06.11 - 8/1/99 - 00521

REMEDIAL ACTION WORK PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000

Atlantic Division
Naval Facilities Engineering Command
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Prepared by:

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March 1999
Delivery Order No. 0013
OHM Project No. 920736

FINAL

REMEDIAL ACTION WORK PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

Department of the Navy
Contract No. N62470-97-D-5000
Delivery Order 0013

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August 1999

SITE-SPECIFIC HEALTH AND SAFETY PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

Department of the Navy
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March 1999

CONSTRUCTION QUALITY CONTROL PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
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March 1999

SAMPLING AND ANALYSIS PLAN
FOR
REMEDIATION OF SITE 85
CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

Department of the Navy
Contract No. N62470-97-D-5000
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March 1999

RESPONSE TO COMMENTS
ON
REMEDIAL ACTION WORK PLAN
FOR REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MCB CAMP LEJEUNE, NORTH CAROLINA

A. Comments from North Carolina Superfund Section.

Response to Comment 1 – USEPA Region III Industrial Soil Risk-Based Concentration has been incorporated into table given on Page 2-1 of the Remedial Action Work Plan. Institutional control will be applied to this site.

Response to Comment 2 – The comment "One characterization sample should be collected for every 500 cubic yards of soil" has been incorporated into Appendix C, Page 3-1, Section 3.1.2.

Response to Comment 3 – Confirmatory samples will be collected from the floor of the excavated areas, and one sample will be collected for every 500 square feet, or fraction therefore, of the base of the excavation. Since the excavated area will be approximately one foot deep with sloped sides, side wall confirmatory samples will not be collected. The above response has been incorporated into Appendix C, Page 3-1.

B. Comments from Baker Environmental, Inc.

Response to Comment 1 – The wording "batteries as well as soil" has been incorporated into the last sentence, Section 1.1, page 1-2.

Response to Comment 2 – The misspelled word "battery" has been incorporated into the first sentence of Section 1.3, page 1-2.

Response to Comment 3 – Figure 2 title has been changed to "Battery Pile Locations".

Response to Comment 4 – Within the contaminated areas, no stump or root removal will be performed. Section 3.3, page 3-2 has been revised, and the work plan has been revised to delete the word "grubbing" accordingly.

Response to Comment 5 – The specific of the seed mix and fertilizer type is deferred to future response.

Response to Comment 6 – The Baker analytical results may not have all the parameters OHM is looking for. Therefore, OHM will obtain a representative sample and have it analyzed prior to start of work. The text in Section 4.0 page 4-1 will stay as is.

Response to Comment 7 – Contaminated debris will be disposed of in selected landfills. This sentence has been incorporated in Section 5.2, page 5-1.

Response to Comment 8 – The extra word "not" has been deleted from the sentence in Section 5.3, page 5-1.

Response to Comment 9 – The proposed seed mixture will be specified at a later date.

Response to Comment 10 – The base landfill has been included in Section 6.2, page 6-2.

Response to Comment 11 – The "Waste Disposal Activities Checklist" is included in Section 6.5, after page 6-3.

Response to Comment 12 – There is no confined space entry required for the remediation of this site, therefore, this procedure is not provided in the HASP. Sanitation facilities and potable drinking water will be covered during site orientation prior to each employee begin work at site and will not be covered in the HASP.

Response to Comment 13 – The word "batteries" has been added to the scope of work in Appendix A, HASP, Section 1.

Response to Comment 14 – Mr. Randy Smith is the Site Supervisor and is also the Project Supervisor.

Response to comment 15 – PCBs have been deleted from Appendix A, HASP, Section 3.1.

Response to Comment 16 – Appendix A, HASP, Section 6.1 has been revised to incorporate two layers of 10 mil polyethylene in the decontamination areas.

Response to Comment 17 – MSDSs will be prepared in a separate binder and posted on site.

Response to Comment 18 – The PID action levels will stay as shown in Appendix A, Section 7.0.

Response to Comment 19 – The mini-ram action levels will stay as shown in Appendix A, Section 7.0.

Response to Comment 20 – The base hospital is shown in the revised Figure 1. The street address of each hospital is included in Appendix A, Section 8.12.

Response to Comment 21 – The word "batteries" has been incorporated into Exhibit 9.1, Definable Feature of Work.

Response to Comment 22 – The word "batteries" has been incorporated in the Project Task Descriptions in Appendix C, page 2-1.

Response to Comment 23 – The project chemist is to be determined. The pronouns have been revised to reflect a he/she in the paragraph.

Response to Comment 24 – Appendix C, page 3-1, Section 3.1.1, the wording "remediation goals or limits" has been incorporated into the first sentence, last paragraph.

Response to Comment 25 – Appendix C, Page 3-1, has been revised to define SS (stainless steel).

States Department of the Navy (DoN) entered into a Federal Facilities Agreement (FFA) for MCB Camp Lejeune. The primary purpose of the FFA was to ensure that environmental impacts associated with past and present activities at MCB Camp Lejeune were thoroughly investigated and appropriate CERCLA response/Resources Conservation and Recovery Act (RCRA) corrective action alternatives were developed and implemented as necessary to protect the public health and the environment.

Based on the results of the Pre-Remedial Investigation Screening Study conducted at Site 85 (Baker Environmental, Inc., 1996), contaminated surface soil may present a threat to human health and the environment. As a result, the remediation of this surface soil is being conducted as a non Time Critical Removal Action (TCRA) The non-TCRA includes excavation of the battery piles and contaminated surface soil and disposal of the batteries as well as soil in an appropriate treatment/disposal facility.

1.2 SITE DESCRIPTION

MCB Camp Lejeune is a training base for the U.S. Marine Corps, located in Onslow County, North Carolina. The base covers approximately 234 square miles and includes 14 miles of coast line. MCB Camp Lejeune is bounded to the southeast by the Atlantic Ocean, to the northeast by State Route 24, and to the west by U.S. Route 17. The town of Jacksonville, North Carolina is located north of the Base. The remedial action area, Site 85, is located within the Camp Johnson support operations area. The site is situated to the south of Coolidge Road using a network of improved and unimproved roads. The area is heavily vegetated and contains downed trees from previous hurricanes and storms. The approximate size of the area of concern is 4.5 acres. Currently the roads surrounding Site 85 are used for vehicle training and support operations. Figure 1 shows the location of Site 85 within MCB Camp Lejeune.

The site's terrain is relatively flat with some mounded soil and excavated open holes. No pