all personnel on-site and coordinates with the Program Management Office (PMO). |
| Project Engineer (PE) | <p>Reports to the PM and will act as the Assistant Project Manager. Specific responsibilities include:</p> <ul style="list-style-type: none"> · Supervises the activities of the project field staff (regulatory specialists, geologists, field engineers, etc.). · Coordinates with the Site Superintendent to ensure that activities are properly coordinated between subcontractors. · Coordinates the activities of the support staff and provides project status reports to the PM. · Maintains project records and prepares technical scopes of work for subcontractors. · Directs the efforts of technical subcontractors (i.e., surveying, sampling and testing). |
| Cost and Schedule Engineer | <p>Reports to the PE and has primary responsibility for the maintenance of the cost and schedule control systems, including regular assessments of performance.</p> <ul style="list-style-type: none"> · Provides administrative support services. · Evaluates cost and schedule information and provides status reports. · Prepares monthly progress reports. · Reviews cost/schedule submissions by subcontractors. · Verifies progress against payment requests. · Maintains the document control system. · Maintains contract change notice log and trend logs. |
| Contract Administrator | <p>Provides administrative support to the technical staff for contractual and procurement activities.</p> <ul style="list-style-type: none"> · Prepares subcontract bid packages. · Issues and provides support in the administration of subcontracts. · Monitors SB/SDB compliance. · Monitors purchase orders. |

**Table 3-1
Project Responsibilities**

| TEAM MEMBERS | RESPONSIBILITIES |
|--|--|
| <p>Site Safety and Health Officer (SSHO)</p> | <p>Reports to the PMO. Implements and ensures compliance with the Task-Specific Site Safety and Health Plan (SSHP). Tracks and reports on safety-related matters.</p> <ul style="list-style-type: none"> • Responsible for the control and elimination of existing and potential industrial hazards. • Implements and executes personnel monitoring program to ensure proper monitoring of internal and external exposures. • Provides site-specific training to personnel as required by the SSHP. • Tracks all personnel training requirements, survey data, certifications, and records to ensure compliance with plans and regulations. • Assists in developing and implementing the SSHP. • Reviews and approves subcontractor Safety and Health Plans and Programs. Conducts audits as appropriate to ensure compliance. • Reviews and approves work permits for appropriate industrial hygiene and safety controls. • Provides monitoring to ensure the protection of project personnel, the public, and the environment, • Maintains an inventory of industrial hygiene and safety supplies as appropriate. • Maintains monitoring equipment and calibration records. • Stops work when necessary to ensure the safety of personnel and to prevent damage to the environment. |
| <p>Site Superintendent</p> | <p>Reports to the PM and has primary responsibility for the coordination and control of all field activities to ensure that all tasks included in this Work Plan are completed.</p> <ul style="list-style-type: none"> • Coordinates the activities of all subcontractors. Directs all subcontractors together with the PE. • Provides daily reports to the PM and PE on the status of field activities. |
| <p>Site Quality Control Officer (SQCO)</p> | <p>Reports to the PMO and has primary responsibility for verifying a consistently high level of quality for the project.</p> <ul style="list-style-type: none"> • Reviews and checks all documents, reports, and testing results. • Coordinates with procurement, engineering, and cost/schedule departments. • Observes all field activities to ensure compliance with this Work Plan and the QAPP and completes Field Inspection Checklists (Appendix A). • Keeps minutes of the periodic quality meetings. • Implements the three phases of quality control: Preparatory, Initial, and Follow-up inspections. • Ensures tracking and resolution of nonconformance/rework items. |

Note: See Section 3 of the Task-Specific Site Safety and Health Plan for names and contact.

4.0 PROJECT EXECUTION

This section details the work for the three SWMUs covered by this Work Plan. Unexploded Ordnance (UXO) clearances, excavation permits, hot work permits, and other required approvals will be obtained before performance of any field work beyond visual survey and walk arounds. All activities will also be coordinated with operations activities near the work areas. These clearances, permits, and approvals will be obtained from the NSWC Site Representative.

4.1 SWMU #23/00 - BATTERY SHOP

4.1.1 Work Scope

The scope of work includes excavating, identifying, transporting, and disposing of debris; stockpiling, sampling, and disposing of contaminated soils removed incidental to the debris; and backfilling and restoring the excavated area. Figure 1-2 shows the general layout of the site.

4.1.2 Site Assessment

The NSWC Crane Site Representative will determine if a UXO survey is necessary. If the potential exists for encountering explosive ordnance in the work area, NSWC Crane will perform a surface UXO survey to identify and remove any unexploded ordnance. The area will be surveyed and located in relationship to existing monuments. Data will also be collected to create a topographical map of the site and to verify the quantities of material to be excavated. Permits will be obtained for all site activities and mobilization will begin. Preliminary information indicates that 50 cubic yards of contaminated debris is expected to be excavated and removed.

4.1.3 Mobilization

The first step in mobilization will be to define the work area configuration. The work area configuration is composed of the Exclusion Zone (EZ) boundary, the Contamination Reduction Zone (CRZ) with appropriate decontamination stations, the Support Zone (SZ), and access routes. After the work area configuration is defined, the work zones and access routes will be established. Tools, equipment, and supplies will be delivered to the site and the personnel mobilized.

The subcontractor will steam clean and inspect all equipment before shipment to the site. The contractor will inspect the equipment for the presence of dirt, oils, and grease. The general condition of the equipment will be inspected and tested to ensure that all safety systems and alarms are functional. The

performance of the equipment will be tested to determine if the equipment can perform the required tasks.

Storm water and erosion control measures will be implemented as necessary to control storm water runoff and to prevent erosion. These measures are explained further in the Environmental Protection Plan.

4.1.4 Removal of Debris

After the construction permits have been obtained, including the Excavation and Trenching Permit, preliminary screening of debris will be performed before starting cleanup. Preliminary screening will consist of visually inspecting the entire area; inventorying drums, containers, and other debris; screening sampling if necessary; and sorting debris. Screened items will be removed and placed in a bermed storage area lined with plastic. Drums will be visually inspected for leakage, buckling, or excess corrosion. Nonleaking or empty drums can be placed directly in the storage area. Leaking drums will be placed in overpack containers prior to being placed in the storage area. A NSWC EOD technician will be available to provide oversight as needed during debris cleanup and drum removal activities.

Removal of subsurface drums and debris will require additional precautions and safety considerations as detailed in the Task-Specific Site Safety and Health Plan (SSHP). Debris and incidental soils removed will be placed in the bermed and plastic-covered storage area. Partially buried drums will be hand excavated to prevent punctures. After the debris has been removed, it will be sorted, classified, and containerized for disposal. All debris which is found to be hazardous, in accordance with 40 CFR 261 Subpart C, will be transported off-site for disposal. The inspection, labeling, and preparation requirements for shipment of hazardous material to an off-site Treatment, Storage, and Disposal (TSD) Facility are listed in the Waste Management Plan. All non-hazardous debris will also be transported off site for ultimate disposal.

After the surface debris has been removed, the area will be sampled (as described in Section 4.1.5) for contamination. Soil which is excavated from around the debris remains at the site. The majority of the excavation will be by hand so as not to puncture drums or release contaminants which might be present in the debris. However, heavy equipment may be used where practical.

Storm water that may collect in the area of the excavation will be containerized and sampled. All clean water will be disposed of by using it as dust control on the stockpile or by placing it in a small solar evaporation pond constructed in accordance with §327 IAC 7. Potentially contaminated water will be sampled to determine disposition. Contaminated water will be disposed of as a hazardous waste or in the site's sewage treatment system if the water meets the system's treatment criteria.

4.1.5 Sampling and Analysis

The purpose of soil sampling at the Battery Shop at the completion of the debris removal is to determine if the soil contains concentrations of Appendix IX constituents above the cleanup levels listed in Tables 5 and 6 of the Sampling and Analysis Plan. The following soil sampling strategy is taken from the *Hazardous Waste Management Unit Closure Guidance* (IDEM 1994).

The Battery Shop SWMU area is approximately 125 feet by 400 feet (50,000 square feet). To ensure that the entire SWMU is included in the sampling grid, a maximum grid interval of 10 feet will be used to grid an area of 140 feet by 420 feet. The number of borings collected will be the cube root of the number of grid intersections. The sampling grid contains 588 grid intersections. The cube root of 588 is 8.4; therefore, 9 random samples will be collected. Sample locations will be identified using the random number table (Table 2) in the Sampling and Analysis Plan. Soil samples will be taken at intervals of every 6 inches to a depth of 2 feet and every foot from 2 to 5 feet deep. Details of the sampling techniques and analytical requirements are in the Sampling and Analysis Plan.

Nine confirmation soil samples will be taken at the bottom of the excavations to ensure that contamination levels are below those specified in Tables 5 and 6 of the SAP. The nine samples will be selected using the random number table (Table 2) in the Sampling and Analysis Plan. Background soil samples will also be collected in a number and from a location specified by NSWC Crane personnel.

All potentially hazardous materials contained in drums or containers will be sampled to determine their contents. Sampling of drums or types of containers will be performed in accordance with the Sampling and Analysis Plan and the requirements in the Task-Specific Site Safety and Health Plan. Debris suspected to be contaminated and hazardous material will also be sampled.

The incidental soil removed with the debris, if stockpiled separately in a bermed storage area, will be divided into four quadrants, and a sample will be taken from each quadrant. Equal weights from each sample will be combined into a composite confirmation sample. The soils with contamination levels below those listed in Table 5 or Table 6 of the Sampling and Analysis Plan will be reused as backfill for excavated areas. The soils with contamination levels above those listed in Table 5 and Table 6 will be containerized, labeled, and temporarily stored. Samples will be taken, one from each quadrant of a container with equal weights from each combined into a composite. This composite sample will be analyzed for the parameters defined in 40 CFR 261 Subpart C. Incidental soils and debris will be disposed of as described in Section 4.1.6.

Decontamination water and any collected stormwater runoff will be sampled and analyzed to determine the disposal method.

4.1.6 Packaging, Transportation, and Disposal of Hazardous Waste

Contaminated debris and soils will be packaged, labeled, and placed in temporary storage for no longer than 90 days. Temporary storage areas are discussed in the WMP. A licensed hazardous waste transporter will be contracted to ship the materials to a waste disposal site permitted for the type of material, as determined by the analytical results of the sampling. Manifests shall be prepared and presented to NWSC Site Representative for signature. Hazardous wastes will be packaged, labeled, inspected, and transported in accordance with the WMP.

4.1.7 Site Cleanup

Equipment no longer required in the EZ will be decontaminated and moved to the SZ. After all contaminated materials are containerized, the remaining equipment will be decontaminated and moved to the SZ. The decontamination equipment will then be cleaned and the work zone barriers removed. All decontamination fluids will be collected, sampled, and disposed of either at the sewage treatment plant or at an off-site facility.

4.1.8 Backfilling and Site Restoration

The extent of any excavation and the points at which confirmation samples were taken will be surveyed to determine the volume of the excavation, record the extent of the excavation, and record the location of the samples. The excavation will then be backfilled to grade with clean material. Backfill must be clean, noncontaminated earth fill from on-site or off-site borrow sources. The backfill will be placed in 12-inch lifts and compacted to the requirements of the Testing Plan and Log in the Quality Control Plan. Excavated areas will be covered with 3 inches of topsoil (defined as having a minimum of 5 percent organic matter), seeded with native grasses, and fertilized.

4.1.9 Erosion Control

Special consideration will be given to erosion control techniques due to the severity of sloped conditions in this area. Erosion and sedimentation will be primarily controlled by the use of hay bales and siltation fencing placed at sensitive points across the site.

In addition to the hay bales and siltation fencing, specific application and erosion control techniques will be required for the prevention of seed loss on the hillside. The surfaces at extreme angles may require hydroseeding followed by a

covering with a meshed fiber over the seeded area to ensure proper germination.

4.2 SWMU #25/07D - HIGHWAY 58 DUMP SITE A

4.2.1 Work Scope

The scope of work includes excavating, examining, transporting, and disposing of debris; removing and disposing of asbestos sheets (if present); stockpiling, sampling, and disposing of contaminated soils; and backfilling and restoring all disturbed areas. Figure 1-3 shows the general layout of the site.

4.2.2 Site Assessment

The NSWC Crane Site Representative will determine if a UXO survey is necessary. If the potential exists for encountering explosive ordnance in the work area, NSWC Crane will perform a surface UXO survey to identify and remove any unexploded ordnance. The area will be surveyed and located in relationship to existing monuments. Data will also be collected to create a topographical map of the site and to verify the quantities of material to be excavated. Permits will be obtained for all site activities and mobilization will begin.

4.2.3 Mobilization

The first step in mobilization will be to define the work area configuration. The work area configuration is composed of the Exclusion Zone (EZ) boundary, the Contamination Reduction Zone (CRZ) with appropriate decontamination stations, the Support Zone (SZ), and access routes. After the work area configuration is defined, the work zones and access routes will be established. Tools, equipment, and supplies will be delivered to the site, and the personnel mobilized.

The subcontractor will steam clean and inspect all equipment before shipment to the site. Upon arrival at the site, the contractor will inspect the equipment for the presence of dirt, oils, and grease. The general condition of the equipment will be inspected and tested to ensure that all safety systems and alarms are functional. The performance of the equipment will be tested to determine if the equipment can perform the required tasks.

Storm water and erosion control measures shall be implemented as necessary to control storm water runoff and to prevent erosion. These measures are explained further in the Environmental Protection Plan.

4.2.4 Removal of Debris

After the construction permits have been obtained, including the Excavation and Trenching Permit, preliminary screening of debris will be performed before starting cleanup. Preliminary screening will consist of visually inspecting the entire area; inventorying drums, containers, and other debris; screening sampling if necessary; and sorting debris. Screened items will then be removed and placed in a bermed storage area lined with plastic. Drums will be visually inspected for leakage, buckling, or excess corrosion. Nonleaking or empty drums can be placed directly in the storage area. Leaking drums will be placed in overpack containers prior to being placed in the storage area. A NSWC EOD technician will be available to provide oversight as needed during debris cleanup and drum removal activities.

Removal of subsurface drums and debris will require additional precautions and safety considerations as detailed in the Task-Specific Site Safety and Health Plan (SSHP). Debris and incidental soils removed will be placed in the bermed and plastic-covered storage area. Partially buried drums will be hand excavated to prevent punctures. After the debris has been removed, it will be sorted, classified, and containerized for disposal. All debris which is found to be hazardous, in accordance with 40 CFR 261 Subpart C, will be transported off-site for disposal. The inspection, labeling, and preparation requirements for shipment of hazardous material to an off-site TSD are listed in the Waste Management Plan. All non-hazardous debris will be transported to the on-site disposal facility.

After the surface debris has been removed, the area will be sampled (as described in Section 4.1.5) for contamination. Soil which is excavated from around debris will remain at the site. The majority of excavation will be by hand so as not to puncture drums or release contaminants which might be present in the debris. However, heavy equipment may be used where practical.

Storm water that may collect in the area of the excavation will be containerized and sampled. All clean water will be disposed of by using it as dust control on the stockpile or by placing it in a small solar evaporation pond. Potentially contaminated water will be sampled to determine disposition. Contaminated water will be disposed of as a hazardous waste or in the site's sewage treatment system if the water meets the system's treatment criteria.

4.2.5 Sampling and Analysis

The soil will be sampled for the presence of Appendix IX constituents above the cleanup levels found in Tables 5 and 6 of the Sampling and Analysis Plan. The soil sampling strategy is taken from the *Hazardous Waste Management Unit Closure Guidance* (IDEM 1994).

The Highway 58 Dump Site A SWMU area consists of two separate areas. The largest area is approximately 40 feet by 150 feet (6,000 square feet). To ensure that the entire SWMU is included in the sampling grid, a maximum grid interval of 10 feet will be used to grid an area of 60 feet by 160 feet. The number of samples collected is the cube root of the number of grid intersections. The sampling grid contains 96 grid intersections. The cube root of 96 is 4.6; therefore, 5 random samples will be collected from the grid.

The smaller area is approximately 10 feet by 25 feet (250 square feet). To ensure that the entire area is included in the sampling grid, a maximum grid interval of 10 feet will be used to grid an area of 30 feet by 40 feet. The number of samples collected is the cube root of the number of grid intersections. The 30-foot by 40-foot sampling grid contains 12 grid intersections. The cube root of 12 is 2.3; therefore, 3 random samples will be collected from the grid.

All sample locations will be selected using the random number table (Table 2) in the Sampling and Analysis Plan. Vertical location of the investigative soil samples will be taken at intervals of every 6 inches to a depth of 2 feet and every foot from 2 to 5 feet deep. Details of the sampling techniques and analytical requirements are found in the Sampling and Analysis Plan.

A total of eight confirmation soil samples will be taken to confirm removal of contamination from the excavations. All sampling will be performed in accordance with the Sampling and Analysis Plan. Background soil samples will also be collected in a number and from a location specified by NSWCC Crane personnel.

Decontamination water and any collected stormwater runoff will be sampled and analyzed to decide the disposal method.

The incidental soil removed with the debris, if stockpiled separately in a bermed storage area, will be divided into four quadrants, and a sample will be taken from each quadrant. Equal weights from each sample will be combined into a composite confirmation sample. The soils with contamination levels below those listed in Table 5 or Table 6 of the Sampling and Analysis Plan will be reused as backfill for excavated areas. The soils with contamination levels above those listed in Table 5 and Table 6 will be containerized, labeled, and temporarily stored. Samples will be taken, one from each quadrant of a container with equal weights from each combined into a composite. This composite sample will be analyzed for the parameters defined in 40 CFR 261 Subpart C. Incidental soils and debris will be disposed of as described in Section 4.2.6.

Decontamination water and any collected stormwater runoff will be sampled and analyzed to determine the disposal method.

4.2.6 Packaging, Transportation, and Disposal of Hazardous Waste

Contaminated debris and soils will be packaged, labeled, and placed in temporary storage for no longer than 90 days. Temporary storage areas are discussed in the WMP. A licensed hazardous waste transporter will be contracted to ship the materials to a waste disposal site permitted for the type of material, as determined by the analytical results of the sampling. Manifests shall be prepared and presented to NWSC Site Representative for signature. Hazardous wastes will be packaged, labeled, inspected, and transported in accordance with the WMP.

4.2.7 Site Cleanup

Equipment no longer required in the EZ will be decontaminated and moved to the SZ. After all contaminated materials are containerized, the remaining equipment will be decontaminated and moved to the SZ. The decontamination equipment will then be cleaned and the work zone barriers removed. All decontamination fluids will be collected, sampled, and either disposed of at the sewage treatment plant or at an off-site facility.

4.2.8 Backfilling and Site Restoration

The extent of any excavation and the points at which confirmation samples were taken will be surveyed to determine the volume of the excavation, record the extent of the excavation, and record the location of the samples. The excavation will then be backfilled to grade with clean material. Backfill must be clean, noncontaminated earth fill from on-site or off-site borrow sources. The backfill will be placed in 12-inch lifts and compacted to the requirements of the Testing Plan and Log found in the Quality Control Plan. Excavated areas will be covered with 3 inches of topsoil (defined as having a minimum of 5 percent organic matter), seeded with native grasses, and fertilized.

4.2.9 Erosion Control

Special consideration will be given to erosion control techniques due to the severity of sloped conditions in this area. Erosion and sedimentation will be primarily controlled by the use of hay bales and siltation fencing placed at sensitive points across the site.

In addition to the hay bales and siltation fencing, specific application and erosion control techniques will be required for the prevention of seed loss on the hillside. The surfaces at extreme angles may require hydroseeding followed by a covering with a meshed fiber over the seeded area to ensure proper germination.

4.3 SWMU #26/08D, HIGHWAY 58 DUMP SITE B

4.3.1 Work Scope

The scope of work includes excavating, identifying, transporting, and disposing of debris; stockpiling, sampling, and disposing of contaminated soils; and backfilling and restoring all disturbed areas. Figure 1-4 shows the general layout of the site.

4.3.2 Site Assessment

The NSWC Crane Site Representative will determine if a UXO survey is necessary. If the potential exists for encountering explosive ordnance in the work area, NSWC Crane will perform a surface UXO survey to identify and remove any unexploded ordnance. The area will be surveyed and located in relationship to existing monuments. Data will also be collected to create a topographical map of the site and to verify the quantities of material to be excavated. Permits will be obtained for all site activities and mobilization will begin.

4.3.3 Mobilization

The first step in mobilization will be to define the work area configuration. The work area configuration is composed of the Exclusion Zone (EZ) boundary, the Contamination Reduction Zone (CRZ) with appropriate decontamination stations, the Support Zone (SZ), and access routes. After the work area configuration is defined, the work zones and access routes will be established. Tools, equipment, and supplies will be delivered to the site and the personnel mobilized.

All equipment to be mobilized will be steam cleaned and inspected before shipment to the site by the subcontractor. Upon arrival at the site, the contractor will inspect the equipment for the presence of dirt, oils, and grease. The general condition of the equipment will be inspected and tested to ensure that all safety systems and alarms are functional. The performance of the equipment will be tested to determine if the equipment can perform the required tasks.

Storm water and erosion control measures shall be implemented as necessary to control storm water runoff and to prevent erosion. These measures are explained further in the Environmental Protection Plan.

4.3.4 Removal of Debris

After the construction permits have been obtained, including the Excavation and Trenching Permit, preliminary screening of debris will be performed before starting cleanup. Preliminary screening will consist of visually inspecting the

entire area; inventorying drums, containers, and other debris; screening sampling if necessary; and sorting debris. Screened items will then be removed and placed in a bermed storage area lined with plastic. Drums will be visually inspected for leakage, buckling, or excess corrosion. Nonleaking or empty drums can be placed directly in the storage area. Leaking drums will be placed in overpack containers prior to being placed in the storage area. A NSW C EOD technician will be available to provide oversight as needed during debris cleanup and drum removal activities.

Removal of subsurface drums and debris will require additional precautions and safety considerations as detailed in the Task-Specific Site Safety and Health Plan (SSHP). Debris and incidental soils removed will be placed in the bermed and plastic-covered storage area. Partially buried drums will be excavated by hand to prevent punctures. After the debris has been removed, it will be sorted, classified, and containerized for disposal. All debris which is found to be hazardous, in accordance with 40 CFR 261 Subpart C, will be transported off-site for disposal. The inspection, labeling, and preparation requirements for shipment of hazardous material to an off-site TSD are listed in the Waste Management Plan. All non-hazardous debris will be transported to the on-site disposal facility.

After the surface debris has been removed, the area will be sampled (as described in Section 4.1.5) for contamination. Soil which is excavated from around debris will remain at the site. The majority of excavation will be by hand so as not to puncture drums or release contaminants which might be present in the debris. However, heavy equipment may be used where practical.

Storm water that may collect in the area of the excavation will be containerized and sampled. All clean water will be disposed of by using it as dust control on the stockpile or by placing it in a small solar evaporation pond. Potentially contaminated water will be sampled to determine disposition. Contaminated water will be disposed of as a hazardous waste or in the site's sewage treatment system if the water meets the system's treatment criteria.

4.3.5 Sampling and Analysis

The purpose of the soil sampling effort at the Highway 58 Dump Site B is to determine whether the soil contains concentrations of Appendix IX constituents above the cleanup levels found in Tables 5 and 6 of the Sampling and Analysis Plan. The soil sampling strategy is taken from the *Hazardous Waste Management Unit Closure Guidance* (IDEM 1994).

The Highway 58 Dump Site B SWMU area is approximately 45 feet by 160 feet (7,500 square feet). To ensure that the entire SWMU is included in the sampling grid, a maximum grid interval of 10 feet will be used to grid an area of 60 feet by 180 feet. The number of samples collected is the cube root of the number

of grid intersections. The 60-foot by 180-foot sampling grid contains 108 grid intersections. The cube root of 108 is 4.8; therefore, 5 random samples will be collected from the grid. Sample locations will be selected using the random numbers in Table 2 of the Sampling and Analysis Plan. Vertical locations of investigative soil samples will be taken at intervals of every 6 inches to a depth of 2 feet and every foot from 2 to 5 feet deep. Details of the sampling techniques and analytical requirements are found in the Sampling and Analysis Plan.

A total of five characterization soil samples will be taken to confirm removal of contamination from the excavations. All sampling will be performed in accordance with the Sampling and Analysis Plan. Background soil samples will also be collected in a number and from a location specified by NSWCR Crane personnel.

The incidental soil removed with the debris, if stockpiled separately in a bermed storage area, will be divided into four quadrants, and a sample will be taken from each quadrant. Equal weights from each sample will be combined into a composite confirmation sample. The soils with contamination levels below those listed in Table 5 or Table 6 of the Sampling and Analysis Plan will be reused as backfill for excavated areas. The soils with contamination levels above those listed in Table 5 and Table 6 will be containerized, labeled, and temporarily stored. Samples will be taken, one from each quadrant of a container with equal weights from each combined into a composite. This composite sample will be analyzed for the parameters defined in 40 CFR 261 Subpart C. Incidental soils and debris will be disposed of as described in Section 4.1.6.

Decontamination water and any collected stormwater runoff will be sampled and analyzed to determine the disposal method.

4.3.6 Packaging, Transportation and Disposal of Hazardous Waste

Contaminated debris and soils will be packaged, labeled, and placed in temporary storage for no longer than 90 days. Temporary storage areas are discussed in the WMP. A licensed hazardous waste transporter will be contracted to ship the materials to a waste disposal site permitted for the type of material, as determined by the analytical results of the sampling. Manifests shall be prepared and presented to NSWCR Site Representative for signature. Hazardous wastes will be packaged, labeled, inspected, and transported in accordance with the WMP.

4.3.7 Site Cleanup

Equipment no longer required in the EZ will be decontaminated and moved to the SZ. After all contaminated materials are containerized, the remaining equipment will be decontaminated and moved to the SZ. The decontamination

equipment will then be cleaned and the work zone barriers removed. All decontamination fluids will be collected, sampled, and either disposed of at the sewage treatment plant or at an off-site facility.

4.3.8 Backfilling and Site Restoration

The extent of any excavation and the points at which confirmation samples were taken will be surveyed to determine the volume of the excavation, record the extent of the excavation, and record the location of the samples. The excavation will then be backfilled to grade with clean material. Backfill must be clean, noncontaminated earth fill from on-site or off-site borrow sources. The backfill will be placed in 12-inch lifts and compacted to the requirements of the Testing Plan and Log found in the Quality Control Plan. Excavated areas will be covered with 3 inches of topsoil (defined as having a minimum of 5 percent organic matter), seeded with native grasses, and fertilized.

4.3.9 Erosion Control

Special consideration will be given to erosion control techniques due to the severity of sloped conditions in this area. Erosion and sedimentation will be primarily controlled by the use of hay bales and siltation fencing placed at sensitive points across the site.

In addition to the hay bales and siltation fencing, specific application and erosion control techniques will be required for the prevention of seed loss on the hillside. The surfaces at extreme angles may require hydroseeding followed by a covering with a meshed fiber over the seeded area to ensure proper germination.

5.0 QUALITY CONTROL

As prime contractor, MK will implement and retain full authority of the Quality Control Plan (QCP) for this project. The QCP is bound under separate cover and is to be used in conjunction with this Work Plan. MK will manage all matters involving Quality Control performed in the execution of NAVFAC Delivery Orders. This approach provides the Navy with a quality management system having clear lines of authority and responsibility, and a consistent approach and application of quality requirements.

The QCP identifies quality testing and inspection requirements for the scope of work to be performed. To supplement the information contained therein, Appendix A of this Work Plan provides Field Inspection Checklists for general and specific items when performing inspections.

6.0 SAFETY AND HEALTH

The Task-Specific Site Safety and Health Plan (SSHP) for this Work Plan is specific to interim measures cleanup activities for SWMUs #23/00, #25/07D, and #26/08D. The SSHP is a supplement to this Work Plan. All details in the SSHP are to be strictly followed during the execution of the work.

7.0 DECONTAMINATION ACTIVITIES

7.1 MINIMIZATION OF CONTAMINATION

During site activities, all personnel shall minimize contact with contaminated materials to keep "clean" during site activities. All personnel should minimize kneeling, splashing, and inadvertent physical contact with contaminated materials. Field procedures will be developed to control overspray and runoff and to ensure that unprotected personnel working nearby are not affected.

Entrance to the exclusion zones will be limited to personnel trained in accordance with 29 CFR Part 1910.120. The level of protection worn within each exclusion zone will be specified by the Site Safety and Health Officer (SSHO). Selection of personal protective equipment and anticipated levels of protection are summarized in Tables 5 and 6 of the SSHP. All personnel leaving the exclusion zone will pass through a decontamination zone and follow personnel decontamination procedures as specified in the SSHP.

7.2 DECONTAMINATION FACILITIES

Because of the distances between the different work areas, each SWMU shall have a designated decontamination facility. Before construction of each decontamination facility, soil samples shall be taken at the proposed location of the decontamination pad to establish the environmental conditions before interim measures cleanup activities begin.

Temporary personnel decontamination and shower/changeroom trailers will be provided in those areas designated by the SSHO. Each equipment decontamination facility shall be constructed of a 60-mil high-density polyethylene (HDPE) liner draped over sandbags and sloped to a sump or equal containment system. The liner will be visually inspected before use on a daily basis to detect possible failures of the liner material. The inspection process will consist of checking for the following:

- Evidence of tears and holes.
- Evidence of seepage.
- The sheeting is adequately fastened to the side walls.
- The liner adequately covers the sandbags at the end section.

If the liner is damaged, it will be repaired or replaced before further use of the facility. Soil beneath the liner in the area of the breach will be sampled.

Records will be maintained specifying facility construction material and methods, disposition of liquids and solids, daily inspections, and any repairs and/or breaches of liner integrity.

All decontamination fluids collected in the sump will be containerized at the end of each shift and sampled to determine disposal requirements. If precipitation is predicted, the decontamination pad will be covered to prevent accumulation of storm water.

After interim measures cleanup of a specific SWMU is completed, the decontamination facility will be dismantled. The materials from the facility are anticipated to be reused at another SWMU. If there is no indication of seepage, tears or holes, the HDPE liner will be thoroughly cleaned before being transported to another SWMU. Any decontamination facility materials that have been dispositioned as waste and are not reusable will be characterized and properly disposed of.

After the decontamination facility has been dismantled and removed, the underlying surface will be visually inspected. Visibly contaminated material will be removed and managed as a potentially hazardous material.

7.3 PERSONNEL DECONTAMINATION

Personnel will be required to pass through a decontamination area before exiting the exclusion zone. The personnel decontamination area will be located adjacent to the exclusion zone. The area will include, as required, a protective clothing removal area and container, respirator removal area and containers, storage for clean personnel protection equipment and clothing, wash station supplies for hands and face, and emergency showers for whole-body cleaning.

Before changing into street clothes, whole-body cleaning will be mandatory for personnel exiting areas as designated in the SSHP. The whole-body shower and change trailer will be provided in a central location.

All contaminated personal protective equipment and clothing shall be properly disposed of or cleaned and inspected for reuse. Field personnel decontamination procedures will be generated for these actions and will be monitored by the SSHO.

7.4 DECONTAMINATION OF HEAVY EQUIPMENT

Portions of construction and field equipment that have come into contact with any potentially contaminated material will be decontaminated. Heavy equipment, such as trucks and backhoes, will be cleaned by high-pressure water or steam. The equipment will be visually inspected for signs of contamination. If signs of contamination are still present, the cleaning procedures will be repeated until the

criteria for cleanliness has been met. A detailed written field procedure will be prepared for this action.

7.5 DECONTAMINATION OF SAMPLING EQUIPMENT

Sampling equipment will be decontaminated per the manufacturer's instructions or as described in the Sampling and Analysis Plan.

8.0 WASTE MANAGEMENT

Waste management, including disposal functions, will be conducted in accordance with the project's Waste Management Plan (WMP) and all applicable regulations as specified in this Work Plan. The WMP is bound under separate cover and is to be used in conjunction with this Work Plan. However, NSWCR Crane retains ownership of all wastes generated and is responsible for signing all waste manifests prepared for this project.

During field activities, various wastes will be generated including contaminated and noncontaminated soil and debris, ground and rain water, decontamination water, disposable personnel protective equipment, and inert wastes.

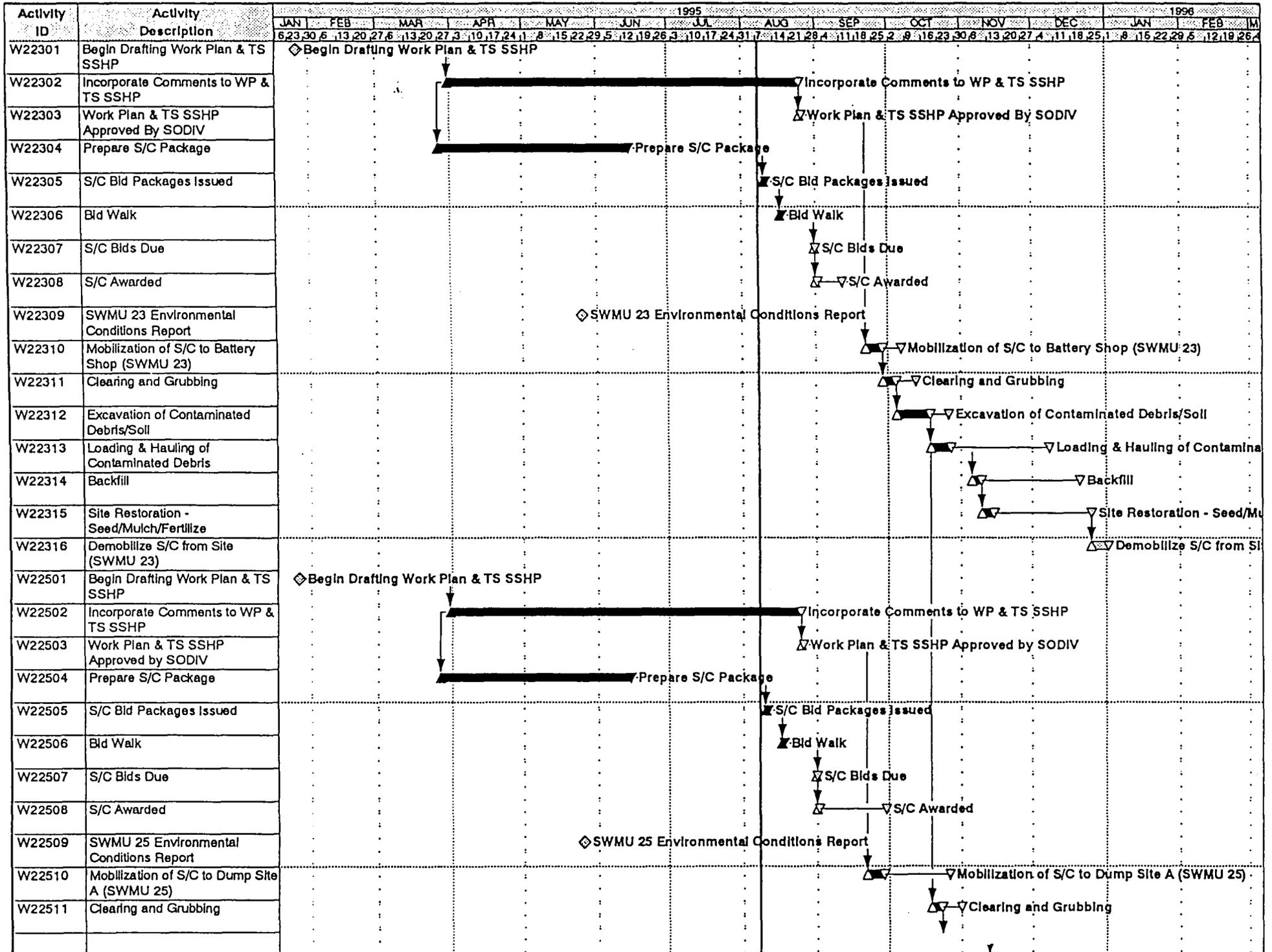
Initially, wastes will be placed in stockpiles and sampled for contamination. Contaminated soil will be containerized and characterized before off-site disposal. Characterization is necessary for soil excavated from the SWMUs. All contaminated soil will be containerized in 20- or 40-cubic yard roll-offs. Once a roll-off is filled, four discrete samples will be obtained from each quadrant of the roll-off. The quadrants will be determined by visual estimation in the field.

Each sample will be collected from at least 1 foot deep. The four samples collected will be composited according to weight (i.e., an equal weight from each discrete sample is combined into the composite sample). Soil samples will be collected using the procedures contained in the Sampling and Analysis Plan (SAP). The SAP is bound under separate cover and is to be used in conjunction with this Work Plan. Each composite sample will be analyzed for the parameters found in Table 1 of the SAP. Laboratory results of the characterization analysis will be used to classify the materials per the WMP.

9.0 ENVIRONMENTAL PROTECTION

During site work, MK will employ measures to ensure protection of the environment. All site work will be performed in a manner that will minimize pollution of the air, water, and land. Environmental protection activities executed at the site will follow the Environmental Protection Plan (EPP) and all applicable regulatory requirements. The EPP is bound under separate cover and is to be used in conjunction with this Work Plan. Care will be exercised to minimize the areas to be disturbed. An Environmental Condition Report (ECR) will be prepared before interim measures cleanup activities at the site. The site will be restored, to the practical extent, to the original conditions documented in the ECR.

**10.0
SCHEDULE**



11.0 REFERENCES

- Brent, Thomas, 1994. *Transmittal Letter: Information requested during the October 13, 1994, Site Visit Meeting*. NSWC Crane. October 6.
- Indiana Department of Environmental Management, Office of Solid and Hazardous Waste Management, 1994. *Hazardous Waste Management Unit Closure Guidance*. March.
- MK, 1994. *Site Meeting Minutes of August 16-17, 1994*. R. Centinaro. August.
- Naval Energy and Environmental Support Activity, 1983. *Initial Assessment Study of Naval Weapons Support Center Crane, Indiana*. NEESA 13-003. May.

APPENDIX A INSPECTION ITEMS



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

WASTE STORAGE AREA INSPECTION

Inspection Code

Revision Date

Checklist

JAN 95

Page 1 of 2

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY/ DATE |
|----------|--|-----|---------------------------|-------------------|
| 1 | Are all containers labeled? | | | |
| 2 | Are any containers bulging or leaking? | | | |
| 3 | Have containers/stockpiles been placed on an impervious pad or area? | | | |
| 4 | Have all containers/stockpiles been sampled? | | | |
| 5 | Are all stockpiles covered? | | | |
| 6 | Are run-on/run-off measures in place? | | | |
| 7 | Are fluids from the waste storage area being disposed of properly? | | | |
| 8 | Is any waste nearing 90 days of storage in the Waste Storage Area? | | | |
| 9 | | | | |
| 10 | | | | |

REMARKS:

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

Sheet _____ of _____



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

DECONTAMINATION FACILITY INSPECTION

Inspection Code

Revision Date

JAN 95

Checklist

Page 2 of 2

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY/ DATE |
|----------|---|-----|---------------------------|-------------------|
| 1 | Has a decontamination area been constructed in accordance with the Work Plan? | | | |
| 2 | Are fluids used for decontamination contained at the decontamination area? | | | |
| 3 | Are fluids disposed of properly on a regular basis? | | | |
| 4 | Are run-on/run-off measures in place? | | | |
| 5 | Have any leaks/seepage occurred since the last inspection? | | | |
| 6 | Is the containment system still in good repair (no holes, tears or cracks)? | | | |
| 7 | Is the decontamination area still in good repair? | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

REMARKS:

Specific Item Identification or Location, as applicable:

MK Project Number
NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

Sheet _____ of _____



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type
FIELD INSPECTION CHECKLIST

| | | | |
|--|-----------------|--------------------------------|---------------------------------|
| Checklist Title GENERAL ITEMS-PRIOR TO EXCAVATION INSPECTION | Inspection Code | Revision Date JAN 95 | Checklist Page 1 of 3 |
|--|-----------------|--------------------------------|---------------------------------|

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY/ DATE |
|----------|---|-----|---------------------------|-------------------|
| 1 | Has an Environmental Condition Report been prepared for the area? | | | |
| 2 | Have the batteries/capacitors been located? | | | |
| 3 | Has an unexploded ordnance survey been completed? | | | |
| 4 | Have the EZ, CRZ and SZ been defined and laid out? | | | |
| 5 | Have erosion control measures been put in place? | | | |
| 6 | Has the contractor hired to accomplish the work submitted all required reps/certs, training records and insurance certificates? | | | |
| 7 | Have investigative soil samples been taken to define the levels of contamination in the area? | | | |
| 8 | Have photographs been taken of the area? | | | |
| 9 | Is contractor equipment in working order and has it been cleaned? | | | |
| 10 | Has a decontamination area been constructed? | | | |
| 11 | Have necessary permits been obtained and have required notification been made? | | | |

REMARKS:

Specific Item Identification or Location, as applicable:

| | | | |
|---|----------------|---------------------|---|
| MK Project Number NSWC Crane-Delivery Order 0009 | Drawing Number | Work Package Number | Inspection Report Sheet _____ of _____ |
|---|----------------|---------------------|---|



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

GENERAL ITEMS-DURING EXCAVATION INSPECTION

Inspection Code

Revision Date

Checklist

JAN 95

Page 2 of 3

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY/ DATE |
|----------|--|-----|---------------------------|-------------------|
| 1 | Has proper care been taken to locate the batteries/capacitors so they are not damaged by excavation? | | | |
| 2 | Is storm water or groundwater properly disposed of? | | | |
| 3 | Has soil sampling been accomplished in the excavation and stockpile? | | | |
| 4 | Do the analytical results confirm that the excavation is clean? | | | |
| 5 | Have the batteries/capacitors been properly packaged, labeled and manifested? | | | |
| 6 | Has contaminated soil been properly packaged and labeled? | | | |
| 7 | Have photographs been taken of the remediation activities? | | | |
| 8 | Were daily logs and reports made? | | | |
| 9 | Has the decontamination facility been inspected on a daily basis? | | | |
| 10 | Has all equipment been decontaminated? | | | |

REMARKS:

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

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MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

GENERAL ITEMS-AFTER EXCAVATION INSPECTION

Inspection Code

Revision Date

Checklist

JAN 95

Page 3 of 3

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY/ DATE |
|----------|--|-----|---------------------------|-------------------|
| 1 | Has the excavation been backfilled with clean material which has been placed and compacted properly? | | | |
| 2 | Has topsoil been placed in disturbed areas? | | | |
| 3 | Have the disturbed areas been seeded? | | | |
| 4 | Has a general cleanup been done of the affected areas? | | | |
| 5 | Were photographs taken of the affected areas? | | | |
| 6 | Were soil erosion prevention measures left in place until vegetation grew? | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

REMARKS:

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

Sheet _____ of _____



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

**SOILS
BACKFILL AND COMPACTION
SWMU #23/00 - Battery Shop**

Inspection Code

SO-08

Revision Date

DEC 94

Checklist

Page 1 of 2

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|---|-----|---------------------------|------------------|
| 1 | Confirm a soils report has been generated to confirm soils types and depth of water table. | N/A | | |
| 2 | Confirm work areas have been located with the limits of work clearly established (stakes, lines, monuments). | | | |
| 3 | Identify existing improvements and items that are to remain and verify arrangements to protect these items from damage (such as trees, utility poles, buildings, fences and piping, etc.) | | | |
| 4 | Verify precautions are taken to prevent/contain the spillage of gas, oil, slurry, etc. to assure compliance with the base spill plan. | | | |
| 5 | Verify that shoring has been approved, as required, and that provisions have been made for safety barricades. | | | |
| 6 | Verify that excavation is performed in accordance with the Work Plan and within established bounds. | | | |
| 7 | Verify that sub-standard materials (tree roots, etc.) are removed. | | | |
| 8 | Verify that subsoil irregularities such as soft spots are removed. | | | |
| 9 | Confirm that drainage, de-watering, etc., conforms with design/specs. | | | |
| 10 | Ensure that materials, compaction, and work are performed, inspected, and tested in accordance with the Work Plan, procedures, standards, and specifications. Required reports shall be maintained. | | | |

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

Sheet _____ of _____



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type

FIELD INSPECTION CHECKLIST

Checklist Title

**SOILS
BACKFILL AND COMPACTION
SWMU #23/00 - Battery Shop**

Inspection Code

SO-08

Revision Date

DEC 94

Checklist

Page 2 of 2

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|--|-----|---------------------------|------------------|
| 11 | After an area has been excavated, confirm the area was resurveyed so foundations are properly located. | N/A | | |
| 12 | Confirm footing areas are compacted. | N/A | | |
| 13 | Check foundation excavations for adequacy, bracing, form clearance, etc. | N/A | | |
| 14 | Confirm that footing drains are installed in manner specified. | N/A | | |
| 15 | Check that backfill materials comply with specifications (moisture, density, gradation). | | | |
| 16 | Verify performance of ASTM D 4254/ASTM D 4253 (<i>Minimum Index Density of Soils and Calculation of Relative Density and Test Method for Maximum Index Density of Soils Using a Vibratory Table</i> , respectively) by the testing laboratory for each soil type. | | | |
| 17 | Verify that backfill materials are compacted in lift thicknesses that do not exceed specification. Compaction testing of lifts shall also be confirmed. | | | |
| 18 | Verify performance of ASTM D 3017 and ASTM D 2922 (<i>Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth) and Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)</i> , respectively) by the Testing Laboratory and documentation of results. | | | |
| 19 | See that corrective action measures have been performed where required, verified, and documented. | | | |

PROVIDE DETAILED SKETCH:

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

Sheet _____ of _____



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type
FIELD INSPECTION CHECKLIST

Checklist Title

**SOILS
BACKFILL AND COMPACTION
SWMU #25/07D - Highway 58 Dump Site A**

Inspection Code

SO-10

Revision Date

DEC 94

Checklist

Page 1 of 2

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|---|-----|---------------------------|------------------|
| 1 | Confirm a soils report has been generated to confirm soils types and depth of water table. | N/A | | |
| 2 | Confirm work areas have been located with the limits of work clearly established (stakes, lines, monuments). | | | |
| 3 | Identify existing improvements and items that are to remain and verify arrangements to protect these items from damage (such as trees, utility poles, buildings, fences and piping, etc.) | | | |
| 4 | Verify precautions are taken to prevent/contain the spillage of gas, oil, slurry, etc. to assure compliance with the base spill plan. | | | |
| 5 | Verify that shoring has been approved, as required, and that provisions have been made for safety barricades. | | | |
| 6 | Verify that excavation is performed in accordance with the Work Plan and within established bounds. | | | |
| 7 | Verify that sub-standard materials (tree roots, etc.) are removed. | | | |
| 8 | Verify that subsoil irregularities such as soft spots are removed. | | | |
| 9 | Confirm that drainage, de-watering, etc., conforms with design/specs. | | | |
| 10 | Ensure that materials, compaction, and work are performed, inspected, and tested in accordance with the Work Plan, procedures, standards, and specifications. Required reports shall be maintained. | | | |

Specific Item Identification or Location, as applicable:

MK Project Number

NSWC Crane-Delivery Order 0009

Drawing Number

Work Package Number

Inspection Report

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| | | | |
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| Checklist Title SOILS BACKFILL AND COMPACTION SWMU #25/07D - Highway 58 Dump Site A | Inspection Code SO-10 | Revision Date DEC 94 | Checklist Page 2 of 2 |
|---|---------------------------------|--------------------------------|---------------------------------|

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|--|-----|---------------------------|------------------|
| 11 | After an area has been excavated, confirm the area was resurveyed so foundations are properly located. | N/A | | |
| 12 | Confirm footing areas are compacted. | N/A | | |
| 13 | Check foundation excavations for adequacy, bracing, form clearance, etc. | N/A | | |
| 14 | Confirm that footing drains are installed in manner specified. | N/A | | |
| 15 | Check that backfill materials comply with specifications (moisture, density, gradation). | | | |
| 16 | Verify performance of ASTM D 4254/ASTM D 4253 (<i>Minimum Index Density of Soils and Calculation of Relative Density and Test Method for Maximum Index Density of Soils Using a Vibratory Table</i> , respectively) by the testing laboratory for each soil type. | | | |
| 17 | Verify that backfill materials are compacted in lift thicknesses that do not exceed specification. Compaction testing of lifts shall also be confirmed. | | | |
| 18 | Verify performance of ASTM D 3017 and ASTM D 2922 (<i>Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth) and Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)</i> , respectively) by the Testing Laboratory and documentation of results. | | | |
| 19 | See that corrective action measures have been performed where required, verified, and documented. | | | |

PROVIDE DETAILED SKETCH:

Specific Item Identification or Location, as applicable:

| | | | |
|---|----------------|---------------------|---|
| MK Project Number NSWC Crane-Delivery Order 0009 | Drawing Number | Work Package Number | Inspection Report Sheet _____ of _____ |
|---|----------------|---------------------|---|



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type
FIELD INSPECTION CHECKLIST

| | | | |
|---|---------------------------------|--------------------------------|---------------------------------|
| Checklist Title SOILS BACKFILL AND COMPACTION SWMU #36/08D - Highway 58 Dump Site B | Inspection Code SO-11 | Revision Date DEC 94 | Checklist Page 1 of 2 |
|---|---------------------------------|--------------------------------|---------------------------------|

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|---|-----|---------------------------|------------------|
| 1 | Confirm a soils report has been generated to confirm soils types and depth of water table. | N/A | | |
| 2 | Confirm work areas have been located with the limits of work clearly established (stakes, lines, monuments). | | | |
| 3 | Identify existing improvements and items that are to remain and verify arrangements to protect these items from damage (such as trees, utility poles, buildings, fences and piping, etc.) | | | |
| 4 | Verify precautions are taken to prevent/contain the spillage of gas, oil, slurry, etc. to assure compliance with the base spill plan. | | | |
| 5 | Verify that shoring has been approved, as required, and that provisions have been made for safety barricades. | | | |
| 6 | Verify that excavation is performed in accordance with the Work Plan and within established bounds. | | | |
| 7 | Verify that sub-standard materials (tree roots, etc.) are removed. | | | |
| 8 | Verify that subsoil irregularities such as soft spots are removed. | | | |
| 9 | Confirm that drainage, de-watering, etc., conforms with design/specs. | | | |
| 10 | Ensure that materials, compaction, and work are performed, inspected, and tested in accordance with the Work Plan, procedures, standards, and specifications. Required reports shall be maintained. | | | |

Specific Item Identification or Location, as applicable:

| | | | |
|---|----------------|---------------------|---|
| MK Project Number NSWC Crane-Delivery Order 0009 | Drawing Number | Work Package Number | Inspection Report Sheet _____ of _____ |
|---|----------------|---------------------|---|



MORRISON KNUDSEN CORPORATION
Engineering, Construction, & Environmental

Procedure Type
FIELD INSPECTION CHECKLIST

| | | | |
|---|---------------------------------|--------------------------------|---------------------------------|
| Checklist Title SOILS BACKFILL AND COMPACTION SWMU #36/08D - Highway 58 Dump Site B | Inspection Code SO-11 | Revision Date DEC 94 | Checklist Page 2 of 2 |
|---|---------------------------------|--------------------------------|---------------------------------|

| ITEM NO. | ITEM CHECKED | A/R | INSPECTION NUMBER/REMARKS | VERIFIED BY DATE |
|----------|--|-----|---------------------------|------------------|
| 11 | After an area has been excavated, confirm the area was resurveyed so foundations are properly located. | N/A | | |
| 12 | Confirm footing areas are compacted. | N/A | | |
| 13 | Check foundation excavations for adequacy, bracing, form clearance, etc. | N/A | | |
| 14 | Confirm that footing drains are installed in manner specified. | N/A | | |
| 15 | Check that backfill materials comply with specifications (moisture, density, gradation). | | | |
| 16 | Verify performance of ASTM D 4254/ASTM D 4253 (<i>Minimum Index Density of Soils and Calculation of Relative Density and Test Method for Maximum Index Density of Soils Using a Vibratory Table</i> , respectively) by the testing laboratory for each soil type. | | | |
| 17 | Verify that backfill materials are compacted in lift thicknesses that do not exceed specification. Compaction testing of lifts shall also be confirmed. | | | |
| 18 | Verify performance of ASTM D 3017 and ASTM D 2922 (<i>Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth) and Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)</i> , respectively) by the Testing Laboratory and documentation of results. | | | |
| 19 | See that corrective action measures have been performed where required, verified, and documented. | | | |

PROVIDE DETAILED SKETCH:

Specific Item Identification or Location, as applicable:

| | | | |
|---|----------------|---------------------|---|
| MK Project Number NSWC Crane-Delivery Order 0009 | Drawing Number | Work Package Number | Inspection Report Sheet _____ of _____ |
|---|----------------|---------------------|---|

TASK-SPECIFIC SITE SAFETY AND HEALTH PLAN

**SUPPLEMENT TO
WORK PLAN
FOR
SOLID WASTE MANAGEMENT UNITS
#23/00, #25/07D, and #26/08D**

**NSWC CRANE
Crane, Indiana**

**CONTRACT #N62467-93-D-1106
DELIVERY ORDER 0009
STATEMENT OF WORK 007**

August 25, 1995
Revision B

Prepared for:

**SOUTHERN DIVISION
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Prepared by:

**MORRISON KNUDSEN CORPORATION
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NORTH CHARLESTON, SOUTH CAROLINA 29406**

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1.0 INTRODUCTION

This Task-Specific Site Safety and Health Plan (SSHP) describes safety and health requirements for interim cleanup measures at NSWC Crane, specifically for Solid Waste Management Units (SWMUs) #23/00, #25/07D, and #26/08D. This SSHP is consistent with requirements of the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Site Regulations; 29 CFR 1910.120 and 29 CFR 1926.65; and the U.S. Army Corps of Engineers (ACOE) *Safety and Health Requirements Manual* EM 385-1-1, dated October 1992.

This SSHP is applicable to all personnel who enter work areas described in this SSHP and who are under the control of Morrison Knudsen Corporation (MK) or MK's Subcontractors.

1.1 WORK TASK SUMMARY

Work tasks are briefly summarized as follows. Detailed task descriptions are provided in Section 4.0 of the MK Work Plan.

SWMU #23/00, Battery Shop - The scope of work includes excavating, examining, packaging, transporting, and disposing of debris; stockpiling, sampling, and disposing of contaminated soils; and backfilling and restoring the excavated area. Figure 1-2 in the MK Work Plan shows the general layout of the site. The excavation and stockpiled soils will be sampled for PCBs and TCLP organics, metals, and pesticides. The contents of drums and containers, if unknown, and any debris, if determined to be necessary, will also be sampled.

SWMU #25/07D, Highway 58 Dump Site A - The scope of work includes excavating, examining, packaging, transporting, and disposing of debris; stockpiling, sampling, and disposing of contaminated soils; and backfilling and restoring the excavated area. Figure 1-3 in the MK Work Plan shows the general layout of the site. The excavation and stockpiled soils will be sampled for PCBs and TCLP organics, metals, and pesticides. The contents of drums and containers, if unknown, and any debris, if determined to be necessary, will also be sampled. A paint filter test is required on any contaminated soils containerized for land fill disposal.

A smaller dump site located to the southeast contains transite asbestos tiles or panels and is approximately 25 feet by 10 feet. Asbestos will be removed by a certified asbestos remediation contractor.

SWMU #26/08D, Highway 58 Dump Site B - The scope of work includes excavating, examining, packaging, transporting, and disposing of debris; stockpiling, sampling, and disposing of contaminated soils; and backfilling and

restoring the excavated area. Figure 1-4 in the MK Work Plan shows the general layout of the site. The excavation and stockpiled soils will be sampled for PCBs and TCLP organics, metals, and pesticides. The contents of drums and containers, if unknown, and any debris, if determined to be necessary, will also be sampled. A paint filter test is required on any contaminated soils containerized for land fill disposal.

1.2 CONTAMINANT CHARACTERISTICS

The potential contaminants and debris for each SWMU are summarized below, based on the best available information. The majority of the information on contaminants will be obtained during screening operations as debris is unearthed and segregated. Material Safety Data Sheets (MSDSs) or National Institute for Occupational Safety and Health (NIOSH) Pocket Guides will be used as a source of information to help personnel recognize and control occupational chemical hazards. MSDS and NIOSH information for each of the potential contaminants, process chemicals, or other chemical substances encountered during the interim cleanup process will be organized into a separate binder, commonly called the "MSDS Binder." These binders will be available to all personnel, at anytime, and will be at appropriate on-site locations such as the MK job-site trailer, Subcontractor job-site trailer, NSWC Medical Building, and each active SWMU work area.

SWMU #23/00, Battery Shop. Potential contamination includes soil contaminated by spent battery acids, miscellaneous debris, and waste oils/waters which could have contained lead, sulfates, and oily wastes. Unlabeled containers and drums may be encountered.

SWMU #25/07D, Highway 58 Dump Site A. Debris may consist of paper, cardboard containers, paint, thinners, lubrication and hydraulic fluids, and scrap metal. Unlabeled containers and drums may be encountered. A smaller area is known to contain transite asbestos tiles or panels, and its structural condition is unknown at this time.

SWMU #26/08D, Highway 58 Dump Site B. Debris may consist of paper, cardboard containers, paint, thinners, lubrication and hydraulic fluids, and scrap metal. Unlabeled containers and drums may be encountered.

1.3 REFERENCES

American Conference of Governmental Industrial Hygienists (ACGIH), 1994-1995. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices.*

Maslansky, Carol J. and Steven P., 1993. *Air Monitoring Instrumentation, A Manual for Emergency, Investigatory, and Remedial Responders*, Van Nostrand Reinhold.

- Morrison Knudsen Corporation (MK), MK-Ferguson Group, 1989. *Safety Manual*. January.
- MK, EC&E Group, 1994a. *Industrial Hygiene Procedures Manual*. Rev. 0. April.
- MK, 1994b. *Accident Prevention Plan For Naval Facilities Engineering Command Southern Division*, Prepared by Morrison Knudsen under contract N62467-93-D-1 106. Rev. 0. May 20.
- MK, 1994c. *Site Meeting Minutes of August 16-17, 1994*. R. Centinaro. August.
- MK, 1994d. *Safety and Health Program Description for Hazardous Waste Operations*. Rev. 1. September.
- MK, 1994e. NAVFAC SouthDiv Project Procedures:
PHSP 001.1, Hazardous Energy Control (Lockout/Tagout), 11/4/94.
PHSP 002.1, Emergency Response, 11/4/94.
PHSP 003.1, Spill Response, 11/4/94.
PHSP 004.1, Incident Reporting, 3/2/95.
PHSP 005.1, Excavations, 11/4/94.
- NIOSH/OSHA/USCG/EPA, 1985. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*. DHHS (NIOSH) Publication No. 85-115. October.
- NIOSH, 1990. *Pocket Guide to Chemical Hazards*.
- Naval Energy and Environmental Support Activity (NEESA), 1983. *Initial Assessment Study of NSWC, Indiana; NEESA 13-0003*, NSWC Crane, Indiana. May.
- OSHA, 1994. *Limits for Air Contaminants*, Title 29 CFR Part 1910 Section 1000, Table Z-1, July 1, 1994 revision.
- U.S. Army Corps of Engineers (ACOE), 1992. *Safety and Health Requirements Manual*. EM 385-1-1. October.

2.0 SAFETY AND HEALTH HAZARDS SUMMARY

This section describes the potential safety and health hazards anticipated for SWMUs #23/00, #25/07D, and #26/08D and applicable control methodologies.

2.1 OVERVIEW

Any investigative and remediation tasks performed at an uncharacterized landfill present a moderate to high risk of acute exposure to chemical, physical, and biological agents. The potential risk of acute exposure to chemical contaminants will be significantly reduced if engineering controls and administrative controls, including air monitoring and personal protective equipment (PPE) requirements, are strictly followed. The workers must be alert to unexpected objects being encountered during excavations and debris removal activities. Handling drums suspected of containing toxic, reactive, and/or flammable materials presents the greatest risk. Steps to ensure identification and confirmation of the object uncovered must be completed, and the object must be staged properly.

Other hazards at this site include construction safety hazards associated with heavy equipment; soil excavation and penetrations and potential contact with buried drums and/or containers; contact with underground utilities; walking and working surfaces; traffic control including haul road layout; slinging and rigging for moving objects from the excavation to staging; physical hazards during clearing and grubbing; site restoration including backfilling and compaction; eye/head/feet physical hazards; and heat and cold stress.

2.2 ACTIVITY HAZARD ANALYSES

Activity hazard analyses have been prepared for each anticipated task according to EM 385-1-1 (ACOE 1992). These hazard analyses are in the form of worksheets contained in Appendix A of this SSHP. Each site activity shall be reviewed by field supervision, namely the MK SSHO, MK General Superintendent and Subcontractor Job Supervisors(s) prior to starting work to determine if the prepared AHA adequately addresses the planned activity. If the prepared AHA requires revision or a new task is identified, additional hazard analysis will be prepared as needed. A new AHA worksheet shall be field prepared by the Subcontractor Job Supervisor and the MK SSHO before the activity takes place. The Pre-Entry Briefing meeting is utilized to review the AHA and is conducted with all affected workers by the Subcontractor Job Supervisor.

2.3 CHEMICAL HAZARDS

The potential chemical contaminants, their exposure limits, sign and symptoms of overexposure, and first aid requirements are presented in Table 2. This list is preliminary and will be updated as the debris is identified and characterized on site.

2.4 CONSTRUCTION SAFETY HAZARDS

2.4.1 Physical Hazards

Physical hazards associated with the project include the use of heavy equipment such as dump trucks, backhoes and excavators; and tripping and slipping from walking and working surfaces. Project personnel will receive site-specific and safety training, discussed later, to orient them to these potential hazards.

2.4.2 Noise

Certain operations may generate noise levels that exceed applicable limits. Hearing protection is required when noise levels exceed 85 dBA steady state or 140 dBA impulse, regardless of the exposure duration. Hearing protection will be provided to all field personnel. A comprehensive Hearing Conservation Program will be implemented when noise levels equal or exceed 85 dBA on an 8-hour time weighted average.

2.4.3 Adverse Weather Stress

All employees are to be alert to the signs and symptoms of heat stress. Should any of the following symptoms occur: extreme fatigue, cramps, dizziness, headache, nausea, profuse sweating, rapid pulse, pale clammy skin, the employee is to immediately leave the work area, rest, cool off, and drink plenty of cool water. If the symptoms do not subside after a reasonable rest period, the employee shall notify their supervisor who in turn will notify the MK SSHO and seek medical assistance. The MK SSHO and the site supervisor will be alert to signs of heat stress in site personnel and increase the frequency of breaks and fluid consumption as necessary.

Cold injury is classified as either localized, as in frostbite, frost nip or chilblain; or generalized, as hypothermia. In judging the cold hazard both air temperature and wind chill factor must be considered. The first symptoms of hypothermia are uncontrolled shivering, the sensation of being cold; the heartbeat slows and sometimes becomes irregular, the pulse weakens and blood pressure changes. Severe shaking or rigid muscles caused by bursts of energy change the body chemistry. Vague or slowed speech occurs, memory lapses, incoherence and drowsiness then occur. As core temperature continues to drop listlessness, confusion and little attempt to keep warm commences. Pain in the extremities is

felt. As exhaustion sets in the blood vessels no longer constrict, but ligate and rapid loss of heat begins.

Frostbite can occur without hypothermia when the extremities do not receive sufficient heat from central body stores. This can occur because of inadequate circulation and/or insulation. This condition results in damage to and loss of tissue. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes. Damage from frostbite can affect the outer layer of skin only, or it can include the tissue beneath the outer layer. Damage from frostbite can be serious; scarring, tissue death and amputation are all possibilities. The symptoms of frostbite include:

1) The skin changes color to white or grayish-yellow, progresses to reddish-violet and turns black as tissue dies. 2) Pain may be felt at first, but subsides. 3) Blisters may appear. 4) The affected part is cold and numb. 5) The skin has a waxy appearance.

To prevent cold stress, proper clothing must be worn. It is important to preserve the air space between the body and the outer layer of clothing to retain body heat. Refer to Section 7.2.6 for more guidance on heat and cold stress management.

2.4.4 Excavations

Open excavations, by their nature, are hazards. Accidental falls into the excavation or side wall collapse while personnel and equipment are near the excavation are potential hazards. Refer to MK project procedure PHSP 005.1 for specific excavation requirements.

An Excavation and Trenching Permit system shall be used whenever excavation, trenching, or penetrations are planned. Figure 1 depicts the MK Excavation and Trenching Permit.

2.4.5 Overhead Power Lines

Overhead high voltage power lines represent an electrocution hazard. Work conducted in proximity of overhead power lines will be performed in accordance with the requirements in EM 385-1-1, Section 11.E.

2.4.6 Underground Utilities

Underground utilities pose hazards such as fire and/or explosion from gaslines, electrocution from power lines, and excavation collapsing and/or filling from water lines. Positive identification of underground utilities and services is required. Underground utilities will be located in accordance with MK procedure PHSP 005.1. If hazardous energy control is anticipated for underground utilities, the requirements of MK procedure PHSP 001.1 shall be followed.

2.4.7 Fire and Explosion

An Unexploded Ordnance Survey (UXO) will be required prior to mobilization and throughout the entire excavation process. The UXO Survey is completed and staffed by NSWC personnel.

No hot work or open flames will be allowed in the work area without a Hot Work Permit. The MK Hot Work Permit is depicted in Figure 2. Hot Work Permitting will be coordinated through the base Fire Department. If fire or explosion hazards exist, all tools will be of the non-sparking type. Electrical pumps and blowers will be bonded or grounded to reduce hazards associated with static discharge. Portable power tools shall be explosion proof in accordance with the National Fire Protection Association (NFPA) 70B and 70E, Class 1, Division 1, Group D or unless approved otherwise.

Fire fighting equipment shall include at least one 40-lb or equivalent "ABC" multi-purpose fire extinguisher maintained at the entrance to the Contamination Reduction Zone (CRZ). All heavy equipment will be fitted with a minimum 10-lb "ABC" fire extinguisher. Job-site trailers and temporary structures will have fire extinguishers installed in accordance with NFPA 10.

2.4.8 Hazardous Energy Control (Lockout/Tagout)

Any system with the potential for unexpected energizing, start-up, or release of potential or kinetic energy during the servicing and maintenance of the system shall be isolated in accordance with MK procedure PHSP 001.1. The Superintendent is responsible for energy control. The on-site Public Works Department (PWD) will provide energy control services. MK will coordinate these services.

2.4.9 General Safety Hazards

Other potential safety hazards include slipping, falling, head trauma, back strains from lifting heavy objects, insect and snake bites, and similar hazards. All project personnel will wear appropriate PPE for the required work activity. As a minimum, Level D protection (hard hats, steel-toed boots and eye protection) will be required in all work areas. First-aid facilities will be available on-site for minor injuries. Local emergency response organizations will be notified of work activities to deal with emergencies.

2.4.10 Vehicular Traffic and Work-Site Control Hazards

Potential hazards from vehicular traffic around work areas will be controlled by using traffic control items such as traffic cones, flagging, barricades, and signage. Types and placement of traffic control items will be in accordance with EM 385-1-1, Section 8 and 29 CFR 1926.201 and 202. Workers required to work in active traffic areas or roadways will be required to wear high visibility reflective vests.

Suggested types of barricades along with placement and signs will follow the requirements of EM 385-1-1, Section 8 and 29 CFR 1926.201 and 202.

The following traffic rules will apply to all motorized vehicles and equipment while on site:

- Equipment carrying waste shall always have the right-of-way within the Work Zones.
- The speed limit is 10 mph, or as posted. Exceeding the speed limit is cause for disciplinary action, including removal from the site.
- Personnel shall not ride equipment that has not been specifically designed for the transport of personnel.
- Seatbelts shall be worn at all times when operating any motorized equipment or vehicle.
- All motor vehicles and equipment including hand and power tools shall be subject to an incoming safety inspection by the MK SSHO. The MK SSHO reserves the right to reject any subcontractor equipment. A "DO NOT USE" or "DEFECTIVE" tag will be placed on the equipment and documented in the MK SSHO Logbook. Corrective action will be pursued with the Subcontractor Supervisor.
- Daily safety checklists shall be completed by Subcontractor heavy equipment operators, especially any type of overhead crane or lifting equipment, and delivered to the MK Site Project Office on a daily basis. The checklist should be based on the equipment manufacturers recommended guidelines for daily checks using a format established and prepared by the owner/operator/subcontractor and approved by the MK SSHO.

2.4.11 Clearing and Grubbing

Clearing and grubbing of work sites will be completed in accordance with EM 385-1-1 Section 31.

2.4.12 Access and Haul Roads

If special access and haul roads are required and constructed for this project, they will be constructed in accordance with EM 385-1-1 Section 21.I.

2.4.13 Handling Drums and Other Containers

Practices and procedures for safe handling of drums and other hazardous waste containers as described in this SSHP and the Contract documents shall be reviewed at mobilization during the project kick-off safety meeting. Drums and containers suspected of containing hazardous material shall be visual inspected and categorized by hazard category. Drums and containers of unknowns shall be placed in temporary staging until they can be sampled and categorized. Assume all unlabeled drums contain hazardous material until their contents is characterized.

A drum/container handling plan shall be established by the MK PM when the Work Zones are defined by the Excavation Subcontractor based on the category of the drums/container identified. The drums can either be sampled in place and characterized or moved to a staging area for sampling and characterization. At all times minimize the amount of handling and use remote moving/handling equipment. Overpacks shall be available and ready before any attempt is made to move drums along with portable spill containment and clean up supplies; fire extinguishing equipment and eye wash/drench.

Drums shall be opened in Level B PPE from behind explosive resistant shields using non-sparking tools or with remote opening equipment designed for blast containment. Air monitoring shall be completed continuously and as close to the source as possible. The drum or container shall be surveyed for ionizing radiation if deemed necessary by the MK SSHO. All drums shall be staged with secondary containment in place and be protected from weather, especially direct sunlight.

3.0 RESPONSIBILITIES AND AUTHORITIES SUMMARY

This section describes the safety and health responsibilities of project personnel. Ultimately, the responsibility for the safety and health lies with the individual. All personnel must be aware of project hazards and the methods of reducing the risk of injury and illness. All personnel will comply with the rules and procedures set forth in this plan and will make project management aware of any conditions that may jeopardize the welfare of project workers and/or the public. Names and telephone numbers of responsible persons are listed in Table 3.

3.1 MK PROJECT MANAGER (PM)

The PM is responsible for the management of all aspects of the project, including safety and health. The PM is responsible for ensuring that all project tasks receive appropriate safety and health review before commencement of field activities and that the necessary equipment and facilities are available to implement the SSHP.

3.2 MK GENERAL SUPERINTENDENT AND SUBCONTRACTOR JOB SUPERVISORS

The MK General Superintendent and the Subcontractor Job Supervisor(s) are responsible for ensuring that the safety and health aspects for their particular task are addressed. They are responsible for the implementation of the SSHP in the field and for ensuring that all project personnel comply with provisions of the plan. The MK General Superintendent and Subcontractor Job Supervisor(s) are also responsible for notifying the MK Site Safety and Health Officer (SSHO) of any changes in work conditions which may affect the safety and health aspects of the task. The MK General Superintendent is responsible for conducting Plan of the Day (POD) meetings. The Subcontractor Job Supervisor(s) are responsible for conducting Pre-Entry Briefings and Post Entry Briefings.

The Subcontractor Job Supervisor(s) must notify the MK SSHO and MK General Superintendent of all accidents and incidents as soon as possible. The Subcontractor Job Supervisor(s) shall conduct an accident investigation and record the results of the investigation on a Supervisor Accident Investigation Report form or equivalent form. The initial investigation report shall be formally transmitted to the MK Project Manager within four hours after critical management of the incident is complete. The MK Project Manager shall follow the reporting requirements described in Section 11.3 of this SSHP. Section 11.3 references the MK Project Procedure PHSP-0004-1. The MK General Superintendent shall conduct a critique of the incident with selected MK and Subcontractor personnel as soon as possible after critical management of the incident is complete. Lessons learned will then be developed by the MK General Superintendent and Subcontractor Job Supervisor(s) and communicated to all affected personnel.

3.3 MK CERTIFIED INDUSTRIAL HYGIENIST (CIH)

The MK CIH who is the MK Project Management Office (PMO) Health and Safety Manager is responsible for preparation of the Site Safety and Health Plan (SSHP). The CIH is based out of the Boise, ID office. The CIH is responsible for making modifications to the plans and recommending changes to the work tasks if they affect safety and health. The CIH is responsible for ensuring that all required sampling/monitoring is performed and that all required safety and health documentation is maintained. The CIH may assign some tasks to the MK SSHO for implementation.

3.4 MK SITE SAFETY AND HEALTH OFFICER (SSHO)

The MK SSHO is responsible for the day-to-day implementation of the Site Safety and Health Plan (SSHP), and verification of compliance with the SSHP and all applicable occupational safety and health rules and regulations. The MK SSHO has the authority to suspend work at any time if there is an imminent threat to the health and safety of project workers or the general public. The MK SSHO shall assure the Navy's designated authority at the site is notified immediately of any accident including spills. The MK SSHO shall assist in the accident investigation effort and shall have final approval authority for accident reports. The MK Work Plan document describes in detail the role and responsibilities of the MK SSHO on this project.

3.5 SUBCONTRACTOR DESIGNATED COMPETENT SAFETY PERSON

The primary Subcontractor shall designate a competent and qualified person, subject to the approval of the MK SSHO and the MK Site Project Engineer, responsible for the implementation of this SSHP and their Company's safety and health program. This designated person shall be referred to as the Subcontractor SSHO. The Subcontractor's SSHO shall be qualified to perform air monitoring to support the subcontractor's operation and be supplied with the appropriate monitoring equipment described in Section 7 of this plan. The Subcontractor SSHO shall provide the MK SSHO copies of all factory calibration certificates and the forms to be used to record daily field calibrations for each instrument. The Subcontractor SSHO shall provide a daily site safety report and shall coordinate his efforts with the MK SSHO.

3.6 SUBCONTRACTOR PERSONNEL

All subcontractors are required to have a qualified designated competent safety person who will assure and abide by the requirements of this SSHP as stated above. They are also required to comply with all applicable and appropriate federal, state, and local laws, standards, and regulations. Subcontractors must notify the MK SSHO and MK General Superintendent of all accidents as soon as possible. Subcontractors must maintain records of all first aid rendered and

recordable, and lost time injuries. Subcontractors must notify the MK SSHO of any changes in work conditions which may affect the safety and health aspects of the task.

3.7 NEAREST EMERGENCY MEDICAL FACILITY

Directions to the On-Site NSWC Medical Department:

The NSWC Fire Department coordinates the on-site ambulance service. The Medical Department is located in Building 12, off of road H-2, just north of H-5.

Directions to Bedford Medical Center:

From the Bloomington Gate, head east on Highway 58 to the city of Bedford, then turn left onto 16th Street. The distance to hospital is approximately 20 miles.

Directions to Bloomington Hospital:

Exit NSWC on road H5-45 through the Bloomington Gate, then follow Highway 45 North to Bloomington. At the intersection of Highway 45 and Highway 37, continue straight ahead over the bypass (Bloomfield Road), and follow Bloomfield Road north until it becomes 2nd Street. Continue on 2nd Street, and the hospital will be on right-hand side of the road.

Note: Refer also to Table 3 and Figure 3.

4.0 TRAINING AND SAFETY MEETING REQUIREMENTS SUMMARY

This Section lists all regulatory driven and project specific training required for this job. Table 4 provides a summary on training requirements. Safety related meetings required for this project are described beginning in Section 4.10. A training and meeting requirements matrix is shown in Table 4.

4.1 HAZARDOUS WASTE OPERATIONS TRAINING

All personnel entering a contamination reduction zone or exclusion zone shall have completed the initial 40-Hour Hazardous Waste Operations Safety and Health Training and three days of supervised experience pursuant to 29 CFR 1910.120(e)(3). All personnel shall receive eight hours of refresher training annually, pursuant to 29 CFR 1910.120(e)(8), as necessary. All on-site supervisors and managers as well as subcontractor superintendents and foremen shall receive an additional eight hours of specialized training pursuant to 29 CFR 1910.120(e)(4).

4.2 SITE SPECIFIC TRAINING

All personnel shall receive site-specific training prior to entering the site or commencement of work. All site employees and subcontractors, including those working in the support zone, shall receive this training. The Subcontractor Job Supervisor(s) are responsible for identifying personnel requiring this training and coordinated with the MK SSHO regarding scheduling of this training. The MK SSHO or designated alternate will conduct the training. Site visitors shall receive site-specific training prior to entering an exclusion zone. An abbreviated version of this training will be given to site visitors not entering an exclusion zone but whose business will be conducted unescorted in the near vicinity of the Work Zones. The format and content will be left up to the discretion of the MK SSHO. This training will cover the SSHP, but not necessarily be limited to, the following topics.

- Names of site safety and health personnel.
- Safety and health hazards present on the site and anticipated during the work campaign.
- Hazard Communication.
- PPE requirements.
- Safe work practices including drum handling.
- Engineering controls.
- Medical surveillance requirements, including recognition or symptoms and signs which might indicate overexposure to hazards.
- Decontamination procedures.
- Emergency procedures.
- Spill containment plan.
- Energy Control.

- Requirements of this SSHP.

4.3 CONFINED SPACE ENTRY TRAINING

Confined Space Entry is not anticipated on this project.

4.4 RESPIRATORY PROTECTION TRAINING

All MK personnel and subcontractors required to use respiratory protection shall be trained in respirator use, care and maintenance pursuant to 29 CFR 1926.103 and 29 CFR 1910.134. Each individual shall be medically qualified to wear a respiratory device and have documented evidence of successfully completing respiratory training and fit testing.

4.5 HAZARD COMMUNICATION TRAINING

All personnel shall complete hazard communication training pursuant to 29 CFR 1910.1200 and 29 CFR 1926.59 regarding all potentially hazardous chemicals to which they may be exposed. In the event that the OSHA regulations regarding other contaminants or hazards become applicable, substance-specific training pursuant to the subject regulation will be performed for the affected project personnel.

Each subcontractor shall have a written Hazard Communication Program in accordance with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and applicable State Department of Health Regulations. Material Safety Data Sheets (MSDS) for all hazardous materials in the work area shall be readily available for employees to review. MSDSs and/or NIOSH Pocket Guides for the contaminants suspected to be in the various work sites will be placed in a site MSDS Right-To-Know Binder. Copies will be maintained at each work site or some location convenient for employees to review plus a copy will be kept at the MK Project Office and the Subcontractor(s) Project Office.

Hazard Communication training will be included as part of the Site-Specific Training required in Section 4.2. When new chemicals are brought onto the work site or new chemical contaminants are identified, an MSDS and/or NIOSH Pocket Guide will be added to the MSDS Right-To-Know Binder(s) with a corresponding review by the MK SSHO and Subcontractor Job Supervisor(s) and if necessary, training shall be conducted with affected individuals. The MK SSHO has overall responsibility for maintenance of the MSDS database. Subcontractors are responsible for notifying the MK SSHO of new chemicals or substances being used in the work place. Subcontractor Job Supervisor(s) are responsible for reviewing the MSDS, identifying training needs for affected workers and transmitting a copy of the MSDS to the MK SSHO.

4.6 CPR/FIRST AID AND BLOODBORNE PATHOGENS

At least two employees on each shift shall be qualified to administer first aid and CPR. At the minimum, the MK SSHO and each Subcontractor shall have at least one person First Aid/CPR qualified. These personnel are also required to be trained to 29 CFR 1910.1030 (Bloodborne Pathogens) as stated and in accordance with MK IH Procedure 11. Trained first aid CPR personnel shall be identified by hard hat stickers or other means of identification.

4.7 DEPARTMENT OF TRANSPORTATION (DOT) HAZARDOUS MATERIALS TRAINING

All personnel required to classify, mark, select packaging, inspect, load and transport hazardous materials must be trained to 49 CFR Part 172 Subpart H and HM 181. This includes personnel responsible for packaging of samples to be sent to off site laboratories for analysis. Also included are personnel responsible for completing a hazardous waste or hazardous material manifest and insuring the hazardous waste/material is properly prepared for off site shipment.

4.8 SAFETY MEETINGS

Safety meetings for all MK employees and subcontractors personnel shall be conducted on a weekly basis. This group meeting by design will be intended to be a self assessment of safety performance and a chance to review any lessons learned as a group plus an opportunity to introduced specialized training topics. The meeting shall be chaired by the MK General Superintendent and Subcontractor Supervisor(s) with assistance by the MK SSHO and/or subcontractor designated competent safety person. This safety meeting can also be used to describe any changes in the Site Specific Training described in Section 4.2. Safety Meetings are documented using Figure 4a from this plan or equivalent. A Safety Meeting for all MK personnel and Subcontractor Job Supervisor(s) shall be conducted at least once per month. The monthly meeting is chaired by the MK Project Manager or General Superintendent with assistance from the MK SSHO. Its purpose is to review and rate safety performance and identify any areas requiring additional specialized training. This meeting shall be documented to include date, time, personnel in attendance, topics, and instructor. The Safety Meeting shall be documented using Figure 4a or equivalent.

4.9 PLAN OF THE DAY (POD) MEETINGS

Plan Of The Day (POD) Meetings shall be held at the beginning of each shift to review the planned work of the day as well as any safety and quality concerns. The meeting is chaired by the MK General Superintendent or MK PM. The attendee's include the Subcontractor(s) Job Supervisor, the MK Quality Control representative, the MK SSHO and other selected personnel. The date, time,

personnel attending and meeting minutes shall be documented using Figure 4a or equivalent.

4.10 PRE- AND POST-ENTRY BRIEFINGS (MEETING)

Pre-entry briefings shall be held for employees prior to their initiating any new or differing site activity in an exclusion zone and at such other times as necessary to ensure employees are knowledgeable of the work plan activity, the Activity Hazards Analysis, and that the plan and analyses are being followed. Pre Entry Briefs are the responsibility of the Subcontractor Job Supervisor. Attendance shall be documented using Figure 4 from this Plan. In addition, a sign-in and sign-out sheet shall be made available at the CRZ for personnel to sign and record time in and out of the exclusion zone.

Post-entry briefings shall be held as needed to assure changes in conditions or work methods are promptly reported and addressed. In addition, all incidents will be promptly evaluated and the evaluation results will be communicated to personnel in post-entry briefings and other meetings. Lessons-learned from these evaluations shall be communicated to all affected personnel. Post Entry Briefs are the responsibility of the Subcontractor Job Supervisor. They are not required to be formally documented using Figure 4 from this plan, a logbook entry is sufficient.

4.11 QUALITY CONTROL PREPARATORY INSPECTION PHASE MEETING

The MK SSHO shall attend all Quality Control Preparatory Phase Inspection Meetings to discuss any safety and health concerns requiring special attention and to review anticipated safety requirements for a specific definable feature of work, and to review specific air monitoring required.

4.12 RECORDKEEPING

Written records of all required training and meetings shall be maintained on site by the MK SSHO. These records shall be made available to U.S. Navy personnel upon request. Subcontractors to MK shall provide copies of training certifications along with proof of medical surveillance physical and respirator certification to the MK Project Manager or MK SSHO prior to personnel working on site.

5.0 MEDICAL SURVEILLANCE PROGRAM REQUIREMENTS

5.1 SUMMARY

All project personnel who work within the EZ for more than three days per month or are required to use respiratory protection within the EZ for any length of the time will participate in a medical surveillance program, as described in this section. Clean, new construction activities will not require participation in the medical surveillance program unless special tasks dictate, as determined by the SSO.

The medical surveillance program consists of a baseline or initial examination, an annual medical examination, a termination examination, and episodic medical examinations as necessary. **Termination or exit physicals shall be required on this project.**

At a minimum, the content of the initial, annual, and termination examinations shall consist of the following medical tests and procedures (or as determined by the examining physician):

- Medical and occupation history.
- Complete physical examination.
- Pulmonary function test (FVC and FEV₁).
- Complete blood count including SMAC-22 or 24 biochemical profiles.
- Audiometry.
- Complete urinalysis.
- Resting electrocardiogram.
- Vision screen.
- Chest X-ray (PA) (at the direction of the examining physician).

Special Requirement #1. Pre-employment or pre-task baselines will be obtained for heavy metals via 24-hour urine collection and analysis for each MK employee and subcontractor working in any of the SWMU exclusions zones on a routine basis. Metals analyses will include antimony, arsenic, cadmium, and chromium.

Special Requirement #2. Pre-employment or pre-task baselines will be obtained for heavy metals, specifically cadmium and lead via whole blood collection and analysis for each MK employee and subcontractor working in any of the SWMU exclusions zones on a routine basis during the work campaign.

An episodic examination will be required if any worker develops signs or symptoms related to the possible overexposure to hazardous substances or other health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation. The scope of any episodic examination will be left to the discretion of the examining physician.

A copy of the examining physician's written opinion about the employee's ability to perform work on this hazardous waste site and use respiratory protection, and a statement that the physician has informed the employee of the results of the examination shall be kept on site. Subcontractors must provide this information to the MK Project Manager or the MK SSHO prior to mobilization activities on site. These statements must not contain the specific results of medical examinations or tests.

5.2 DRUG ABUSE PREVENTION PROGRAM

Drug screening is required for work at this site. Results must be provided for all personnel to the MK Project Manager prior to beginning any work at this site. Morrison Knudsen Corporation is committed to the establishment and maintenance of a safe and efficient work environment for all employees free from the effects of alcohol, illegal drugs, other controlled substances, and prohibited items.

5.3 RECORDKEEPING

Arrangements shall be made with the examining physician(s) or others to assure long-term storage of medical records in accordance with 29 CFR 1910.120 and 1926.65. MK will manage medical surveillance records for MK employee's only. The statements by the examining physician(s) attesting to the medical qualification of individual workers shall be maintained at the project site for both MK and the Subcontractor and will remain a part of the project files. The subcontractor's are responsible for all medical records management for their direct hire employees in accordance with OSHA 1910.120 and 1926.65.

6.0 PERSONAL PROTECTIVE EQUIPMENT

In addition to engineering controls and work practices, personal protective equipment (PPE) shall be used to protect personnel from exposure to contaminants which may be encountered during activities on site as warranted. The following guidelines will be followed:

- Respirators and other PPE necessary to protect the health of employees shall be provided by their employer.
- Only NIOSH/MSHA-approved respirators and cartridges shall be used.
- The respirator user's medical status shall be reviewed by the MK SSHO before work is performed requiring respirator use.
- MK IH Procedure 14.0 shall serve as the written standard operating procedure governing the use of respirators at the job site. Section 10 from MK Safety and Health Program Description for Hazardous Waste Operations shall serve as the written standard operating procedure governing the use of PPE at the job site.
- Respirators will be assigned to individual employees for their exclusive use and marked to indicate to whom it was assigned, for the duration of this scope of work.

Table 5 presents the basic levels (Level B, C, Modified D, and D) of PPE.

Table 6 lists the minimum PPE level required for each task or operation. If air sampling/monitoring indicates that modification to the levels of protection are warranted, the SSHO is empowered with the authority to authorize the modification based on the guidance provided in Table 7, Airborne Contaminant Response Criteria.

The PPE has been selected based on the site specific hazards. If conditions change, PPE selection and use shall be reviewed by the MK SSHO. Personnel will be trained if necessary on the use and limitations of specific pieces of PPE prior to initiation of work by their designated supervisors with assistance when necessary from the MK SSHO.

PPE will be maintained and stored in accordance with the manufacturer's recommendation and good industrial hygiene practices. Personnel will inspect PPE prior to each use to assure the PPE is clean and good working order. Training will be provided to personnel concerning PPE inspection criteria if determined to be necessary by the MK SSHO. Where needed, PPE donning and doffing procedures

will be developed or reviewed and personnel will be trained on these procedures by the MK SSHO.

The MK SSHO shall conduct evaluations of effectiveness of PPE. Revisions in PPE selection and use will be made as warranted. The Subcontractor(s) Job Supervisor and/or Subcontractor designated competent safety person in coordination with the MK SSHO shall address medical considerations, including work limitations due to temperature extremes, when assigning or revising PPE requirements to personnel in accordance with MK Procedure on PPE.

7.0 MONITORING AND SAMPLING

Air monitoring refers to direct real-time reading of airborne concentrations, and air sampling refers to time-integrated air sampling (either personal or area samples). Execution of real time air monitoring and/or sampling will be coordinated by the MK SSHO in accordance with the requirements for air monitoring depicted in Table 9.

7.1 GENERAL

This section describes the air sampling and air monitoring program performed to evaluate project worker exposure to potentially hazardous airborne materials and to evaluate off-site impacts. The air sampling/monitoring results will be used to:

- Assess worker exposure to potentially hazardous materials with respect to the Permissible Exposure Limit (PEL) for Air Contaminants (Title 29 Code of Federal Regulations, Part 1910.1000) or other published exposure levels.
- Assess the adequacy of engineering controls and respiratory protection.
- Delineate areas where controls or respiratory protection is needed.
- Establish work control zones.

7.2 MONITORING

7.2.1 Volatile Organic Compounds

A direct-reading, real-time photo-ionization or flame-ionization detection instrument capable of detecting volatile organic compounds (VOCs) will be used whenever excavation and penetration in potentially contaminated areas occurs. Readings will be taken at locations that reflect approximate concentrations of organic vapors and gases in the breathing zone of excavation personnel. Results of the organic vapor and gas monitoring will be documented. If necessary, the level of PPE used by personnel will be modified. Table 7 describes the level of PPE to be used, based on the concentration of organic vapors and gases in the breathing zone of project personnel. The direct-reading real-time organic vapor and gas monitoring equipment will be "response checked" according to the manufacturer's instructions before use each day, and calibrated yearly by the manufacturer or other qualified personnel. Records of the response check, maintenance, and annual calibration will be maintained on-site.

Colorimetric indicator tubes (such as Dräger tubes) will be used at the SSHO's discretion whenever the direct-reading real-time instrument measures breathing zone concentrations of organic gases or vapors at 2 parts per million (ppm) greater

than background concentrations. The following compounds may be measured by colorimetric indicator tubes: benzene, toluene, xylene, ethylbenzene, petroleum hydrocarbons (n-Octane), and trichloroethene (TCE). If benzene or other volatiles are detected, the level of PPE will be upgraded as specified in Table 7, or as determined by the MK SSHO.

7.2.2 Airborne Dust

A direct-reading, real-time instrument capable of detecting airborne dust (such as MIE Miniram) may be used, based on visible observations of excessive dust. Readings will be taken at locations that reflect approximate concentrations of airborne dust in the breathing zone of project personnel. Results of the airborne dust monitoring will be documented. If necessary, the level of PPE used by personnel will be modified or engineering controls enhanced. The direct-reading, real-time monitoring equipment will be "response checked" according to the manufacturer's instructions before use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance, and annual calibration will be maintained on-site. When such monitoring is conducted and the results are greater than 10 mg/m³ total dust concentrations, immediate steps will be taken to determine the cause, modify site operations, evacuate unprotected personnel and the public if necessary, and notify agency contact personnel.

7.2.3 Confined Space Monitoring

Real-time air monitoring shall be conducted for percent lower explosive limit (LEL), oxygen (O₂), hydrogen sulfide (H₂S) and other toxic gases as determined to be necessary by the MK SSHO. Entry into sludge beds, sumps, pits, and open excavations greater than 5 foot depth shall be considered permit-required confined spaces until monitoring for toxic and physical hazards has determined that the space can be entered without a permit. The logic of classification of confined spaces shall follow the requirements established in 29 CFR 1910.146 Appendix A. Monitoring and hazard evaluation must be completed on either a MK "Non-Permit Required Confined Space Work Form" (Attachment IV, Procedure 9 of IH Procedures Manual) or on a "Confined Space Entry Form" (Attachment VI, Procedure 9 of IH Procedures Manual). Monitoring must be conducted for (1) oxygen content to demonstrate that available oxygen is greater than 19.5 % and less than 23.5 %, (2) flammable/explosive atmospheres must be less than 10 % or the lower flammable limit of potential explosive/flammable gases or dusts that may be present, and (3) toxic gases must be less than either the OSHA PEL or the ACGIH TLV whichever is less or required by law. Any atmosphere of a confined space that cannot be monitored to determine the potential hazard will be considered an IDLH situation and will require engineering controls plus level B PPE depending on the situation for personnel entry into the space. Only personnel suitably trained to conduct hazard evaluations of confined spaces will be authorized to conduct monitoring and testing of atmospheres.

7.2.4 Perimeter Monitoring

Perimeter monitoring to evaluate emissions of airborne dust will be performed periodically, as warranted. When such monitoring is conducted and results are greater than 1.0 mg/m³ (10 times less than the TLV-TWA listed in Section 7.2.2), immediate steps will be taken to determine the cause, modify site operations, evacuate unprotected personnel and the public if necessary, and notify agency contact personnel.

7.2.5 Noise Monitoring

Noise monitoring will be performed, as warranted, by the MK SSO at the initiation of each task or operation to determine the sound levels associated with the particular task or operation. Sound levels will be determined at locations that best approximate the sound levels at the ear of potentially affected personnel. Noise monitoring equipment will be "response checked" according to the manufacturer's instructions prior to use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance, and annual calibration will be maintained on-site.

7.2.6 Heat Stress and Cold Stress Monitoring

When temperatures at the site are above 65°F, the wet bulb globe temperature (WBGT) may be monitored to assess the potential for heat stress. Work/rest periods will be adjusted according to the guidelines stated in the current edition of *ACGIH Threshold Limit Values for Chemical Substances and Physical Agents*⁵. When the clothing worn differs from the ACGIH standard ensemble, such as with workers wearing semipermeable or impermeable, the guidelines established in the NIOSH/OSHA/ USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, Section 8 (NIOSH and others 1985) should be consulted. Section 8 of this document is summarized as follows:

When employees are required to wear impermeable chemical protective clothing in temperatures exceeding 70°F, employees shall use the "buddy system" to monitor each other's pulse rate at the start of each rest period. If the pulse rate exceeds 110 beats per minute, the next work period shall be shortened by one-third without shortening the rest period. The pulse rate shall be monitored again at the beginning of the next rest period, and if the pulse rate exceeds 110 beats per minute, the work period shall again be shortened by one-third. No employee shall be allowed to continue working in PPE if his or her pulse rate exceeds 110 beats per minute continuously.

Table 8 (reprinted from the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*) can be used to establish work/rest periods and the frequency of monitoring pulse rates.

Guidelines for the prevention of cold stress and cold stress threshold limit values (TLVs) shall follow the guidelines stated in EM-381-1-1 Section 06.J and the current edition of *ACGIH Threshold Limit Values for Chemical Substances and Physical Agents* (OSHA 1993). At air temperatures below 45°F, the air temperature shall be monitored. Below 30°F, the temperature and wind speed shall be monitored and the equivalent chill temperature calculated. Clothing requirements are listed in paragraph 06.J.09, Section 06.J of EM 385-1-1.

7.2.7 Ionizing Radiation Monitoring

A portable direct-reading ionizing radiation survey meter with geiger-mueller (GM) probe suitable for detection of beta, gamma, and x-ray radiation will be used during characterization of debris. The meter must display readings in milli-roentgens per hour (mR/hr). The GM meter will be response checked according to the manufacturer's instructions prior to use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance, and annual calibration will be maintained on-site. An action level of 1 mR/hr above background is established. If readings greater than 1 mR/hr above background are detected, the immediate area will be secured. The dose rate on the boundary of the secured area must be below 1 mR/hr. Health Physics personnel from NSWC Crane will be notified to investigate the readings.

7.3 AIR SAMPLING

7.3.1 Organic Compounds

Time-integrated air sampling for aromatic hydrocarbons will be performed whenever the real-time monitoring measures concentrations exceeding 5 ppm for organic gases or vapors for more than 5 consecutive minutes. Samples will be taken with personal air sampling pumps from the personal breathing zone. Time-integrated air samples will be collected and analyzed for aromatic hydrocarbons at the SSHO's discretion. The air samples will be collected and analyzed in accordance with NIOSH Method 1501 or equivalent method. The air sampling pump will be calibrated before and after sample collection. Passive dosimeters may be used in place of air sampling pumps. Analysis of all air samples will be performed by an American Industrial Hygiene Association (AIHA) accredited laboratory.

7.3.2 PCB Hazards

Air monitoring samples for PCBs are not anticipated. However, if soil significantly contaminated with PCB oil is encountered, then two personal samples shall be collected using the maximum exposed individual(s) in accordance with NIOSH Method 5503. The samples will be collected during the follow-on soil removal activities if any person(s) will be within 15 feet of the soil movement.

7.4 AIR MONITORING AND SAMPLING REQUIREMENTS

Air monitoring and sampling requirements are shown in Table 9.

7.5 RECORDKEEPING AND CHAIN OF CUSTODY

Written records of all monitoring will be maintained on-site. Affected employees will be notified of monitoring results representative of their exposure. Chain-of-Custody (COC) Records will be used for industrial hygiene sampling requiring the collection and shipment of a sample to an approved analytical laboratory. A COC Record will be properly completed and accompany all collected samples in accordance with MK Industrial Hygiene Procedures Manual, Procedure 7.0, *Analytical Laboratory Procedures* (MK 1994a). The selected AIHA-accredited industrial hygiene lab will be American Analytical Laboratories, Inc., Akron, Ohio (216-535-1300) or a local laboratory if one is found. Turn-around time is estimated to be 5 to 10 working days. Workers will be notified of time-integrated sampling results via memo to the designated supervisor. The Navy will receive a summary on all sampling records and results as part of the Close-Out Report.

8.0

SAFETY AND HEALTH WORK PRECAUTIONS AND PROCEDURES

Operations shall be conducted in a safe manner consistent with the policies and procedures outlined in this SSHP. The number of personnel shall be restricted to the minimum necessary to complete the required work as an administrative control to limit personnel exposures to potential site chemical, physical and biological hazards.

All project and subcontractor personnel assigned to this project are responsible for following this SSHP unless modified in the subcontracting special conditions document, for using safe practices, and for wearing the PPE specified by the MK SSO. Project personnel shall report hazards and unsafe conditions and practices to the MK SSO. All federal, state and local occupational health and safety regulations must be complied with by project personnel. Violations of project procedures may include disciplinary measures up to and including termination.

8.1 RULES AND PROCEDURES

- The Subcontractor shall have available a 40-lb rated ABC multipurpose dry chemical fire extinguisher (or two 20 lb ABC's); first aid kit including CPR kit (Pocket Mask) and biohazards control kit; emergency eyewash and drench; and spill response equipment available at every controlled work location. Also, the Subcontractor shall complete the Work Zone Map and post it at each work site including emergency phone numbers. Work zone signs shall be posted in accordance with the requirements of Section 9.4 of this SSHP.
- Avoid driving over dry grass that is higher than the ground clearance of the vehicle. Catalytic converters on the undercarriage of vehicles are sufficiently hot to ignite dry prairie grass. Never allow a vehicle with a warm undercarriage to sit in a stationary location over dry grass or other combustible materials.
- Do not eat, drink, smoke, take medications, chew gum or tobacco, or put objects in mouth while in the exclusion zone and contamination reduction zone or when handling samples.
- After handling samples, thoroughly wash hands and, if necessary, face, before eating or putting anything in mouth (i.e., avoid hand-to-mouth contamination).
- At a minimum, wear hard hats, safety glasses and steel-toed boots when inside the work boundaries.

- Remain a safe distance from the excavation equipment when not involved in operation or monitoring activities.
- Do not under any circumstances enter or ride in or on any backhoe/excavator bucket, materials hoist or any other device not specifically designed for carrying human passengers.
- Remain aware of your own and other's positions with regard to rotating equipment and be extremely careful when assembling, lifting and carrying items that may cause pinch point injuries and collisions.
- Be alert to the symptoms of fatigue, heat stress and cold stress and their effect on the normal caution and judgment of personnel.
- Use explosion proof sampling equipment and tools.
- Use ground fault circuit interrupters (GFCI) with all electrical tools and equipment.
- Stand clear of trenches during excavation. Always approach the excavation from upwind.
- Stand upwind, whenever possible, of excavations and other sites where the soil has been disturbed.
- Be alert to potentially changing exposure conditions as evidenced by perceptible odors, unusual appearance of excavated soils, oily sheen on water, or other evidence of possible contamination.
- Do not enter any excavation or trench greater than five feet in depth unless authorized by the MK SSHO.
- Keep hand tools off the ground and centrally located on a plastic cover or area of no contamination whenever possible to avoid tripping hazards and the spread of contamination.
- Use the buddy system at all times while working at the site in controlled work zones. No one is to work alone in the Exclusion Zone or Contamination Reduction Zone without permission from the MK SSHO and MK General Superintendent.
- Minimize truck tire disturbance of all stabilized sites and areas beyond the work area boundaries.
- Cease all work operations on the site at sunset unless the control zone is adequately illuminated with artificial lighting.

- Subcontractor Job Supervisors shall attend the POD meeting prior to the start of the work and conduct pre and post entry briefs with all affected workers. All personnel shall sign and record the time in and out of all Exclusion Zones.
- Avoid direct contact with contaminated materials unless necessary for sample collection or required observation. PPE shall be worn at all times, as required.
- Remove disposable clothing and follow decontamination procedures.
- Always use an appropriate level of personal protection as assigned in this SSHP. Lesser levels of protection can result in otherwise preventable exposure.
- Maintain a high level of awareness of the limitations in mobility, dexterity and visual impairment inherent in the use of Level B and Level C PPE.
- Establish prearranged hand signals or other means of emergency communication when wearing respiratory equipment, since this equipment impairs speech communication.
- Wear hearing protection if you have to shout to communicate at a distance of three feet in steady-state (continuous) noise or when you expect loud impact noise from certain activities. The MK SSHO will assess potential noise exposure and provide recommendation on correct hearing protection.

9.0 WORK ZONES

Where a potential exists for worker exposure to hazardous substances, safety, or health hazards, work zones will be established, and the flow of personnel and equipment will be controlled. The establishment of work zones will ensure that personnel are properly protected against hazards present in the work area, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

Prior to the commencement of field activities, Work Zones shall be established by the Excavation Subcontractor with the approval of the MK SSHO as necessary to meet operational and safety objectives. These work zones will be depicted on Work Zone Maps that are field prepared by the Excavation Subcontractor to be posted by the Subcontractor Job Supervisor near the entrance to the work area. In addition to the zones, these maps should show assembly points; evacuation routes; location of first aid equipment, fire extinguisher and eye wash/drench and spill containment equipment; and emergency communications equipment. One copy of the work zone maps and all revisions shall be delivered to the MK SSHO by the Subcontractor Job Supervisor to be retained by the MK SSHO in Appendix B of the field master copy SSHP. Posted with the Work Zone Map shall be the list of emergency phone numbers and route map to hospital. The Excavation Subcontractor shall maintain a sign-in and sign-out log at the entrance to the Contamination Reduction Zone (CRZ) for personnel entering the Exclusion Zone (EZ).

9.1 EXCLUSION ZONE

The exclusion zone (EZ) is the area where hazardous substances are present or expected to occur, or health and safety hazards are present. Entry into this area is limited to personnel required to perform the work who are wearing the specified PPE and have attended a Pre-Entry Briefing. Everyone entering the EZ shall have completed the required health and safety training and will participate in the medical surveillance program as necessary. The boundary of the EZ will be determined for each activity and may change depending on activities and conditions.

An EZ will be established to encompass the contaminated area. For this project, the EZ for each soil excavation area will consist of the immediate area of excavation extending outward for approximately 20 feet. The EZ will include the excavated soil classified as potentially contaminated that may be stockpiled.

The EZ will be clearly delineated with signs, barricade tape, fences, or other suitable means. Access control points will be established to regulate the flow of personnel and equipment in and out of the zone and to help verify that proper procedures for entry and exit are followed. PPE levels in the EZ (refer to Section 6) are initially scoped as Level C, depending on the task listed in Table 6.

Decontamination will follow guidelines established in Section 10. Gross contamination will be removed in the EZ followed by additional decontamination in the CRZ. The MK SSHO will monitor activities in the EZ from his position in the CRZ. The boundary line from the EZ to the CRZ will be based on the following criteria:

1. Approximately 20 feet outward from contaminated work area, or as much as necessary, to include the heavy equipment operating in the zone and the temporary staging of any potentially contaminated soil.
2. Perimeter air monitoring for VOCs if necessary reads no increase in ppm-equivalents above background and the portable dust/aerosol monitor shows no increase in concentration above background. Background is considered the Support Zone (SZ) area.

9.2 CONTAMINATION REDUCTION ZONE

The Contamination Reduction Zone (CRZ) is the transition area between the contaminated area (the EZ) and the clean area (the SZ). While designed primarily to reduce the possibility of the support zone becoming contaminated or affected by EZ activities, the CRZ is also used for decontamination of personnel and equipment. No personnel or equipment will be allowed to exit the EZ or CRZ without being properly decontaminated, except in emergencies. The CRZ is designated as the immediate area around the EZ, extending outward approximately 20 feet or as much as necessary, to accommodate the complete length of the longest piece of heavy equipment. Additionally, the immediate area extending outward for approximately 10 feet from the decontamination facility will be designated as the CRZ.

Used PPE will be removed and stored in properly marked 55-gallon drums or other containers for disposal. Work clothing will also be removed and stored in lockers. Personnel washing and shower facilities will be provided. Provisions for decontamination of construction and field equipment along with soil sampling equipment will be implemented as necessary.

9.3 SUPPORT ZONE

The support zone (SZ) consists of all areas outside the exclusion and contamination reduction zones, but within the project site. The SZ is used for all site activities that are not limited to the EZ or CRZ equipment and material storage, offices, parking, etc. Logs will be maintained of the Pre-Entry Briefing in the SZ to record the names, companies, and reason for entry into the CRZ or EZ. The SZ will also serve as the staging area for all activities.

9.4 WORK ZONE CONTROLS

Before site operations begin, the SZ site office/decontamination facility will be identified with signs stating that all visitors are required to stop and inform site personnel of their presence on the work site.

The Subcontractor shall post signs at entrances to the CRZ and EZ stating the following:

**HAZARDOUS AREA KEEP OUT
DANGER
AUTHORIZED PERSONNEL ONLY
PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED IN THIS AREA**

In addition, at the entrance to the CRZ, post sign stating the following:

NO SMOKING, DRINKING, OR EATING BEYOND THIS POINT

The following requirements will apply to all personnel entering the CRZ or EZ:

- The use of the buddy system is mandatory. No one will be allowed to work alone in the CRZ or EZ without permission from the SSHO.
- No smoking, eating, drinking, chewing tobacco or gum, or application of cosmetics within the CRZ or EZ.

10.0 PERSONNEL AND EQUIPMENT DECONTAMINATION AND HYGIENE PROCEDURES

All personnel, clothing and equipment leaving an EZ shall be inspected and, if necessary, decontaminated to remove any potentially harmful substances that may have adhered to them. Some equipment/clothing may be disposed of rather than decontaminated. In this case, the used PPE and/or equipment (such as disposable sampling equipment) will be stored in properly marked, plastic-lined 55-gallon drums in the CRZ, followed by transport to a disposal facility. A Decontamination Facility will be constructed for personnel and equipment decontamination (refer to Section 7.2 in the MK Work Plan). Refer also to MK Work Plan Section 7.3 for personnel decontamination, Section 7.4 for equipment decontamination, and Section 7.5 for sampling equipment decontamination. This section gives guidelines for performing the decontamination procedures. Final details will be described during the site-specific safety and health briefing prior to commencing field operations when all equipment is procured, tested, and in place.

10.1 PERSONNEL DECONTAMINATION

Decontamination (decon) stations will be established in the CRZ. The decon stations will consist of the following, as appropriate:

- Equipment drop.
- Portable High-Energy Particulate Air (HEPA) vacuum for vacuuming PPE before removal.
- Boot wash station consisting of a boot pick for mud removal, a tub of water, detergent with brushes for cleaning, and another tub of water for rinsing.
- Glove wash station similar to boot wash station.
- Sampling equipment wash station (similar to boot wash station).
- Disposable clothing drop and work clothing drop. All contaminated or potentially contaminated disposable clothing shall be placed into labeled 6-mil plastic bags for disposal as contaminated waste. Work clothing will be required to be placed into labeled 6-mil plastic bags for laundry servicing if potentially contaminated as a result of ripped or torn disposable clothing or other abnormal conditions.
- Personal showers and washing facilities will consist of water, towels, and soap. Street clothing shall be stored in lockers provided in the personnel decon facility "clean side."

10.2 EMERGENCY PERSONNEL DECONTAMINATION

Based on the type of emergency that is postulated, the following types of response actions are anticipated for personnel emergencies within the exclusion zone.

- A. Critical Triage Condition (life threatening) - Emergency evacuation or extrication from the exclusion zone to contamination reduction zone where emergency medical treatment and stabilization will be attempted until arrival of first responding medical unit. Or, emergency medical treatment and stabilization will be completed in the exclusion zone till arrival of first responding medical unit. In either case, gross decontamination will be completed to the extent possible by removal PPE, wiping patient down to remove contamination and/or wrapping patient to prevent spread of contamination.
- B. Marginal Triage Condition (non life threatening) - patient will be evacuated from exclusion zone and treated in the contamination reduction zone followed by decontamination and patient preparation for transport to emergency medical facility. Decontamination could occur first followed by medical treatment in selected scenarios.

10.3 EQUIPMENT DECONTAMINATION

All equipment and tools used in the EZ will be inspected for contamination before removal from the EZ. Any equipment and tool with visible contamination will be cleaned before removal from the EZ. A water and detergent solution will be used for highly contaminated equipment, followed by a high-pressure hot water rinse, if necessary. All water used during decontamination will be contained for treatment and/or disposal. Some construction and field equipment will be decontaminated at the temporary decontamination facility. After gross contamination is removed, affected surfaces of the equipment will be wrapped in plastic and transported.

10.4 WASHING FACILITIES

A washing facility may or may not be available in the SZ. The washing facility will consist of water, soap, and towels for personnel, as necessary. If a washing facility is not available, SZ personnel will be allowed to use the washing facilities in the CRZ.

10.5 DECONTAMINATION WASH WATER

Personnel decon stations, equipment decon areas, and washing facilities will be designed to collect all wash and rinse waters into 55-gallon drums or a larger temporary storage container. The tank, if used, will be of sufficient volume to allow for collection and temporary storage of decontamination water and rinse water from the CRZ and vehicle decontamination. Decontamination water will be

disposed of via the on-site sewage treatment facility or shipped off-site for disposal.

10.6 PERSONAL HYGIENE

Eating, drinking, and the use of tobacco or cosmetic products are prohibited in the CRZ and EZ. Personnel exiting the controlled areas are required to thoroughly wash their hands and face before eating, drinking, smoking, or using toilet facilities. End-of-work-shift showers may be required with change to street clothes. Adequate toilet and lunchroom facilities free of contaminants must be made available.

11.0 ON-SITE FIRST AID AND EQUIPMENT

11.1 FIRST AID AND MEDICAL FACILITY REQUIREMENTS

At a minimum, 16-unit first aid kits shall be maintained by MK in their office trailer and each of the Subcontractors shall maintain a first aid kit at their office trailer and have sufficient supply of kits for each of the work sites. The location of the first aid kit shall be communicated to project personnel as part of the site-specific and pre-entry brief training. Included with the first aid kit shall be a CPR Pocket Mask and a biohazards control kit (used to clean up incidents involving body fluid's). The MK SSHO can require upgrades to the first aid equipment requirements as deemed necessary for this job.

An emergency eyewash/drench kit, fire extinguisher and spill control kit shall be available at each controlled work area. The Subcontractor is responsible for furnishing their office trailers and each controlled work location with this equipment as stated in Section 8.2 of this SSHP. The emergency phone number list and route map to medical facilities shall be posted at each office trailer and at each controlled work zone as part of the Excavation Subcontractor prepared Work Zone Map.

11.2 REPORT OF FIRST AID CASES

All first aid cases, accidents and incidents shall be promptly reported to the MK SSHO. The MK SSHO shall immediately notify the Navy Technical Representative (NTR) or the Navy Officer in Charge of Construction (ROICC) of all injuries even if preliminary information is available. The MK SSHO and MK PM shall follow the guidance presented in MK NAVFAC SOUTH DIV Procedure PHSP-0004.1 titled Incident Reporting dated 3/2/95. The MK Charleston Project Management Office (PMO) should be notified shortly after notification to the Navy's designated authority. If an on-site official cannot be reached, the MK Charleston PMO still should be promptly notified at (803) 554-0100.

A written report of the injury must be provided to the ROICC or REICC and MK Charleston PMO within 24 hours of the incident via memo form. This report is to include as attachments:

- a. Employer's First Report of Injury (Workman's Comp Insurance Form)
- b. Supervisor's Accident Investigation Report (MK Form CAS 24/77)
- c. Accident Data Report (MK Form 6783/91)
- d. Any records provided by the Medical Service Provider such as 1) Hospital Emergency room Report, 2) Examining Physician's designation of work restriction, and 3) Examining Physician's Work Release.

12.0 EMERGENCY RESPONSE PLAN AND CONTINGENCY PROCEDURES

This section describes a contingency plan to be implemented in the event of injuries, illnesses, accidents, and fires. The contingency plan provides guidelines for the proper response to emergencies, but the actual response will depend on the situation.

12.1 GENERAL

This section describes a contingency plan to be implemented in the event of injuries, illnesses, accidents, and fires. The contingency plan provides guidelines for the proper response to emergency situations, however the actual response will depend on the situation.

In the event of an emergency, the MK SSHO, MK General Superintendent and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include any or all of the following:

- Evacuate all personnel involved to a safe place of refuge.
- Notify emergency services using phone numbers identified in Table 2.
- Initiate emergency response action.

12.2 PRE-EMERGENCY PLANNING

During mobilization activities for this project, the MK Project Manager, MK General Superintendent, Subcontractor Job Superintendents and the MK SSHO shall review the NAVFAC SouthDiv Project Procedure PHSP 002.1 and execute the steps necessary to assure effective emergency response requirements and resources are established for this project.

In addition to the guidance provided in this document and the preconstruction meeting, all safety meetings and pre-entry briefs shall include emergency response preplanning specific to each task and work site as a topic area. This training will include:

- **Assembly Points.** If the work activity may result in a release of hazardous substances, more than one assembly point will be specified to ensure that at least one upwind assembly point is accessible. This also pertains to fires and sites subjected to adverse weather conditions. Information must be included on the Work Zone Maps to be completed by the MK Subcontractor(s).
- **Emergency Response Coordinator.** The MK SSHO, as the onsite emergency response coordinator, will contact the emergency response

providers, account for individuals at the assembly point, and plan the appropriate response.

- **Evacuation Routes.** Routes will be specified as needed. Information must be included on the Work Zone Maps.
- **Means of Evacuation.** The number of personnel that may be evacuated from the work site by various routes will be evaluated by the MK SSHO.
- **Means of Communication.** This will include the means of alerting personnel to an emergency at all points in the work site and should consider the sound screening potential of hearing protection, distance and noisy equipment when specifying the use of alarms, horns and sirens. The means of communication with emergency response providers will be considered. Information must be included on the Work Zone Maps.
- **Designation of a location for first aid services, fire extinguisher(s) and spill control equipment.** Information must be included on the Work Zone Maps.
- **Procedures to be followed by employees who remain to manage critical operations to insure safe shutdown.**

12.3 RESPONSIBILITIES

The following is a description of personnel roles, lines of authority, and the emergency response communication/notification responsibilities for site personnel.

12.3.1 Project Personnel

It is the responsibility of all project personnel to recognize conditions that have the potential for resulting in a personal injury or damage to property, and to report the condition immediately to their supervisor or the MK SSHO.

12.3.2 MK Project Manager (PM)

The MK PM is responsible for assuring adherence to the administrative elements and implementation of the Emergency Response Plan, as referenced in this document. He will evaluate the site's preparedness for emergency responses and identify special conditions which may require additional preparations. He will ensure that necessary equipment and facilities are provided to support this plan.

12.3.3 MK Certified Industrial Hygienist (CIH)

The CIH is responsible for preparing the Emergency Response Plan (this section of the SSHP). The CIH will develop and review the Emergency Response Plan, evacuation plans, and oversee implementation at the site. The CIH will ensure that supervisors and employees meet the training requirements of the plan and approve the equipment used in the plan. The CIH may designate duties on site to the MK SSHO. The CIH is the designated Health and Safety Manager based in Boise, ID.

12.3.4 MK Site Safety and Health Officer (SSHO)

The MK SSHO is responsible for directing response actions to emergency situations. He will coordinate with project management to ensure the availability of response equipment and supplies, and initiate drills. Emergency response plans will be evaluated over the course of the project by the MK SSHO to keep them up-to-date and to ensure that they are applicable and relevant to emergency response organizations.

12.3.5 Subcontractors

All MK and Subcontractor personnel will comply with the provisions of this plan and participate in training as required to implement response procedures. All personnel will be cognizant of their work areas and notify their supervisors and the MK SSHO of hazards at the site.

12.4 EMERGENCY RECOGNITION AND PREVENTION

Site personnel shall be apprised of hazards and life-threatening emergency situations during site-specific training to include the project kickoff site specific training, safety meetings and briefs. Means to control hazards and mitigate emergency situations will be addressed at that time.

12.5 SAFETY ZONES

Suitable assembly points will be established at the start of the project for each work site. These assembly points will provide a safe point of refuge for site personnel. Additional information will be provided in the site briefing concerning other hazards that may arise at the site. Safety Zones or assembly points must be included on the Work Zone Map.

12.6 SITE SECURITY AND CONTROL

At all times, site personnel working in an area in the near vicinity of an emergency situation shall be apprised of the emergency as soon as possible. Only authorized personnel shall be allowed into the emergency area. As necessary, the emergency area may be cordoned off and access restricted by MK and the Subcontractors.

12.7 EVACUATION ROUTES

Evacuation routes will be established based on scope of work, location of work and atmospheric conditions. Evacuation routes shall be posted in various locations on the site if necessary and included on the Work Zone Map. All site personnel will be made aware of evacuation procedures during site-specific training especially pre entry briefings. Topography, layout and prevailing wind conditions shall be considered in establishing evacuations routes and assembly points.

12.8 EMERGENCY DECONTAMINATION

In the event an employee is injured or becomes ill and requires hospital treatment, the extent of decontamination to be performed will be assessed based on severity of the injury or illness and time delay that decontamination may cause. Refer to Section 10.2. If the employee has any signs of contamination, the ambulance and hospital staff will be notified of this and the nature of the contamination. Reasonable effort will be expended to decontaminate the victim prior to removal from the site. The medical facilities shall be notified by the MK SSHO of the intended scope of work and the potential for contaminated personnel. The medical facilities will receive copies of all the Material Safety Data Sheets (MSDSs) and/or NIOSH Pocket Guides applicable to this project. The MK SSHO shall contact the medical facility to establish a contact person for the necessary information.

12.9 EMERGENCY MEDICAL TREATMENT AND FIRST AID

See Section 11.

12.10 COMMUNICATIONS

The MK SSHO, the MK General Superintendent and the Subcontractor Job Supervisor(s) at each work site area shall be equipped with two-way radios for communications on site as warranted. Additional communications with outside emergency services will be accomplished through the use of cellular telephones if necessary. Both two way radios and cellular phones are to be used for emergency's only. In the radios will be used for standard field construction communication, then the MK SSHO shall establish strict protocols for radio communication and insure all personnel who carry radios understand the protocols.

12.11 CRITIQUE OF RESPONSE AND FOLLOW-UP

All actual emergencies shall be critiqued and follow-up corrective actions shall be implemented as needed. Drills and exercises if completed shall also be critiqued. The critique will be conducted as part of a safety meeting first by supervisory personnel and second with all MK and Subcontractor personnel.

12.12 INITIAL REPORTING AND MANAGEMENT OF INCIDENTS

All emergencies will be promptly reported to the Emergency Response Number (X3300), the Environmental Department (X1132, X3114, or X6160), and to the MK SSHO. The MK SSHO will ensure that the NSWSC Site Representative is notified promptly and will direct initial emergency response actions until the arrival of the NSWSC Site Representative. The NSWSC Site Representative can include the officer in charge of security, fire department and/or ambulance services, or the Environmental Protection Department Manager or designee.

The following initial response actions are to be taken by MK personnel and subcontractors at the work site for various types of incidents.

A. Incident Type: Fires in Vehicles and Mobile Equipment, Process Equipment, and Support Structures.

Response Actions:

1. Notify the NSWSC Crane Security Desk at extension 3300, and provide the following information:
 - a. The name and phone number of the person making the call.
 - b. The location of incident.
 - c. The type of incident.
 - d. Injured or trapped personnel and any potential material release.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor designates one person to meet the emergency response units at the nearest road where the units will be approaching.
3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory assumes initial command of the situation and directs personnel to do one of the following:
 - a. Emergency shutdown of process equipment or mobile equipment, evacuate the work zone or immediate area to a safe place of refuge, meet the incoming response units and provide all available information.
 - b. Initiate first fire attack and knockdown using available fire extinguishing equipment followed by evacuating the work zone or immediate area.

B. Incident Type: Preparation for Adverse Weather Condition to Include High Winds, Tornado, Heavy Rains, Snow and Ice Conditions.

Response Actions:

1. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory notifies the NSWC Crane Security Desk at extension 3300 and provides the following information:
 - a. The name and phone number of the person making the call.
 - b. The location of the work site(s).
 - c. Preparation for adverse weather condition has begun.
 - d. Permanent structure location where personnel will be relocating to on Base.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory will direct personnel to shutdown operations, secure loose materials, and park and secure mobile equipment. Personnel shall be directed to report to a permanent building after completing decontamination procedures.
3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory will complete accountability and await clearance from Base Security to resume operations or other action.

C. Incident Type: Medical and Rescue Emergencies.

Response Actions:

1. Notify the NSWC Crane Security Desk at extension 3300 and provide the following information:
 - a. The name and phone number of the person making the call.
 - b. The location of incident.
 - c. The type of incident.
 - d. Injured or trapped personnel and any exposure to hazardous material.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory designates one person to meet the emergency response units at the nearest road where the units will be approaching.
3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory assumes initial command of the situation and completes or directs personnel to do one or both of the following:

- a. Emergency shutdown of process equipment or mobile equipment and any other necessary action to mitigate or control the incident.
 - b. Initiate emergency first aid actions until arrival of emergency units.
4. For Confined Space Rescue, only emergency rescue units trained in confined space rescue shall enter the confined space. **The Designated Attendant for that work space must never enter the space as a rescue attempt unless relieved of attendant duties and assigned as a member of the trained rescue team by either the MK SSHO or the responsible supervisor for the confined space entry.**

13.0 LOGS, REPORTS, AND RECORDKEEPING

13.1 SAFETY AND HEALTH LOGBOOK

The MK SSHO shall maintain a Project Safety and Health Logbook for the duration of work activities at the site. Entries in the logbook shall be time sequenced. The entries must be written in ink and the bottom of each page must be signed. The logbook shall be hard bound. No pages will be removed from the log book. Corrections must be lined out and initialed. The logbook will contain specific information recorded on a daily basis utilizing the Form shown in Figure 6.

A separate file folder shall be maintained for Figure 6. Additional forms supporting Figure 6 shall be attached to Figure 4 and held in file folder. Separate file folders shall be established for this SSHP; calibration data sheets if not attached to Figure 6; safety and IH instrument serial numbers and shipping papers; field specific safety and health procedures; all safety and health related permits; and weekly safety inspections. Records of training and site orientations; briefings including pre entry briefs; Subcontractor prepared equipment inspection sheets and exclusion zone sign-in and sign-out logs shall also be maintained in file folders by the MK SSHO.

13.2 REPORTS

A weekly site safety and health inspection report shall be prepared by the SSHO. This report shall identify work activities, safety and health-related deficiencies, and corrective measures. As a minimum, the checklist shown in Figure 7 shall be completed by the MK SSHO. All near miss incidents and incidents that result in property damage, personnel injuries or illness will be investigated and notification/reporting requirements shall be followed in accordance with PHSP 004.1.

13.3 FIELD MASTER COPY OF SSHP

The MK SSHO shall maintain a field master copy of this SSHP document to include all redlines and the completed work zone maps. This copy shall be properly filed with project records at the completion of the project to be sent to MK PMO office in Charleston.

13.4 RECORDKEEPING

The MK SSHO shall maintain records of all injuries and illnesses for MK employees only incidental to the work in accordance with 29 CFR 1904, including copies of the Worker's Compensation First Report of Injury. Accidents and Incidents data reporting requirements shall be managed in accordance with MK NAVFAC

SOUTHDIV Procedure PHSP-0004.1 titled Incident Reporting dated 3/2/95 for both MK and Subcontractor personnel as stated in Section 11.3.

The MK SSHO shall receive copies of all records for injuries and illnesses of Subcontractors incidental to the work, including copies of the Worker's Compensation First Report of Injury. These records will be maintained on the Subcontractors OSHA 200 Log. Reporting shall follow the guidance stated above. A record of all first aid treatments not otherwise recordable shall be maintained and furnished to the Navy's designated authority upon request. The SSHO shall maintain records of employee exposure to potentially harmful toxic materials, harmful physical agents and medical records, in accordance with 29 CFR 1910.120. Workers will be notified of time integrated sampling results via memo to his employer.

13.5 SAFETY AND HEALTH PROJECT COMPLETION REPORT

The MK SSHO shall complete a safety and health project completion report at the conclusion of the field work. The purpose of the report is to a self assessment summarizing effectiveness of the safety and health program implemented in the field; lessons learned and suggestions for program improvement; accident and incidents; air monitoring and sampling results including ratings on instrument useability; and how well the original prepared Activity Hazards Analysis (AHA) worksheets reflected field conditions. The report shall be directed to the MK SouthDiv Program Health and Safety Manager within ten working days after project task demobilization.

14.0 ON-SITE WORK PLANS

A site-specific Work Plan was developed to define the work tasks and identify the work objectives. The means and personnel required to complete the task are identified along with consideration for methods, logistics, quality control/quality assurance, and resources. This SSHP is a supplement to the Work Plan.

15.0 COMMUNICATION PROCEDURES

This section describes communication procedures and equipment.

15.1 RADIO COMMUNICATION

At a minimum, the MK SSHO and construction supervisors shall be equipped with two-way radios for on-site communications, as warranted by the number and proximity of work sites. Two-way radios will not be available from the base. MK will lease radios per requirements specified by the Security Chief. The MK SSHO will obtain information on radio unit designation and communication protocols and brief the construction supervisors. In certain areas, two-way radio communication is restricted due to explosive operations.

15.2 TELEPHONE

If not restricted by explosive operations, a cellular telephone shall be available for emergency communications if no other telephone is readily available. At each job location, the Supervisor is responsible for verifying the location of the nearest telephone and informing the workers at the Pre-Entry Briefing.

15.3 EMERGENCY ALARM

An emergency alarm, such as an air horn, shall be available at each major work site to warn personnel of an emergency. Personnel shall be trained on actions they are to take if the alarm is sounded to include evacuation routes and assembly points. During this project, use of audible alarm may not be necessary and voice contact should be sufficient for emergency annunciation. The MK SSHO will make this decision. The buddy system shall be used always while operating at this project. The job supervisor along with the MK SSHO shall establish prearranged handsignals, as a backup to voice communications, in cases such as wearing respirator equipment and confined space entry.

15.4 DRILLS AND EXERCISES

Drills and exercises shall be conducted to ensure that communication methods are adequate. The SSHO will test the two-way communication to confirm emergency communication using NSWCC Crane recommended protocols. No field exercises are planned at this time.

16.0 SPILL CONTAINMENT PLAN

Spill and release accident scenarios during remediation could occur and involve residue process material and reinstates from decontamination activities. The following information will be used by project personnel to respond to and mitigate any releases on the project site. In the event of a spill or release, the MK SSHO, MK General Superintendent and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include any one or all of the following:

- Initiate spill response action and notify emergency services.
- Notify emergency services as identified in Table 3.
- Evacuate the work zone to a safe place of refuge.

16.1 PREPLANNING FOR SPILL CONTROL

Remedial construction activities will be reviewed for release potential and the capability of on-site personnel to adequately respond. Base personnel will be contacted to determine their capability to respond to various releases. All aspects of the Emergency Response Plan as described in Section 12, will be reviewed by site personnel to ensure adequacy and that resources are available.

During mobilization activities for this project, the MK Project Manager, MK SSHO, MK General Superintendent and Subcontractor Job Supervisor(s) the SSHO shall review the NAVFAC SouthDiv Project Procedure PHSP 003.1 and execute the steps necessary to assure effective spill response planning requirements and resources are established for this project.

MK will cooperate with the base; other site contractors; and federal, state and local directors of emergency preparedness and response to ensure a coordinated effort in preparing for a spill emergency, with response plans that are compatible and integrated. Prior to the start of work, MK will review the above listed documents and meet with site representatives on spill control and assure the SSHP is consistent with site requirements for spill control. Specific roles and responsibilities will be reviewed for MK and Navy personnel. The Base Fire Department will be notified of any spills classified above operational and will assist in spill containment. The Base Fire Department will provide overall command and control of the clean-up activity for spills classified above operational until relieved by a higher authority.

16.2 SPILL AND FIRE CONTROL MATERIALS AND EQUIPMENT

When planning to move or handle drums (or other containers) containing hazardous or special waste materials, the following shall be kept available in areas where spills, leaks or ruptures may occur: 1) salvage drums and container overpacks (approved by the U.S. Department of Transportation); 2) suitable quantities of

proper absorbent materials; 3) portable containing material; 4) neutralizing agents; 5) fire extinguisher(s); 6) emergency eyewash/drench station; and 7) spill pallets or platforms for secondary containment.

Drums and containers used during a clean-up will be appropriate to the hazardous substances they are meant to contain, and will meet the regulations promulgated by DOT, 49 CFR Parts 171-179, OSHA 29 CFR 1910.120, and EPA 40 CFR 262. Drums and containers will be inspected for defects and their integrity assured prior to being filled with any non-solid hazardous or special waste substance.

A spill of material can be contained with porous or absorbent barriers. Absorbent materials can take several configurations (pillows, sheets, booms, loose chips, particle beads, and fibers) that may be set in place, or scattered by hand. Preferred sorbents are inert nonreactive clay minerals (neutralizing agents may be added), or specific formulations which provide automatic neutralization or vapor control.

16.3 SPILL CONTROL MEASURES

Stopping the leak or spill at its source may involve turning off pumps or closing valves. Returning a container to an upright position, transferring wastes to other containers, or moving containers to less dangerous locations may, in some circumstances, be possible, but should not be attempted if the identification of the substance is not known unless Level B Protection is worn and decontamination stations have been established. Similarly, the patching of an active leak is not advised until an initial "Size-Up" of the situation is made and guidance established in Section 16.6 has been followed.

16.4 DRUM, CONTAINER, AND TANK HANDLING AND MOVING PROCEDURES

Drums, containers, and/or tanks of hazardous or special waste substances will not be moved until the requirements for preparation have been completed (i.e., all required equipment and materials are at the work site ready for use, and the employees have been familiarized with their responsibilities, the emergency response procedures, and the potential hazards associated with the contents of the drums and containers).

Work site operations will be organized to minimize the amount of drum or container movement. Each drum or container will be inspected before it is moved to ensure that it can be handled without suffering a rupture or puncture, and relocated without having the contents spill or leak.

Unlabeled or unmarked drums and containers will be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled. Drums and containers under pressure, as evidenced by bulging or swelling, will not be moved until such time as the cause for excess

pressure is determined and appropriate containment procedures have been implemented to protect employees from explosion.

Equipment used to handle the drums and containers will be selected, positioned, operated, and maintained to minimize any contact that could rupture, puncture, dent, or drop drums and containers holding hazardous or special waste substances, and the potential for equipment ignition sources to ignite vapors released from ruptured drums or containers shall be controlled.

Drums and containers that cannot be moved without rupture, leakage or spillage will be transferred to a sound container using a device specified for the material being transferred. During liquid transfer of flammable or combustible liquids, bonding and grounding equipment shall be utilized.

16.5 INITIAL REPORTING AND MANAGEMENT OF INCIDENTS

All emergencies will be promptly reported to the on-site Emergency Response Number (X3300), the Environmental Protection Department (X1132, X3114, or X6160), and to the MK SSHO. The MK SSHO will ensure that the NSWC Site Representative is notified promptly and will direct initial emergency response actions until the arrival of the NSWC Site Representative. The NSWC Site Representative can include the officer in charge of security, fire department and/or ambulance services, or the Environmental Protection Department Manager or designee. Response will be conducted according to NAVSURFWARCENDIVINST 5090.5, Base Oil and Hazardous Substance Spill Contingency Plan.

Initial response actions to be taken by MK personnel and subcontractors at the work site for spill and release emergencies are as follows:

A. Incident Type: Spills or Releases of Hazardous Material

Response Actions:

1. Notify the NSWC Crane Security Desk at extension 3300 and provide the following information:
 - a. The name and phone number of the person making the person call.
 - b. The location of incident.
 - c. The type of incident.
 - d. Injured or trapped personnel and estimate of material released.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory designates one person to meet the emergency response units at the nearest road where the units will be approaching.

3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisory assumes initial command of the situation and directs personnel to do one of the following:
 - a. Emergency shutdown of process equipment or mobile equipment, evacuate the work zone or immediate area to a safe place of refuge, and meet the incoming response units and provide all available information.
 - b. Initiate first spill response using available spill response equipment only for small operational spills where personnel are trained to mitigate. Evacuate the work zone or immediate area if there are any health threats or risks to personnel.

17.0 CONFINED SPACES

Permit-required confined space entry is not anticipated on this project. If entry is required in an excavation that is greater than 5 feet in depth, the excavation must be treated initially as a permit-required confined space. Atmospheric monitoring must be completed before the excavation can be downgraded to nonpermit-required confined space. Engineering controls must be in place to safeguard the excavation from collapse. Any confined space entry must follow MK Procedure 9.0 found in the Industrial Hygiene Procedures Manual (MK 1994a).

Adequate provisions for rescue and emergency medical care must be made prior to entry. Initial emergency rescue response will be provided by the NSWC Crane Fire Department. The Fire Department shall be notified at least two hours in advance of permit required confined space entry.

TABLES

**Table 1
Site Description and Contaminants**

| Identifier | Location/Description | Scope of Work | Contaminants |
|-------------------------------------|--|--|--|
| SWMU 23/00, Battery Shop | West off the intersection of H-45 and H-5 on H-5. | Excavation, examination, transportation and disposal of debris; site sampling; disposal of contaminated soil; and site restoration. | May include soil contaminated with spent battery acid miscellaneous debris and waste oils/waters which could have contained lead, sulfates and oily waste. |
| SWMU 26/08D, Highway 58 Dump Site B | East of the intersection of H-45 and H-58 on H-58. | Excavation, examination, transportation and disposal of debris; site sampling; disposal of contaminated soil; and site restoration. | Includes debris; paper, cardboard, containers, paint, thinners, lubrication and hydraulic fluids and scrap metal. Unlabeled containers and buried drums may be encountered. |
| SWMU 25/07D, Highway 58 Dump Site A | East of the intersection of H-45 and H-58 on H-58. | Excavation, examination, transportation and disposal of debris; site sampling; disposal of contaminated soil; and site restoration. Removal of transite asbestos tiles or panels by certified asbestos removal contractor. | Includes debris; paper, cardboard, containers, paint, thinners, lubrication and hydraulic fluids and scrap metal. Unlabeled containers and buried drums may be encountered. Transite asbestos tiles or panels, condition of panels good. |

**Table 2
Potential Contaminants**

| Potential Contaminant | Description | Exposure Limits | Signs and Symptoms | First Aid |
|---|---|--|--|---|
| Asbestos | White or greenish (chrysotile), or grey-green (amosite) fibrous, odorless solids. | OSHA PEL 0.1 f/cc as 8 hr. TWA | Difficulty breathing, interstitial fibrosis, and restricted pulmonary function. | Irrigate eyes with water. Soap wash skin if contaminated. |
| BTEX (Benzene, Toluene, Ethylbenzene, Xylene) hydrocarbon contamination in soils or residuals in containers, not in pure form | Colorless or light colored liquids with petroleum aromatic odor. | Benzene, OSHA PEL of 1 ppm. Toluene, OSHA PEL of 200 ppm. Ethylbenzene, OSHA PEL of 100 ppm. Xylene, OSHA PEL of 100 ppm. | Irritant to eyes, nose and throat. Causes headache, dermatitis and narcosis. May cause dizziness, excitement, drowsiness and incoherence. May cause nausea, vomiting and abdominal pain if ingested. | Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately. |
| Waste Oil | Yellow to brown liquid which is combustible at high temperatures. | OSHA PEL 100 ppm as 8 hr TWA for naphtha. | Skin and eye irritant. Ingestion causes gastrointestinal tract irritation. | Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately. |
| Lead | A heavy, ductile, soft grey solid. Noncombustible solid. (May be in soil as a biodegraded product of leaded gasoline. | OSHA PEL 50 ug/m ³ as 8 Hr. TWA | Weakness, lassitude, and insomnia. Facial pallor, anorexia, low weight, and malnutrition. Constipation, abdominal pain and colitis. Anemia, gingival lead line, tremor, Encephalopathy, Nephropathy. Irritant to eyes. Hypertension. | Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately. |

**Table 2
Potential Contaminants**

| Potential Contaminant | Description | Exposure Limits | Signs and Symptoms | First Aid |
|---|--|--|--|---|
| Sulfuric Acid (spent) contaminated soil | Colorless to dark brown, oily, odorless liquid. | OSHA PEL 1 mg/m ³ as 8 hr. TWA. | Eye, nose and throat irritant. Cause choking and cough. Causes eye and skin burns. | Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately. |
| PCBs, Aroclor 1242, 1254 and 1260 | Colorless to brown liquid with mild hydrocarbon odor | OSHA PEL 0.5 mg/m ³ | Irritant to eyes and skin. Acne form dermatitis, jaundice, dark urine. | Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately. |

Note: Data is derived from ACGIH 1994-1995, NIOSH 1990, and OSHA 1994.

**Table 3
Personnel Names and Telephone Numbers**

| <u>Contact</u> | <u>Person or Agency</u> | <u>Telephone</u> |
|-----------------------------|---|--|
| Robert Hlavacek | MK Program Manager (MK PMO) | (803) 554-9367 |
| Scott Newman | MK Senior Project Engineer (MK PMO) | (803) 554-9369 |
| Tom Payne | MK Project Manager at NSWC Crane | Office: (812) 854-6941 |
| Robert Porter | MK Site General Superintendent | Office: (812) 854-6941 |
| Elvin Graves | MK Site Safety and Health Officer | Office: (812) 854-6941 Cellular: (812) 639-8356, two way radio designation: Unit 0004 |
| Steve Downey | MK Project Engineer | Office: (812) 854-6941 |
| Jerry Smith | MK Site Quality Control Officer | Office: (812) 854-6941 |
| Willy Piispanen | MK Health and Safety Program Manager | (208) 386-5930 |
| Cmdr. Larry Laws | NSWC Crane PWD/Eng. Dept | (812) 854-1834 |
| Capt. J.M. Carney | NSWC Base Commander | (812) 854-1210 |
| Jim Hunsicker or Tom Brent | NSWC Environmental Protection Services | (812) 854-6160 |
| Adrienne Townsel-Wilson | SOUTHNAVFACENCOM | 803-743-0582 |
| Brent Robertson | ROICC(NTR) | (812) 854-3318 |
| Law Enforcement | NSWC Security (Base) | 3300 emergency |
| Fire Department | NSWC Fire Department (Base) | 3300 emergency (812) 854-1235 |
| Lt. Dale Eads | NSWC E.O.D. (Base) | (812) 854-3456 |
| Ambulance Service | NSWC Ambulance (Base) | 3300 emergency (812) 854-1100 |
| Dale Groh | NSWC Safety Director | (812) 854-3601 |
| Poison Control Center | Poison Control Center | (800) 942-5969 |
| National Response Center | National Response Center | (800) 424-8802 |
| Regional USEPA Emergency | USEPA (Region 5) | (910) 221-5191 |
| Hospital | NSWC Base Medical Facility Head Nurse (Mary Muessig) | (812) 854-1220 (812) 854-4319 |

**Table 3
Personnel Names and Telephone Numbers**

| <u>Contact</u> | <u>Person or Agency</u> | <u>Telephone</u> |
|-------------------------|---|------------------|
| Hospital | Bedford Medical Center 2900 West 16 th Street Bedford, IN 47432 | (812) 275-1200 |
| Hospital | Bloomington Hospital 601 West Second Street Bloomington, IN | (812) 336-9515 |
| Utility Locator Service | Public Works Dept. | (812) 854-1834 |

Directions to NSWC Medical Department On-site:

The NSWC Fire Department coordinates the on-site ambulance service. The Medical Department is located in Building 12, off of H-2 just north of H-5.

Directions to Bedford Medical Center:

From Bloomington Gate, head east on Highway 58 to the city of Bedford, then turn left onto 16th Street. Distance to hospital is approximately 20 miles.

Directions to Bloomington Hospital:

Exit NSWC Crane on H5-45 through the Bloomington Gate, then follow Highway 45 North to Bloomington. At the intersection of Highway 45 and Highway 37, continue straight ahead over the bypass (Bloomfield Road), and follow Bloomfield Road north until it becomes 2nd Street. Continue on 2nd Street and the hospital will be on right-hand side of the road.

Note: SSHO is to make sure Table 3 and Figure 3 are included with the Work Zone Maps posted at the job site. In addition, Table 3 and Figure 3 must be posted at each office location. Table 3 must be updated to include all subcontractor points-of-contact.

Notify the SSHO of any changes in work conditions which may affect the health and safety aspects of the task. The Superintendents or designated supervisors are responsible for conducting Plan-of-the-Day meetings, Pre-Entry and Post-Entry Briefings, weekly safety meetings, and conducting or ensuring that other training is completed.

**Table 4
Training Requirements**

| Identifier | Location | 40 Hr. Haz. Waste | Haz. Waste Annual Ref. | Haz. Waste Supervisor | Weekly Safety Mtg. | Haz. Com. | Metals | CPR / First Aid | Respiratory Protection | Confined Space | Site Specific | POD, Pre & Post Entry Brief | Other |
|---|------------------------|-------------------|------------------------|-----------------------|--------------------|----------------|----------------|-----------------|------------------------|----------------|---------------|-----------------------------|--------------------|
| SWMU 23/00 | Battery Shop | Y | Y | Y | Y | Y ⁶ | Y ⁵ | Y | Y | O ¹ | Y | Y | O ^{2,3} |
| SWMU 26/08D | Highway 58 Dump Site B | Y | Y | Y | Y | Y ⁶ | Y ⁵ | Y | Y | O ¹ | Y | Y | O ^{2,3} |
| SWMU 25/07D | Highway 58 Dump Site A | Y | Y | Y | Y | Y ⁶ | Y ⁵ | Y | Y | O ¹ | Y | Y | O ^{2,3,4} |
| Soil, debris and drum /container sampling | All Areas | Y | Y | Y | Y | Y ⁶ | Y ⁵ | Y | Y | O ¹ | Y | Y | Y ^{2,3} |

Y = Yes, N = No, O = Optional

Notes:

- 1- Excavations greater than 5 feet in depth should be treated as permit required confined spaces until atmospheric monitoring proves it can be downgraded to non permit required confined space and engineering controls on excavation design are in place.
- 2- Competent person per 29 CFR 1926, subpart P, Excavations.
- 3- 49 CFR Part 172 Subpart H for personnel required to classify, mark, select packaging, inspect, load and transport hazardous materials.
- 4- Competent person per 29 CFR 1910.1001 and 1926.58, Asbestos and Hazard Communication.
- 5- Competent person per 29 CFR 1926.62 Lead Standard and Hazard Communication.
- 6- Special training topic, emphasis on reviewing practices and procedures for safe handling of drums and other hazardous waste containers to include the preliminary drum/container handling and staging plan.

Table 5
Selection of Personal Protective Equipment

| PPE | Level D | Modified Level D | Level C | Level B |
|--|----------|------------------|----------|----------|
| Coveralls or other approved working apparel | Yes | Optional | Optional | Optional |
| Chemical-resistant clothing (coveralls; hooded, one- or two-piece chemical-resistant coveralls) | | Yes | | |
| Chemical-resistant clothing (coveralls; hooded one- or two-piece chemical splash suit; chemical-resistant hood and apron; disposal chemical-resistant coveralls) | | | Yes | |
| Chemical-resistant clothing (coveralls and long-sleeved jacket; one- or two-piece chemical splash suit; disposal chemical-resistant one-piece suit) | | | | Yes |
| Boots, leather or chemical resistant, steel protective toe (29 CFR 1926.28, 1910.136 and ANSI Z41-1991). | Yes | | | |
| Boots (inner), chemical resistant, protective toe and shank meeting ANSI Z41.1 (29 CFR 1926.28(a)). | | Yes | Yes | Yes |
| Boot covers (outer), chemical resistant (disposable) | | Optional | Optional | Optional |
| Safety glasses or chemical splash goggles (29 CFR 1910.133, ANSI Z87.1-1989, and 1926.102) | Yes | Yes | Yes *1 | |
| Face shield (29 CFR 1910.133, ANSI Z87.1-1989, and 1926.102) | Optional | Optional | Optional | Optional |
| Gloves (cotton/leather) | Optional | | | |
| Gloves (inner), chemical resistant or liners | | Optional | Yes | Yes |
| Gloves (outer), chemical resistant | | Yes | Yes | Yes |
| Long underwear | | Optional | Optional | Optional |
| Hardhat (29 CFR 1926.100, 1910.135, ANSI Z89.1-1969 and ANSI Z89.2-1971) | Yes | Yes | Yes | Yes |
| Positive pressure, full-facepiece with nose cup, self-contained breathing apparatus (SCBA) or positive pressure, supplied-air respirator with escape SCBA (MSHA or NIOSH approved) (Note: escape SCBA may not be required) | | | | Yes |
| Air-purifying respirator, half-face or full face with suitable cartridge (MSHA or NIOSH approved) | | | Yes | |

Note: Optional requirements to be determined by SSHO based on Activity Hazard Analysis.
*1 = not required with full face respirator mask.

**Table 6
Minimum Personal Protective Equipment Requirements by Task**

| Site | Activity | PPE |
|--|--|---|
| SWMU 23/00 | <ol style="list-style-type: none"> 1. Configure and set up work area. 2. Preliminary screening of debris. 3. Hand excavation. 4. Mechanical excavation. 5. Drum or container handling 6. Soil packaging. 7. Decontamination. 8. Site restoration. | <ol style="list-style-type: none"> 1. Level D, modify where necessary. 2. Level B, modify where necessary. 3. Level B, modify where necessary. 4. Level B, modify where necessary. 5. Level B, modify where necessary. 6. Level C, modify where necessary. 7. Level C, modify where necessary. 8. Level D. |
| SWMU 26/08D | <ol style="list-style-type: none"> 1. Configure and set up work area. 2. Preliminary screening of debris. 3. Hand excavation. 4. Mechanical excavation. 5. Drum or container handling 6. Soil packaging. 7. Decontamination. 8. Site restoration. | <ol style="list-style-type: none"> 1. Level D, modify where necessary. 2. Level B, modify where necessary. 3. Level B, modify where necessary. 4. Level B, modify where necessary. 5. Level B, modify where necessary. 6. Level C, modify where necessary. 7. Level C, modify where necessary. 8. Level D. |
| SWMU 25/07D | <ol style="list-style-type: none"> 1. Configure and set up work area. 2. Preliminary screening of debris. 3. Hand excavation. 4. Mechanical excavation. 5. Drum or container handling 6. Soil packaging. 7. Decontamination. 8. Site restoration. 9. Asbestos Removal | <ol style="list-style-type: none"> 1. Level D, modify where necessary. 2. Level B, modify where necessary. 3. Level B, modify where necessary. 4. Level B, modify where necessary. 5. Level B, modify where necessary. 6. Level C, modify where necessary. 7. Level C, modify where necessary. 8. Level D. 9. Level C per OSHA regulation. |
| Sampling at all locations including drums and/or containers. | <ol style="list-style-type: none"> 1. Obtain soil and/or groundwater and/or drum/container samples per sampling and analysis plan. | <ol style="list-style-type: none"> 1. Level B for unknown drums and containers, modify where necessary. Soil and groundwater may only require level C or modified Level D. |

**Table 7
Airborne Contaminant Response Criteria**

| Contaminant | Level | PPE | Monitoring Frequency | Actions Taken |
|----------------------------|---|-----------------------------|---|--|
| Volatile organic compounds | No more than 5 ppm above background, no benzene detected | Level D or modified Level D | Prior to each shift and reentry following 30 minute vacancy or as warranted | Continue periodic monitoring |
| | Greater than 5 ppm above background but less than 10 ppm above background. No benzene detected, no Action Level for any organic exceeded. | Level D or Modified Level D | At least once every hour, when change in operation occurs, or when requested by workers | Monitor for benzene or other organics. Continue periodic monitoring |
| | Greater than 10 ppm above background or benzene detected or Action Level exceeded for any organic. | To be determined by SSHO | To be determined by SSHO | Stop work and notify SSHO |
| Oxygen | Less than 19.5% | To be determined by SSHO | To be determined by SSHO | Stop work, exit area and immediately notify SSHO |
| % LEL | Equal to or greater than 10%. | To be determined by SSHO | To be determined by SSHO | Stop work, shut off equipment, remove ignition sources if safe to do so; notify SSHO |

**Table 8
Frequency of Physiological Monitoring for Fit and Acclimatized Workers¹**

| ADJUSTED TEMPERATURE ² | IMPERMEABLE ENSEMBLE |
|-----------------------------------|--------------------------------|
| 90°F (32.2°C) or above | After each 15 minutes of work |
| 87.5°-90°F (30.8°-32.2°C) | After each 30 minutes of work |
| 82.5°-87.5°F (28.1°-30.8°C) | After each 60 minutes of work |
| 77.5°-82.5°F (25.3°-28.1°C) | After each 90 minutes of work |
| 72.5°-77.5°F (22.5°-25.3°C) | After each 120 minutes of work |

¹For work levels of 250 kilocalories/hour.

²Calculate the adjusted air temperature (ta adj) by using this equation:

$$ta \text{ adj } ^\circ\text{F} = ta^\circ\text{F} + (13 \times \% \text{ sunshine}).$$

Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow.

(100 percent sunshine = no cloud cover and a sharp, distinct shadow: 0 percent sunshine = no shadows.)

Note: Reprinted from *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (NIOSH 1985).

**Table 9
Monitoring and Sampling Requirements**

| Site | Activity | Monitor | | | | | | Sample | | |
|----------------|--|------------------|------|--|------------------------------|-------|----------------|--------|--------|------------------|
| | | VOC | Dust | Oxygen, H ₂ S and % LEL | Perimeter (VOCs /Dust) | Noise | Heat Stress | VOC | Metals | Asb esto s |
| SWMU 23/00 | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| SWMU 25/07D | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| | 9. Asbestos Remediation | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.Y |
| SWMU 26/08D | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| Sampling | 1.obtain soil and/or groundwater and/or debris/ drum/container samples | 1.Y ¹ | 1.O | 1.Y ¹ | 1.N | 1.N | 1.O | 1.N | 1.N | 1.N |

**Table 9
Monitoring and Sampling Requirements**

| Site | Activity | Monitor | | | | | | Sample | | |
|------|----------|---------|------|--|------------------------------|-------|----------------|--------|--------|------------------|
| | | VOC | Dust | Oxygen, H ₂ S and % LEL | Perimeter (VOCs /Dust) | Noise | Heat Stress | VOC | Metals | Asb esto s |

Y = Yes, O = Optional at discretion of SSHO, N = Not required

¹ = When obtaining soil samples in excavations deeper than 5 feet, treat the excavation as permit-required confined space until it has been assessed by atmospheric monitoring that the atmosphere is safe and it can be downgraded to nonpermit-required confined space. Engineering controls must be in place to safeguard excavation from collapse.

FIGURES



MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION, AND ENVIRONMENTAL GROUP

EXCAVATION AND TRENCHING PERMIT

(OSHA Section 1926.650)

| | | |
|-------|-------|---------------|
| DATE: | TIME: | DATE EXPIRES: |
|-------|-------|---------------|

JOB DESCRIPTION AND LOCATION (Be Specific):

BEFORE TRENCHING AND EXCAVATION

| | |
|---|--|
| <input type="checkbox"/> Soil Classification <input type="checkbox"/> Stable Rock <input type="checkbox"/> Type A <input type="checkbox"/> Type B <input type="checkbox"/> Type C <input type="checkbox"/> Check For Proximity To Utilities, Buildings, Footing or Piling and Sources of Vibrations. <input type="checkbox"/> Owners of Utilities, Services or Transmission Piping, Etc. (Electrical, Telephone, Water, Sewer) | <input type="checkbox"/> Check For Previously Disturbed Ground <input type="checkbox"/> Adequacy and Availability of All Equipment, Including Personal Protective Gear, Shoring Material, Signs, Barricades and Machinery. <input type="checkbox"/> Other Known Obstructions (e.g. Footing Concrete Encasement) <input type="checkbox"/> Allowable Slope. |
|---|--|

COMMENTS:

DURING TRENCHING AND EXCAVATION

| | | | | | | | | | | | | | | | | |
|---|--|---------------------------------|--|--|-------------|----------|-------|--------|-------|-------|--------|-----|-------|--------|---------|-------|
| <input type="checkbox"/> Size of Excavation Depth _____ Width _____ Length _____ <input type="checkbox"/> Changing Ground Conditions, Particularly After Rain Fall <input type="checkbox"/> Monitor For Possible Oxygen Deficiency Or Gaseous Conditions. (Record per IH Manual Procedure 5.0 or equivalent). _____ _____ <input type="checkbox"/> Adequacy of Shoring And/Or Sloping As Work Progresses. <input type="checkbox"/> Entrances and Exit Facilities <input type="checkbox"/> Stairway <input type="checkbox"/> Ladders <input type="checkbox"/> Ramp <input type="checkbox"/> Change In Vehicular and Machinery Operation <input type="checkbox"/> Water Removal Equipment and Operation <input type="checkbox"/> Adequacy of Portable Trench Boxes or Trench Shields | <input type="checkbox"/> Protective Systems Depth of A Trench Or Excavation of 5 Feet or More. <p style="text-align: center;"><u>Check The Applicable OSHA Appendix Below:</u></p> <input type="checkbox"/> B - Sloping and Benching <table style="margin-left: 20px;"> <tr><td colspan="3">Maximum Allowable Slopes</td></tr> <tr><td>Stable Rock</td><td>Vertical</td><td>(90°)</td></tr> <tr><td>Type A</td><td>3/4:1</td><td>(53°)</td></tr> <tr><td>Type B</td><td>1:1</td><td>(45°)</td></tr> <tr><td>Type C</td><td>1 1/2:1</td><td>(34°)</td></tr> </table> <p>NOTE: Sloping or Benching For Excavations Greater Than 20 Feet Deep Shall Be Designed By A State Registered Professional Engineer (RPE).</p> <input type="checkbox"/> C - Timber Shoring For Trenches <input type="checkbox"/> D - Aluminum Hydraulic Shoring For Trenching <input type="checkbox"/> RPE - Designed Protection Systems (data must be filed on job-site) | Maximum Allowable Slopes | | | Stable Rock | Vertical | (90°) | Type A | 3/4:1 | (53°) | Type B | 1:1 | (45°) | Type C | 1 1/2:1 | (34°) |
| Maximum Allowable Slopes | | | | | | | | | | | | | | | | |
| Stable Rock | Vertical | (90°) | | | | | | | | | | | | | | |
| Type A | 3/4:1 | (53°) | | | | | | | | | | | | | | |
| Type B | 1:1 | (45°) | | | | | | | | | | | | | | |
| Type C | 1 1/2:1 | (34°) | | | | | | | | | | | | | | |

COMMENTS:

SIGNATURES AND DATES

| | | |
|------------------------|---------------------|-----------------------|
| COMPETENT PERSON: | SSHO: | PROJECT MANAGER: |
| CLIENT REPRESENTATIVE: | CIVIL ENGINEER: | CIVIL SUPERINTENDENT: |
| EQUIPMENT OPERATOR: | SUBCONTRACTOR REP.: | OTHER APPROVAL: |

Figure 2 Hot Work Permit



MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION, AND ENVIRONMENTAL GROUP

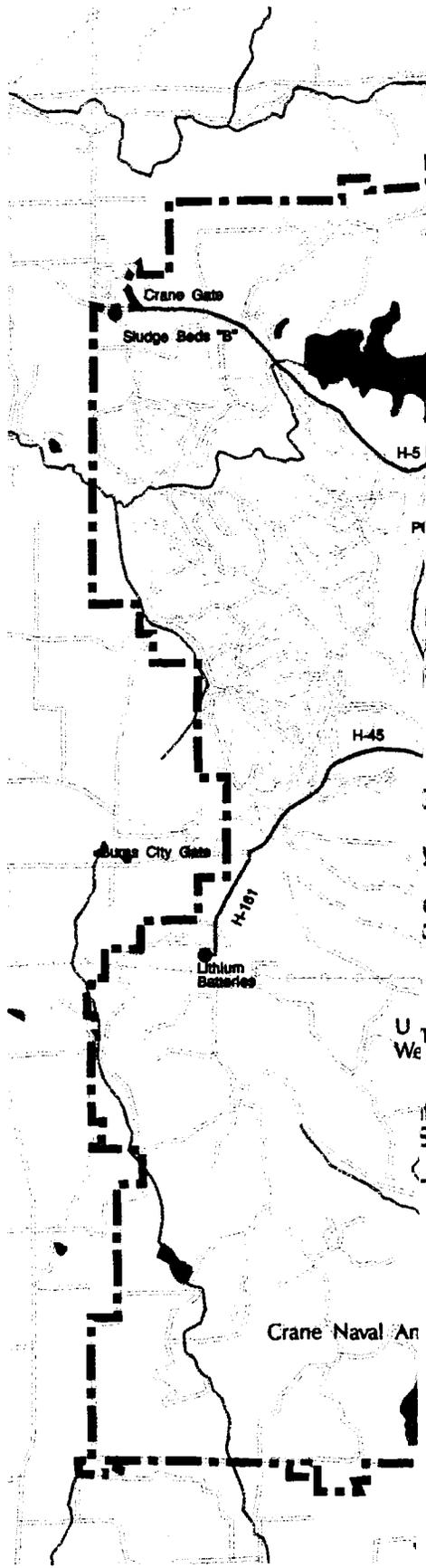
HOT WORK PERMIT

| | | |
|---|---------------------|--------------------------|
| Issued to: | Responsible Person: | Date: |
| Building: | Area Equipment | Control No. |
| Special Work To Be Done: | | Time From/To: |
| Please check appropriate response | | YES NO N/A |
| 1. Has affected personnel been briefed on job safety & requirements? | | |
| 2. Has equipment been properly prepared for this work? | | |
| 3. Does other work or processes affect this work? | | |
| 4. Has fire detection and/or gas systems been isolated? | | |
| 5. Is the work area clean and ready for work to begin? | | |
| 6. Has isolation lockout been completed? If so, record lock and tag numbers below. | | |
| 7. Has fire watch been assigned with appropriate equipment? Name(s) | | |
| 8. Is GAS TEST required? <input type="checkbox"/> Yes <input type="checkbox"/> No Test Results Percent LEL O ₂ H ₂ S, CO, other toxic | | Time Tester |
| Continuous? <input type="checkbox"/> Yes <input type="checkbox"/> No Total Hydrocarbons Others As Req. | | |
| Remarks: | | |
| Special Instructions: <input type="checkbox"/> Yes <input type="checkbox"/> No | Lock Numbers | Tag Numbers |
| | | |
| | | |
| | | |
| | | |
| Job Completed? <input type="checkbox"/> Yes <input type="checkbox"/> No | Time/Initial: | Permit Cancelled: (Time) |

Endorsements as Required

| | | |
|-----------------------------|-----------------|-------|
| Area Operations Technician: | Signature/Name: | Time: |
| Person Doing The Work: | | |
| Job Supervisor/Foreman: | | |
| Project Supervisor: | | |
| SSHO (Safety) | | |

Figure 3 Directions to the Nearest Medical Facility



Legend

- Primary Route**
- H-5 Naval Reservation Boundary**

- NSWC Medical Department on site:**
Medical Department manages and coordinates the ambulance service. Located in Building 12 off of Highway 58 of H-5.
- Bedford Medical Center:**
From Crane Gate, head east on Highway 58 to the city of Bedford onto 16th street. Distance to hospital is approximately 20 miles.
From Burgs City Gate, head east on I58 to the city of Bedford. Distance to 16th street is approximately 10 miles.
- Bloomington Hospital:**
From Crane Naval Air Station, head west on Highway 58 through the Bloomington Gate, follow Highway 58 North to Bloomington. At Highway 45 and Highway 101, go straight over the bypass (Bloomfield Road), then turn north which turns into 2nd Street. Bloomington Hospital and hospital is on your right.



1 inch = 1.5 miles

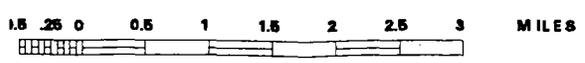


Figure 5 SSHO Daily Logbook Report Page ___ of ___

Date _____ Report Number _____

Location(s) Work Activity and # Employees: _____

Weather: Wind speed _____ Wind direction _____
Temp & Pressure _____ Precipitation _____
Amount sun _____

| Monitoring conducted: | | Instrument | Sampled |
|-----------------------|----------------|-------------|----------------|
| <u>Location</u> | <u>By/Time</u> | <u>used</u> | <u>Results</u> |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

Levels of Protection: _____

Problems or Unusual Situations: _____

Correspondence: _____

Other Comments: _____

SSHO Printed Name: _____ Signature _____ Date _____

Figure 6 SSHP Weekly Inspection Checklist

Surveillance No. _____

| SURVEILLANCE NO: | | ACTIVITY: | | | | PROJECT NO: | |
|------------------|--|---------------------|--|----------------------|-----|-------------------------------|--|
| DATE: | | LOCATION: | | | | SURVEYED ORGANIZATION: | |
| | | SITE/AREA CONTACT: | | RESPONSIBLE MANAGER: | | PRIME: | |
| | | | | | | SUBTIER: | |
| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
| Section 1 | | | | | | | |
| 1 | Scope of work and site contaminants accurately described? | | | | | | |
| Section 2 | | | | | | | |
| 2 | Activity hazard analysis prepared for each major work phase? (EM 385-1-1, Section 01.A.09) | | | | | | |
| 3 | All hazards including chemical and physical adequately described? | | | | | | |
| Section 3 | | | | | | | |
| 4 | Roles and responsibilities described and personnel roster up-to-date? | | | | | | |
| Section 4 | | | | | | | |
| 5 | All site personnel completed required training? | | | | | | |
| 6 | Training documented and records on site? | | | | | | |
| Section 5 | | | | | | | |
| 7 | All site personnel completed initial medial qualification? | | | | | | |
| Section 6 | | | | | | | |
| 8 | PPE available and in good condition? | | | | | | |
| 9 | PPE work per SSHP and/or SSOH direction? | | | | | | |
| 10 | Personnel trained in proper use, limitations, and inspection of PPE? | | | | | | |

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|-----------------|--|---------------------|--|-------------------|-----|-------------------------------|--|
| 11 | PPE inspected per SSHP? | | | | | | |
| 12 | PPE donning/doffing procedures in place? | | | | | | |
| 13 | Written SOP available describing respirator selection and use? | | | | | | |
| Section 7 | | | | | | | |
| 14 | Air monitoring conducted per SSHP? | | | | | | |
| 15 | Monitoring equipment properly maintained and calibrated? | | | | | | |
| 16 | Employees notified of monitoring results? | | | | | | |
| 17 | Chain of custody prepared and maintained for all samples? | | | | | | |
| Section 4 and 8 | | | | | | | |
| 18 | Weekly safety meeting held? | | | | | | |
| 19 | Pre-entry briefs held? and signature sheet completed? | | | | | | |
| 20 | Haz Com programs in place? | | | | | | |
| 21 | Competent person evaluates excavation? | | | | | | |
| 22 | Personnel responsible for work maintain control of area? | | | | | | |
| Section 9 | | | | | | | |
| 23 | Work zone maps prepared and updated? | | | | | | |
| 24 | Maps posted near work area and stored in SSHP? | | | | | | |
| 25 | Traffic patterns established and rules observed? | | | | | | |
| Section 10 | | | | | | | |
| 26 | Inspections performed of all personnel, clothing and equipment leaving exclusion zone? | | | | | | |
| 27 | All materials decontaminated prior to existing contamination reduction zone? | | | | | | |
| 28 | Decon stations properly established? | | | | | | |

Figure 6 SSHP Weekly Inspection Checklist (Continued)

Surveillance No. _____

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|----------|---|---------------------|--|-------------------|-----|-------------------------------|--|
| 29 | Proper personal hygiene practices observed? | | | | | | |
| 30 | Decon solutions collected and properly disposed of? | | | | | | |
| | Section 4 and 11 | | | | | | |
| 31 | At least two employees on each shift trained in CPR and first aid and bloodborne pathogens? | | | | | | |
| 32 | First aid kit at each work site? | | | | | | |
| 33 | All first aid and medical cases promptly reported to SSHO? | | | | | | |
| | Section 12 | | | | | | |
| 34 | All personnel trained on Emergency Response Plan and Contingency Procedures? | | | | | | |
| 35 | Emergency pre-planning addressed in safety meeting? | | | | | | |
| 36 | List of emergency services/contact is up to date and posted? | | | | | | |
| 37 | Assembly points identified and communicated to employees? | | | | | | |
| 38 | Evacuation routes established and communicated to employees? | | | | | | |
| 39 | Communication methods are adequate | | | | | | |
| 40 | All drills, exercises, and emergencies critiqued? | | | | | | |
| 41 | All emergencies promptly reported to SSHO? | | | | | | |
| | Section 13 | | | | | | |
| 42 | SSHO maintains project log book? | | | | | | |
| 43 | Daily reports completed by SSHO? | | | | | | |
| 44 | Daily inspections completed by SSHO? | | | | | | |
| 45 | Weekly reports prepared by SSHO? | | | | | | |

Figure 6 SSHP Weekly Inspection Checklist (Continued)

Surveillance No. _____

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|----------|--|---------------------|--|-------------------|-----|-------------------------------|--|
| 46 | Records of all injuries and illnesses maintained by SSHO? | | | | | | |
| | Section 14 | | | | | | |
| 47 | Work plans available and up to date? | | | | | | |
| 48 | SOPs developed as needed? | | | | | | |
| | Section 15 | | | | | | |
| 49 | Two-way radios available per SSHP? | | | | | | |
| 50 | Cellular telephone available as needed? | | | | | | |
| 51 | Emergency alarms available and personnel trained on what actions to take? | | | | | | |
| 52 | Drills and exercises conducted to test communication methods? | | | | | | |
| | Section 16 | | | | | | |
| 53 | Spill response measures reviewed with personnel? | | | | | | |
| 54 | Suitable quantities of spill supplies available? | | | | | | |
| 55 | Spills promptly reported to SSHO? | | | | | | |
| 56 | Operations arranged to minimize spills? | | | | | | |
| | Section 17 | | | | | | |
| 57 | Confined space requirements of 385-1-1, Section 06.0.01 followed? Personnel trained? | | | | | | |

Inspection Performed By: _____ Date: _____

Abatement Accepted By: _____ Date: _____

APPENDIX A
ACTIVITY HAZARD ANALYSIS (AHA)

ACTIVITY HAZARD ANALYSIS (AHA)

| Activity: Configure and set up work areas. | | Analyzed By/Date: Frank J. Petrik 8/22/95 | Reviewed By/Date: |
|---|--|---|-------------------|
| 1.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>1.1 Walk area down, establish work zone and laydown areas.</p> <p>1.2 Clearing and grubbing.</p> | <p>1.1a. Struck by and struck against physical objects during loading and unloading operations and setup.</p> <p>1.1b. Biological; weeds, snakes, spider's; other plant life.</p> <p>1.1c. Contact by inhalation, direct contact or ingestion of chemical contaminants.</p> <p>1.2a. Struck by and struck against physical objects during clearing and grubbing.</p> <p>1.2b. Contact with debris resulting in inhalation, direct contact or ingestion of chemical contaminants.</p> | <p>1.1a. Preplan work layout (Work Zone Map completed and posted by Subcontractor). Backup alarms on all motorized heavy equipment. Use correct hand and power tools for job and good housekeeping practices.</p> <p>Note: MK PM to coordinate the unexploded ordnance survey (UXO) in the work zone areas with the NSWC contact.</p> <p>1.1b. MK SSHO to discuss specific biological hazards awareness and communicate findings at POD and/or Pre Entry Briefs.</p> <p>1.1c. Level D PPE expected. MK SSHO to visual inspect area for evidence of contaminants and will also conduct general area scans for VOCs using PID and FID.</p> <p>1.2a. Preplan work layout (Work Zone Map completed and posted by Subcontractor). Backup alarms on all motorized heavy equipment. Use correct handtools and power equipment for the job. Review EM 385-1-1 Section 31 on safeguards and recommended practices.</p> <p>1.2b. Level C PPE for clearing and grubbing. Level B PPE for preliminary screening of debris. Modify PPE levels as conditions warrant.</p> | |
| 1.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| <p>1.4 Heavy equipment for loading and hauling. Hand and power tools.</p> | <p>Daily, prior to use per manufacturer's recommendation.</p> | <p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator.</p> | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|---|-------------------|
| Activity: Preliminary Screening of Debris including Hand and Mechanical excavating. | | Analyzed By/Date: Frank J. Petrik 8/22/95 | Reviewed By/Date: |
| 2.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>2.1 Initial excavations completed by hand (potholing) to locate underground debris/drums and containers</p> <p>2.2 Mechanical excavation.</p> | <p>Contact with underground utilities, and other objects not expected in the burial area.</p> <p>Inhalation, direct contact or ingestion of chemical, biological and physical agents. (Physical includes ionizing radiation)</p> <p>Struck by and struck against physical objects during excavations.</p> | <p>MK Excavation and Trenching permit required. Confirm if any utilities in area. UXO personnel standing by observing excavation. Underground location equipment available to estimate size and depth of buried containers and drums.</p> <p>Level B PPE during excavating, upgrade or downgrade per MK SSHO direction. SSHO to conduct periodic air monitoring for VOCs, LEL, O₂ and H₂S. General object surveys for ionizing radiation required.</p> <p>Maintain clear area around heavy equipment. Competent person shall inspect excavation on a periodic basis.</p> <p>Note: analyze for need, and establish full fall protection if necessary, for work on steep grades (SWMU 23/00) in accordance with OSHA 1926.501 and subsequent subsections.</p> | |
| 2.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 2.4 Heavy equipment and handtools. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator and Operator Training. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|---|---|--|-------------------|
| Activity: Handling and Staging of Debris | | Analyzed By/Date: Frank J. Petrik 8/22/95 | Reviewed By/Date: |
| 3.0 Principal Steps | Potential Hazards | Recommended Controls | |
| 3.1 Complete final clean-off of debris. 3.2 Load debris onto staging area. | Physical hazards related to the lifting, moving and loading of debris. Direct contact with any contaminated material not readily removable from surface. | Preplan the staging area layout and flow of material. Preplan all lifts and verify safe loading factors and correct rigging for equipment. Level B PPE, downgrade per MK SSHO direction. | |
| 3.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 3.4 Heavy equipment, slinging and rigging, overpack containers, handtools. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication and Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|--|---|----------------------------|
| Activity: Decontamination Facility Operations, Personnel and Equipment. | | Analyzed By/Date: Frank J. Petrik 8/22/95 | Reviewed By/Date: _____ |
| 4.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>4.1 Receive and place material at facility.</p> <p>4.2 Decontaminate Equipment using high pressure wash or hand scrubbing and/or automatic wash on vehicle tires and undercarriage.</p> | <p>4.1a. Struck by and struck against. Material handling concerns.</p> <p>4.2a. Contact with contaminated material and cross contamination; inhalation of airborne aerosols; contact with high pressure wash stream; unexpected movement of material to be decontaminated.</p> | <p>4.1a. Site Decontamination Facility to provide isolation and controlled access. MK SSHO and Project Supervisor(s) to review material handling procedures to insure good practices and approved equipment is used which conforms to OSHA and EM-381 Section 28.1 requirements.</p> <p>4.2a. Level C PPE with faceshield to include waterproof clothing and boots, modify per MK SSHO review. Secure items to be decontaminated. Visual inspect integrity of Facility's containment liners and containers used for waste waters before use.</p> <p>Clean side area shall be established for worker's street clothes and MK SSHO approved respirator cleaning, sanitizing and storage facility.</p> | |
| 4.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 4.4 High pressure wash with soap solution; other decontamination solutions; scrub brushes; material handling equipment and securing equipment. | Before use per manufacturers recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, and Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|--|-------------------|
| Activity: Backfilling and Site Restoration. | | Analyzed By/Date: Frank J. Petrik 8/22/95 | Reviewed By/Date: |
| 5.0 Principal Steps | Potential Hazards | Recommended Controls | |
| 5.1 Offload, spread, compact and reseed area. | <p>5.1a. Contact with airborne treated material, may present a biological hazard.</p> <p>5.1b. Struck by and struck against physical objects during offloading and spreading material.</p> <p>5.1c. Vibration from compactor, electric or air source.</p> | <p>5.1a. Dust Controls required to include wetting fill material. Level D PPE expected, upgrade if necessary. Dust controls and respirator (dust mask) may be necessary during spreading and covering with cover material (spray on straw)</p> <p>5.1b. Preplan work layout. Backup alarms on all motorized equipment. Keep clear area around heavy equipment.</p> <p>5.1c. Equipment operated per manufacturers recommendation. May require heavy work glove for vibration dampening and hearing protection for noise mitigation.</p> | |
| 5.2 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 5.3 Heavy equipment, hand-tools, sodding equipment, straw spreader, compactor. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|---|--|--|-------------------|
| Activity: Field Sampling Activities for Soil. | | Analyzed By/Date: Frank J. Petrik 8/23/95 | Reviewed By/Date: |
| 6.0. Principal Steps | Potential Hazards | Recommended Controls | |
| <p>6.1. Hand augering (in excavations)</p> <p>6.2. Hand augering (non excavated areas)</p> <p>6.3. Containerized Liquids Sampling (known contents)</p> <p>6.4. Sampling Equipment Decontamination</p> | <p>6.1a. Collapse of excavation or trench; entrance and egress from excavation; contaminated soil/debris contact; contact with underground utility or piping/mechanical system.</p> <p>6.2a. Contaminated soil contact, contact with utility or piping/mechanical system.</p> <p>6.3a. Contaminated liquid contact.</p> <p>6.4a. Contact with contaminated material, also direct contact with decontamination solutions (weak nitric acid and acetone)</p> | <p>6.1a. Sampler requires approval from competent person to enter excavation if deeper than 5 foot. Atmospheric conditions in excavation checked prior to and during sampling. Modified Level D PPE expected, upgrade per MK SSHO review. Analyze for potential contact with any underground utility or mechanical service. Note: Excavation Permit must be valid. Review and train on Field Sampling Kit MSDSs.</p> <p>6.2a. Analyze for confined space entry concerns and potential contact with any underground utility or mechanical service. Level D PPE expected, upgrade per MK SSHO review. Review and train on Field Sampling Kit MSDSs, add MSDS to project files.</p> <p>6.3a. Modified Level D PPE or as appropriate for content hazard.</p> <p>6.4a. Modified Level D PPE with chemical goggles and gloves.</p> | |
| 6.5 Equipment to be Used | Inspection Requirements | Training Requirements | |
| <p>6.6. Soil auger, stainless steel spoons, buckets, field sampling kits and decontamination solutions.</p> | <p>Per manufacturers recommendation. Core drilling equipment if used must be inspected daily. Preplan waste handling.</p> | <p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment.</p> | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|---|--|--|-------------------|
| Activity: Drum and container sampling and disposal of "identifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 | Reviewed By/Date: |
| 7.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>7.1 Conduct visual inspection of drum.</p> <p>7.2 Prepare for sampling.</p> <p>7.3 Open drum.</p> <p>7.4 Obtain sample.</p> <p>7.5 Secure drum and stage.</p> <p>7.6 Load for final disposition.</p> | <p>7.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement.</p> <p>7.2 None identified.</p> <p>7.3 Inhalation or direct contact with drum contents, sparks and static electricity.</p> <p>7.4 Same as 7.3.</p> <p>7.5 Same as 7.3 plus loss of drum containment during transport on-site. Physical hazards during manual movement of drums.</p> <p>7.6 Physical hazards during movement of drums.</p> | <p>7.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments and GM Survey instrument if necessary. No drum movement permitted. Level B PPE.</p> <p>7.2 Preplan staging area and handling methods. Stage spill prevention equipment (absorbent, temporary containment, overpack) and fire extinguisher and eyewash/drench.</p> <p>7.3 Reverify drum is not candidate for remote opening. Use non sparking tools. Assume Level B PPE, downgrade per known characterization data and MK SSHA concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments.</p> <p>7.4 Same as 7.3. Lowest downgrade on PPE is modified level D, chemical resistant gloves and faceshild required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required or per manufacturers recommendation.</p> <p>7.5 Same as 7.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment.</p> <p>7.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p> | |
| 7.7 Equipment to be Used | Inspection Requirements | Training Requirements | |
| <p>7.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment.</p> | <p>Daily, prior to use per manufacturers recommendation.</p> | <p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment.</p> | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|--|---|-------------------|
| Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 | Reviewed By/Date: |
| 8.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>8.1 Conduct visual inspection of drum.</p> <p>8.2 Move drum to Staging Area, prepare for sampling.</p> <p>8.3 Open drum.</p> <p>8.4 Obtain sample.</p> <p>8.5 Secure drum and stage.</p> <p>8.6 Load for final disposition.</p> | <p>8.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement.</p> <p>8.2 Loss of drum containment initiated during movement and transport on-site to Staging area. Physical hazards during manual movement of drums. Inhalation or direct contact with contaminants if containment breached.</p> <p>8.3 Inhalation or direct contact with drum contents, sparks and static electricity.</p> <p>8.4 Same as 8.3.</p> <p>8.5 Same as 8.3 plus loss of drum containment and movement during transport on-site. Physical hazards during manual movement of drums.</p> <p>8.6 Physical hazards during movement of drums.</p> | <p>8.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments. Complete general object survey using GM-Survey Meter. No drum movement permitted. Level B PPE (Faceshield and chemical resistant protective clothing). Secondary containment shall be inspected.</p> <p>8.2 Preplan staging area and handling methods. Stage spill prevention equipment (absorbents and pigs) and fire extinguisher and eyewash/drench. For drum movement, use remote drum handling equipment when possible. For drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment. Level B PPE (Faceshield and chemical resistant protective clothing).</p> <p>8.3 Reverify drum is/is not candidate for remote opening. Use non sparking tools and explosive-resistant shield. Assume Level B PPE, downgrade per known characterization data and MK SSHO concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments.</p> <p>8.4 Same as 8.3. Lowest downgrade on PPE is D+, chemical resistant gloves required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required or per manufacturers recommendation.</p> <p>8.5 Same as 8.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment.</p> <p>8.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p> | |
| 8.7 Equipment to be Used | Inspection Requirements | Training Requirements | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|--|-------------------|
| Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 | Reviewed By/Date: |
| 8.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment. | Daily, prior to use per manufacturers recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment. | |

APPENDIX B

WORK ZONE MAPS

Note: Work Zone Maps are field prepared by the Subcontractor and approved by the MK SSHO. The Subcontractor will deliver one set of the Work Zone Maps to the MK SSHO who will insert copies of the map(s) into the field master copy of this SSHP.

**Table 9
Monitoring and Sampling Requirements**

| Site | Activity | Monitor | | | | | | Sample | | |
|----------------|-------------------------------------|---------|------|--|------------------------------|-------|----------------|--------|--------|------------------|
| | | VOC | Dust | Oxygen, H ₂ S and % LEL | Perimeter (VOCs /Dust) | Noise | Heat Stress | VOC | Metals | Asb esto s |
| SWMU 23/00 | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| SWMU 25/07D | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| | 9. Asbestos Remediation | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.O | 9.Y |

**Table 9
Monitoring and Sampling Requirements**

| Site | Activity | Monitor | | | | | | Sample | | |
|----------------|--|------------------|------|--|------------------------------|-------|----------------|--------|--------|------------------|
| | | VOC | Dust | Oxygen, H ₂ S and % LEL | Perimeter (VOCs /Dust) | Noise | Heat Stress | VOC | Metals | Asb esto s |
| SWMU 26/08D | 1. Configure and set up work area. | 1.O | 1.N | 1.N | 1.N | 1.N | 1.O | 1.O | 1.N | 1.N |
| | 2. Preliminary screening of debris. | 2.Y | 2.O | 2.O | 2.O | 2.N | 2.O | 2.O | 2.N | 2.N |
| | 3. Hand excavation. | 3.Y | 3.Y | 3.Y | 3.Y | 3.N | 3.O | 3.O | 3.O | 3.N |
| | 4. Mechanical excavation. | 4.Y | 4.Y | 4.Y | 4.Y | 4.O | 4.O | 4.O | 4.O | 4.N |
| | 5. Drum or container handling | 5.Y | 5.O | 5.Y | 5.O | 5.O | 5.O | 5.O | 5.N | 5.N |
| | 6. Soil packaging. | 6.Y | 6.Y | 6.O | 6.O | 6.O | 6.O | 6.O | 6.O | 6.N |
| | 7. Decontamination. | 7.O | 7.O | 7.O | 7.N | 7.O | 7.O | 7.O | 7.O | 7.N |
| | 8. Site restoration. | 8.N | 8.O | 8.N | 8.N | 8.O | 8.O | 8.N | 8.N | 8.N |
| Sampling | 1.obtain soil and/or groundwater and/or debris/ drum/container samples | 1.Y ¹ | 1.O | 1.Y ¹ | 1.N | 1.N | 1.O | 1.N | 1.N | 1.N |

Y = Yes, O = Optional at discretion of SSHO, N = Not required

¹ = When obtaining soil samples in excavations deeper than 5 feet, treat the excavation as permit-required confined space until it has been assessed by atmospheric monitoring that the atmosphere is safe and it can be downgraded to nonpermit-required confined space. Engineering controls must be in place to safeguard excavation from collapse.

FIGURES



| | | |
|-------|-------|---------------|
| DATE: | TIME: | DATE EXPIRES: |
|-------|-------|---------------|

JOB DESCRIPTION AND LOCATION (Be Specific):

BEFORE TRENCHING AND EXCAVATION

- | | |
|--|--|
| <input type="checkbox"/> Soil Classification <input type="checkbox"/> Stable Rock <input type="checkbox"/> Type A <input type="checkbox"/> Type B <input type="checkbox"/> Type C <input type="checkbox"/> Check For Proximity To Utilities, Buildings, Footing or Pilings and Sources of Vibrations. <input type="checkbox"/> Owners of Utilities, Services or Transmission Piping, Etc. (Electrical, Telephone, Water, Sewer) | <input type="checkbox"/> Check For Previously Disturbed Ground <input type="checkbox"/> Adequacy and Availability of All Equipment, Including Personal Protective Gear, Shoring Material, Signs, Barricades and Machinery. <input type="checkbox"/> Other Known Obstructions (e.g. Footing Concrete Encasement) <input type="checkbox"/> Allowable Slope. |
|--|--|

COMMENTS:

DURING TRENCHING AND EXCAVATION

- | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|--|--|-------------|----------|-------|--------|-------|-------|--------|-----|-------|--------|---------|-------|
| <input type="checkbox"/> Size of Excavation Depth _____ Width _____ Length _____ <input type="checkbox"/> Changing Ground Conditions, Particularly After Rain Fall <input type="checkbox"/> Monitor For Possible Oxygen Deficiency Or Gaseous Conditions. (Record per IH Manual Procedure 5.0 or equivalent). _____ <input type="checkbox"/> Adequacy of Shoring And/Or Sloping As Work Progresses. <input type="checkbox"/> Entrances and Exit Facilities <input type="checkbox"/> Stairway <input type="checkbox"/> Ladders <input type="checkbox"/> Ramp <input type="checkbox"/> Change In Vehicular and Machinery Operation <input type="checkbox"/> Water Removal Equipment and Operation <input type="checkbox"/> Adequacy of Portable Trench Boxes or Trench Shields | <input type="checkbox"/> Protective Systems Depth of A Trench Or Excavation of 5 Feet or More. <u>Check The Applicable OSHA Appendix Below:</u> <input type="checkbox"/> B - Sloping and Benching <table style="margin-left: 20px;"> <tr><td colspan="3">Maximum Allowable Slopes</td></tr> <tr><td>Stable Rock</td><td>Vertical</td><td>(90°)</td></tr> <tr><td>Type A</td><td>3/4:1</td><td>(53°)</td></tr> <tr><td>Type B</td><td>1:1</td><td>(45°)</td></tr> <tr><td>Type C</td><td>1 1/2:1</td><td>(34°)</td></tr> </table> NOTE: Sloping or Benching For Excavations Greater Than 20 Feet Deep Shall Be Designed By A State Registered Professional Engineer (RPE). <input type="checkbox"/> C - Timber Shoring For Trenches <input type="checkbox"/> D - Aluminum Hydraulic Shoring For Trenching <input type="checkbox"/> RPE - Designed Protection Systems (data must be filed on job-site) | Maximum Allowable Slopes | | | Stable Rock | Vertical | (90°) | Type A | 3/4:1 | (53°) | Type B | 1:1 | (45°) | Type C | 1 1/2:1 | (34°) |
| Maximum Allowable Slopes | | | | | | | | | | | | | | | | |
| Stable Rock | Vertical | (90°) | | | | | | | | | | | | | | |
| Type A | 3/4:1 | (53°) | | | | | | | | | | | | | | |
| Type B | 1:1 | (45°) | | | | | | | | | | | | | | |
| Type C | 1 1/2:1 | (34°) | | | | | | | | | | | | | | |

COMMENTS:

SIGNATURES AND DATES

| | | |
|------------------------|--------------------|-----------------------|
| COMPETENT PERSON: | SSHO: | PROJECT MANAGER: |
| CLIENT REPRESENTATIVE: | CIVIL ENGINEER: | CIVIL SUPERINTENDENT: |
| EQUIPMENT OPERATOR: | SUBCONTRACTOR REP: | OTHER APPROVAL: |

Figure 2 Hot Work Permit



MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION, AND ENVIRONMENTAL GROUP

HOT WORK PERMIT

| | | |
|---|---------------------|--------------------------|
| Issued to: | Responsible Person: | Date: |
| Building: | Area Equipment | Control No. |
| Special Work To Be Done: | | Time From/To: |
| Please check appropriate response 1. Has affected personnel been briefed on job safety & requirements? | | YES NO N/A |
| 2. Has equipment been properly prepared for this work? | | |
| 3. Does other work or processes affect this work? | | |
| 4. Has fire detection and/or gas systems been isolated? | | |
| 5. Is the work area clean and ready for work to begin? | | |
| 6. Has isolation lockout been completed? If so, record lock and tag numbers below. | | |
| 7. Has fire watch been assigned with appropriate equipment? Name(s) | | |
| 8. Is GAS TEST required? <input type="checkbox"/> Yes <input type="checkbox"/> No Test Results Percent LEL O ₂ H ₂ S, CO, other toxic | | Time Tester |
| Continuous ? <input type="checkbox"/> Yes <input type="checkbox"/> No Total Hydrocarbons Others As Req. | | |
| Remarks: | | |
| Special Instructions: <input type="checkbox"/> Yes <input type="checkbox"/> No | Lock Numbers | Tag Numbers |
| | | |
| | | |
| | | |
| | | |
| Job Completed? <input type="checkbox"/> Yes <input type="checkbox"/> No | Time/Initial: | Permit Cancelled: (Time) |

Endorsements as Required

| | | |
|-----------------------------|-----------------|-------|
| Area Operations Technician: | Signature/Name: | Time: |
| Person Doing The Work: | | |
| Job Supervisor/Foreman: | | |
| Project Supervisor: | | |
| SSHO (Safety) | | |

Figure 3 Directions to Nearest Emergency Medical Facilities

Figure 5 SSHO Daily Logbook Report Page ___ of ___

Date _____ Report Number _____

Location(s) Work Activity and # Employees: _____

Weather: Wind speed _____ Wind direction _____
 Temp & Pressure _____ Precipitation _____
 Amount sun _____

| Monitoring conducted: | | Instrument | Sampled |
|-----------------------|----------------|-------------|----------------|
| <u>Location</u> | <u>By/Time</u> | <u>used</u> | <u>Results</u> |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

Levels of Protection: _____

Problems or Unusual Situations: _____

Correspondence: _____

Other Comments: _____

SSHO Printed Name: _____ Signature _____ Date _____

Figure 6 SSHP Weekly Inspection Checklist

Surveillance No. _____

| SURVEILLANCE NO: | | ACTIVITY: | | | | PROJECT NO: | |
|------------------|--|---------------------|--|----------------------|-----|-------------------------------|--|
| DATE: | | LOCATION: | | | | SURVEYED ORGANIZATION: | |
| | | SITE/AREA CONTACT: | | RESPONSIBLE MANAGER: | | PRIME: | |
| | | | | | | SUBTIER: | |
| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
| Section 1 | | | | | | | |
| 1 | Scope of work and site contaminants accurately described? | | | | | | |
| Section 2 | | | | | | | |
| 2 | Activity hazard analysis prepared for each major work phase? (EM 385-1-1, Section 01.A.09) | | | | | | |
| 3 | All hazards including chemical and physical adequately described? | | | | | | |
| Section 3 | | | | | | | |
| 4 | Roles and responsibilities described and personnel roster up-to-date? | | | | | | |
| Section 4 | | | | | | | |
| 5 | All site personnel completed required training? | | | | | | |
| 6 | Training documented and records on site? | | | | | | |
| Section 5 | | | | | | | |
| 7 | All site personnel completed initial medial qualification? | | | | | | |
| Section 6 | | | | | | | |
| 8 | PPE available and in good condition? | | | | | | |
| 9 | PPE work per SSHP and/or SSOH direction? | | | | | | |
| 10 | Personnel trained in proper use, limitations, and inspection of PPE? | | | | | | |

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|----------|--|---------------------|--|-------------------|-----|-------------------------------|--|
| 11 | PPE inspected per SSHP? | | | | | | |
| 12 | PPE donning/doffing procedures in place? | | | | | | |
| 13 | Written SOP available describing respirator selection and use? | | | | | | |
| | Section 7 | | | | | | |
| 14 | Air monitoring conducted per SSHP? | | | | | | |
| 15 | Monitoring equipment properly maintained and calibrated? | | | | | | |
| 16 | Employees notified of monitoring results? | | | | | | |
| 17 | Chain of custody prepared and maintained for all samples? | | | | | | |
| | Section 4 and 8 | | | | | | |
| 18 | Weekly safety meeting held? | | | | | | |
| 19 | Pre-entry briefs held? and signature sheet completed? | | | | | | |
| 20 | Haz Com programs in place? | | | | | | |
| 21 | Competent person evaluates excavation? | | | | | | |
| 22 | Personnel responsible for work maintain control of area? | | | | | | |
| | Section 9 | | | | | | |
| 23 | Work zone maps prepared and updated? | | | | | | |
| 24 | Maps posted near work area and stored in SSHP? | | | | | | |
| 25 | Traffic patterns established and rules observed? | | | | | | |
| | Section 10 | | | | | | |
| 26 | Inspections performed of all personnel, clothing and equipment leaving exclusion zone? | | | | | | |
| 27 | All materials decontaminated prior to existing contamination reduction zone? | | | | | | |
| 28 | Decon stations properly established? | | | | | | |

Figure 6 SSHP Weekly Inspection Checklist (Continued)

Surveillance No. _____

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|----------|---|---------------------|--|-------------------|-----|-------------------------------|--|
| 29 | Proper personal hygiene practices observed? | | | | | | |
| 30 | Decon solutions collected and properly disposed of? | | | | | | |
| | Section 4 and 11 | | | | | | |
| 31 | At least two employees on each shift trained in CPR and first aid and bloodborne pathogens? | | | | | | |
| 32 | First aid kit at each work site? | | | | | | |
| 33 | All first aid and medical cases promptly reported to SSHO? | | | | | | |
| | Section 12 | | | | | | |
| 34 | All personnel trained on Emergency Response Plan and Contingency Procedures? | | | | | | |
| 35 | Emergency pre-planning addressed in safety meeting? | | | | | | |
| 36 | List of emergency services/contact is up to date and posted? | | | | | | |
| 37 | Assembly points identified and communicated to employees? | | | | | | |
| 38 | Evacuation routes established and communicated to employees? | | | | | | |
| 39 | Communication methods are adequate | | | | | | |
| 40 | All drills, exercises, and emergencies critiqued? | | | | | | |
| 41 | All emergencies promptly reported to SSHO? | | | | | | |
| | Section 13 | | | | | | |
| 42 | SSHO maintains project log book? | | | | | | |
| 43 | Daily reports completed by SSHO? | | | | | | |
| 44 | Daily inspections completed by SSHO? | | | | | | |
| 45 | Weekly reports prepared by SSHO? | | | | | | |

Figure 6 SSHP Weekly Inspection Checklist (Continued)

Surveillance No. _____

| ITEM NO. | DESCRIPTION OF SURVEYED ITEMS | N/A SAT UNSAT | DESCRIPTION OF DISCREPANCY/ NON-COMPLIANCE | ACT OR COND | CAT | REQUIRED ABATEMENT DATE | CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED |
|----------|--|---------------------|--|-------------------|-----|-------------------------------|--|
| 46 | Records of all injuries and illnesses maintained by SSHO? | | | | | | |
| | Section 14 | | | | | | |
| 47 | Work plans available and up to date? | | | | | | |
| 48 | SOPs developed as needed? | | | | | | |
| | Section 15 | | | | | | |
| 49 | Two-way radios available per SSHP? | | | | | | |
| 50 | Cellular telephone available as needed? | | | | | | |
| 51 | Emergency alarms available and personnel trained on what actions to take? | | | | | | |
| 52 | Drills and exercises conducted to test communication methods? | | | | | | |
| | Section 16 | | | | | | |
| 53 | Spill response measures reviewed with personnel? | | | | | | |
| 54 | Suitable quantities of spill supplies available? | | | | | | |
| 55 | Spills promptly reported to SSHO? | | | | | | |
| 56 | Operations arranged to minimize spills? | | | | | | |
| | Section 17 | | | | | | |
| 57 | Confined space requirements of 385-1-1, Section 06.0.01 followed? Personnel trained? | | | | | | |

Inspection Performed By: _____ Date: _____

Abatement Accepted By: _____ Date: _____

APPENDIX A

ACTIVITY HAZARD ANALYSIS (AHA)

ACTIVITY HAZARD ANALYSIS (AHA)

| Activity: Configure and set up work areas. | | Analyzed By/Date: Frank J. Petrik 8/22/95 <i>FJ Petrik</i> | Reviewed By/Date: |
|---|--|---|-------------------|
| 1.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>1.1 Walk area down, establish work zone and laydown areas.</p> <p>1.2 Clearing and grubbing.</p> | <p>1.1a. Struck by and struck against physical objects during loading and unloading operations and setup.</p> <p>1.1b. Biological; weeds, snakes, spider's; other plant life.</p> <p>1.1c. Contact by inhalation, direct contact or ingestion of chemical contaminants.</p> <p>1.2a. Struck by and struck against physical objects during clearing and grubbing.</p> <p>1.2b. Contact with debris resulting in inhalation, direct contact or ingestion of chemical contaminants.</p> | <p>1.1a. Preplan work layout (Work Zone Map completed and posted by Subcontractor). Backup alarms on all motorized heavy equipment. Use correct hand and power tools for job and good housekeeping practices.</p> <p>Note: MK PM to coordinate the unexploded ordnance survey (UXO) in the work zone areas with the NSWC contact.</p> <p>1.1b. MK SSHO to discuss specific biological hazards awareness and communicate findings at POD and/or Pre Entry Briefs.</p> <p>1.1c. Level D PPE expected. MK SSHO to visual inspect area for evidence of contaminants and will also conduct general area scans for VOCs using PID and FID.</p> <p>1.2a. Preplan work layout (Work Zone Map completed and posted by Subcontractor). Backup alarms on all motorized heavy equipment. Use correct handtools and power equipment for the job. Review EM 385-1-1 Section 31 on safeguards and recommended practices.</p> <p>1.2b. Level C PPE for clearing and grubbing. Level B PPE for preliminary screening of debris. Modify PPE levels as conditions warrant.</p> | |
| 1.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| <p>1.4 Heavy equipment for loading and hauling. Hand and power tools.</p> | <p>Daily, prior to use per manufacturer's recommendation.</p> | <p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator.</p> | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|---|-------------------|
| Activity: Preliminary Screening of Debris including Hand and Mechanical excavating. | | Analyzed By/Date: Frank J. Petrik 8/22/95 <i>FJ Petrik</i> | Reviewed By/Date: |
| 2.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>2.1 Initial excavations completed by hand (potholing) to locate underground debris/drums and containers</p> <p>2.2 Mechanical excavation.</p> | <p>Contact with underground utilities, and other objects not expected in the burial area.</p> <p>Inhalation, direct contact or ingestion of chemical, biological and physical agents. (Physical includes ionizing radiation)</p> <p>Struck by and struck against physical objects during excavations.</p> | <p>MK Excavation and Trenching permit required. Confirm if any utilities in area. UXO personnel standing by observing excavation. Underground location equipment available to estimate size and depth of buried containers and drums.</p> <p>Level B PPE during excavating, upgrade or downgrade per MK SSHO direction. SSHO to conduct periodic air monitoring for VOCs, LEL, O₂ and H₂S. General object surveys for ionizing radiation required.</p> <p>Maintain clear area around heavy equipment. Competent person shall inspect excavation on a periodic basis.</p> <p>Note: analyze for need, and establish full fall protection if necessary, for work on steep grades (SWMU 23/00) in accordance with OSHA 1926.501 and subsequent subsections.</p> | |
| 2.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 2.4 Heavy equipment and handtools. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator and Operator Training. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|---|---|--|-------------------|
| Activity: Handling and Staging of Debris | | Analyzed By/Date: Frank J. Petrik 8/22/95 <i>FJ Petrik</i> | Reviewed By/Date: |
| 3.0 Principal Steps | Potential Hazards | Recommended Controls | |
| 3.1 Complete final clean-off of debris. 3.2 Load debris onto staging area. | Physical hazards related to the lifting, moving and loading of debris. Direct contact with any contaminated material not readily removable from surface. | Preplan the staging area layout and flow of material. Preplan all lifts and verify safe loading factors and correct rigging for equipment. Level B PPE, downgrade per MK SSHO direction. | |
| 3.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 3.4 Heavy equipment, slinging and rigging, overpack containers, handtools. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication and Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|--|---|----------------------------|
| Activity: Decontamination Facility Operations, Personnel and Equipment. | | Analyzed By/Date: Frank J. Petrik 8/22/95 <i>FJ Petrik</i> | Reviewed By/Date: _____ |
| 4.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>4.1 Receive and place material at facility.</p> <p>4.2 Decontaminate Equipment using high pressure wash or hand scrubbing and/or automatic wash on vehicle tires and undercarriage.</p> | <p>4.1a. Struck by and struck against. Material handling concerns.</p> <p>4.2a. Contact with contaminated material and cross contamination; inhalation of airborne aerosols; contact with high pressure wash stream; unexpected movement of material to be decontaminated.</p> | <p>4.1a. Site Decontamination Facility to provide isolation and controlled access. MK SSHO and Project Supervisor(s) to review material handling procedures to insure good practices and approved equipment is used which conforms to OSHA and EM-381 Section 28.1 requirements.</p> <p>4.2a. Level C PPE with faceshield to include waterproof clothing and boots, modify per MK SSHO review. Secure items to be decontaminated. Visual inspect integrity of Facility's containment liners and containers used for waste waters before use.</p> <p>Clean side area shall be established for worker's street clothes and MK SSHO approved respirator cleaning, sanitizing and storage facility.</p> | |
| 4.3 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 4.4 High pressure wash with soap solution; other decontamination solutions; scrub brushes; material handling equipment and securing equipment. | Before use per manufacturers recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, and Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|--|-------------------|
| Activity: Backfilling and Site Restoration. | | Analyzed By/Date: Frank J. Petrik 8/22/95 <i>FJ Petrik</i> | Reviewed By/Date: |
| 5.0 Principal Steps | Potential Hazards | Recommended Controls | |
| 5.1 Offload, spread, compact and reseed area. | <p>5.1a. Contact with airborne treated material, may present a biological hazard.</p> <p>5.1b. Struck by and struck against physical objects during offloading and spreading material.</p> <p>5.1c. Vibration from compactor, electric or air source.</p> | <p>5.1a. Dust Controls required to include wetting fill material. Level D PPE expected, upgrade if necessary. Dust controls and respirator (dust mask) may be necessary during spreading and covering with cover material (spray on straw)</p> <p>5.1b. Preplan work layout. Backup alarms on all motorized equipment. Keep clear area around heavy equipment.</p> <p>5.1c. Equipment operated per manufacturers recommendation. May require heavy work glove for vibration dampening and hearing protection for noise mitigation.</p> | |
| 5.2 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 5.3 Heavy equipment, hand-tools, sodding equipment, straw spreader, compactor. | Daily, prior to use per manufacturer's recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|--|---|---|-------------------|
| Activity: Field Sampling Activities for Soil. | | Analyzed By/Date: Frank J. Petrik 8/23/95 <i>F. Petrik</i> | Reviewed By/Date: |
| 6.0. Principal Steps | Potential Hazards | Recommended Controls | |
| 6.1. Hand augering (in excavations) 6.2. Hand augering (non excavated areas) 6.3. Containerized Liquids Sampling (known contents) 6.4. Sampling Equipment Decontamination | 6.1a. Collapse of excavation or trench; entrance and egress from excavation; contaminated soil/debris contact; contact with underground utility or piping/mechanical system. 6.2a. Contaminated soil contact, contact with utility or piping/mechanical system. 6.3a. Contaminated liquid contact. 6.4a. Contact with contaminated material, also direct contact with decontamination solutions (weak nitric acid and acetone) | 6.1a. Sampler requires approval from competent person to enter excavation if deeper than 5 foot. Atmospheric conditions in excavation checked prior to and during sampling. Modified Level D PPE expected, upgrade per MK SSHO review. Analyze for potential contact with any underground utility or mechanical service. Note: Excavation Permit must be valid. Review and train on Field Sampling Kit MSDSs. 6.2a. Analyze for confined space entry concerns and potential contact with any underground utility or mechanical service. Level D PPE expected, upgrade per MK SSHO review. Review and train on Field Sampling Kit MSDSs, add MSDS to project files. 6.3a. Modified Level D PPE or as appropriate for content hazard. 6.4a. Modified Level D PPE with chemical goggles and gloves. | |
| 6.5 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 6.6. Soil auger, stainless steel spoons, buckets, field sampling kits and decontamination solutions. | Per manufacturers recommendation. Core drilling equipment if used must be inspected daily. Preplan waste handling. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| | | | |
|---|--|---|-------------------|
| Activity: Drum and container sampling and disposal of "identifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 <i>F. Petrik</i> | Reviewed By/Date: |
| 7.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>7.1 Conduct visual inspection of drum.</p> <p>7.2 Prepare for sampling.</p> <p>7.3 Open drum.</p> <p>7.4 Obtain sample.</p> <p>7.5 Secure drum and stage.</p> <p>7.6 Load for final disposition.</p> | <p>7.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement.</p> <p>7.2 None identified.</p> <p>7.3 Inhalation or direct contact with drum contents, sparks and static electricity.</p> <p>7.4 Same as 7.3.</p> <p>7.5 Same as 7.3 plus loss of drum containment during transport on-site. Physical hazards during manual movement of drums.</p> <p>7.6 Physical hazards during movement of drums.</p> | <p>7.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments and GM Survey instrument if necessary. No drum movement permitted. Level B PPE.</p> <p>7.2 Preplan staging area and handling methods. Stage spill prevention equipment (absorbent, temporary containment, overpack) and fire extinguisher and eyewash/drench.</p> <p>7.3 Reverify drum is not candidate for remote opening. Use non sparking tools. Assume Level B PPE, downgrade per known characterization data and MK SSHO concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments.</p> <p>7.4 Same as 7.3. Lowest downgrade on PPE is modified level D, chemical resistant gloves and facemask required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required or per manufacturers recommendation.</p> <p>7.5 Same as 7.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment.</p> <p>7.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p> | |
| 7.7 Equipment to be Used | Inspection Requirements | Training Requirements | |
| 7.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment. | Daily, prior to use per manufacturers recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment. | |

ACTIVITY HAZARD ANALYSIS (AHA)

| Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 <i>FJ Petrik</i> | Reviewed By/Date: |
|--|--|---|-------------------|
| 8.0 Principal Steps | Potential Hazards | Recommended Controls | |
| <p>8.1 Conduct visual inspection of drum.</p> <p>8.2 Move drum to Staging Area, prepare for sampling.</p> <p>8.3 Open drum.</p> <p>8.4 Obtain sample.</p> <p>8.5 Secure drum and stage.</p> <p>8.6 Load for final disposition.</p> | <p>8.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement.</p> <p>8.2 Loss of drum containment initiated during movement and transport on-site to Staging area. Physical hazards during manual movement of drums. Inhalation or direct contact with contaminants if containment breached.</p> <p>8.3 Inhalation or direct contact with drum contents, sparks and static electricity.</p> <p>8.4 Same as 8.3.</p> <p>8.5 Same as 8.3 plus loss of drum containment and movement during transport on-site. Physical hazards during manual movement of drums.</p> <p>8.6 Physical hazards during movement of drums.</p> | <p>8.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments. Complete general object survey using GM-Survey Meter. No drum movement permitted. Level B PPE (Faceshield and chemical resistant protective clothing). Secondary containment shall be inspected.</p> <p>8.2 Preplan staging area and handling methods. Stage spill prevention equipment (absorbents and pigs) and fire extinguisher and eyewash/drench. For drum movement, use remote drum handling equipment when possible. For drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment. Level B PPE (Faceshield and chemical resistant protective clothing).</p> <p>8.3 Reverify drum is/is not candidate for remote opening. Use non sparking tools and explosive-resistant shield. Assume Level B PPE, downgrade per known characterization data and MK SSHO concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments.</p> <p>8.4 Same as 8.3. Lowest downgrade on PPE is D+, chemical resistant gloves required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required or per manufacturers recommendation.</p> <p>8.5 Same as 8.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment.</p> <p>8.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p> | |
| 8.7 Equipment to be Used | Inspection Requirements | Training Requirements | |

ACTIVITY HAZARD ANALYSIS (AHA)

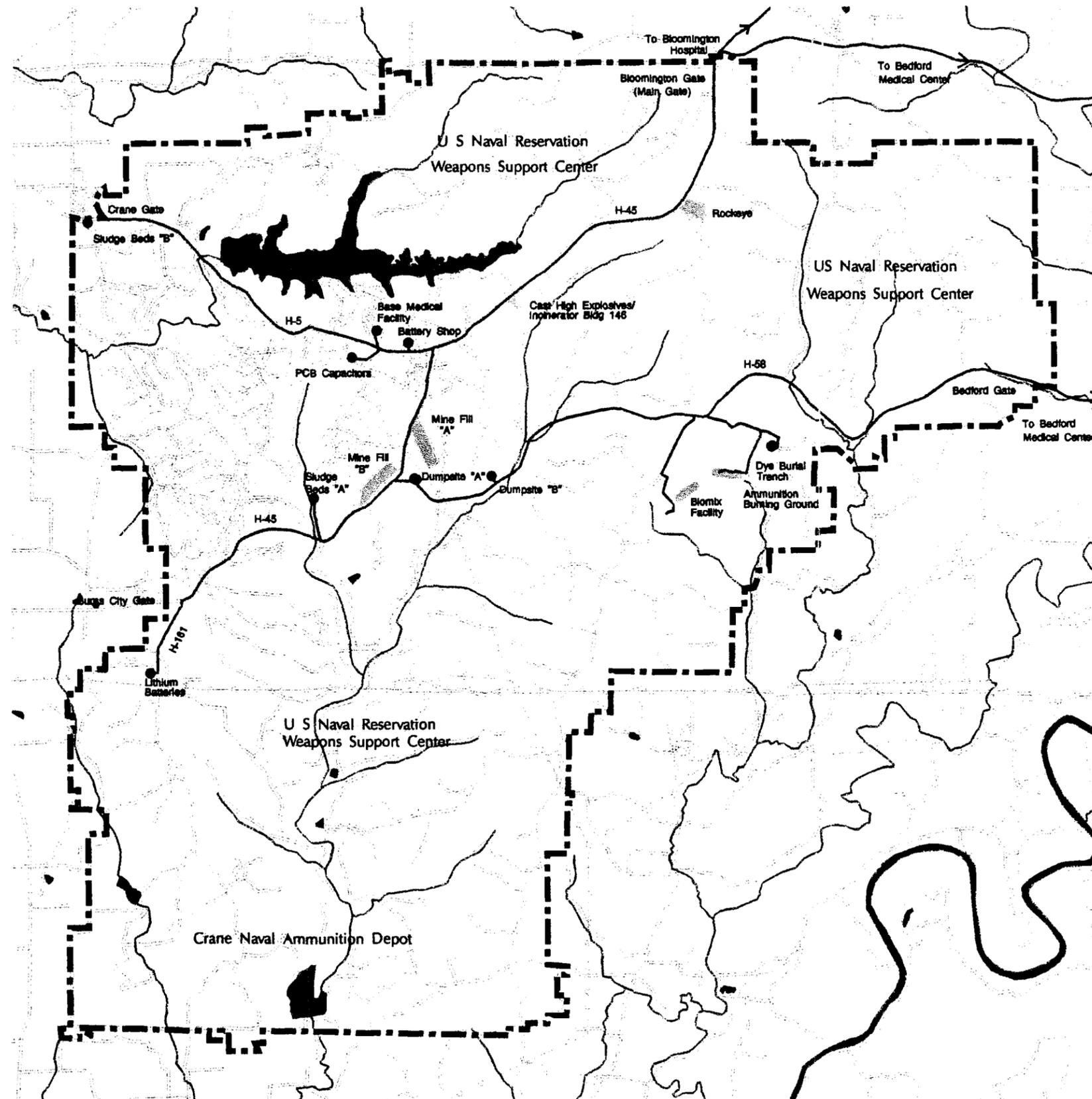
| | | | |
|--|---|--|----------------------------|
| Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers. | | Analyzed By/Date: Frank J. Petrik 8/23/95 <i>F. Petrik</i> | Reviewed By/Date: _____ |
| 8.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment. | Daily, prior to use per manufacturers recommendation. | OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment. | |

APPENDIX B

WORK ZONE MAPS

Note: Work Zone Maps are field prepared by the Excavation Subcontractor and approved by the MK SSHO. The Excavation Subcontractor will deliver one set of the Work Zone Maps to the MK SSHO who will insert copies of the map(s) into the field master copy of this SSHP.

Figure 3
Directions to the Nearest
Medical Facility



Legend

- Primary Route
- - - Naval Reservation Boundary

Directions to NSWC Medical Department on site:

The NSWC Medical Department manages and coordinates the on-site ambulance service. Located in Building 12 off of H-2 just north of H-5.

Directions to Bedford Medical Center:

From Main Gate, head east on Highway 58 to the city of Bedford, left onto 16th street. Distance to hospital is approximately 20 miles.

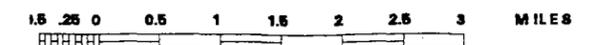
From Bedford Gate, head east on I58 to the city of Bedford. I58 turns into 16th street.

Directions to Bloomington Hospital:

Exit Base on H5-45 through the Bloomington Gate, follow Highway 45 North to Bloomington. At Highway 45 and Highway 37, continue going straight over the bypass (Bloomfield Road), follow Bloomfield road north which turns into 2nd Street. Follow 2nd Street and hospital is on your right.



1 inch = 1.5 miles



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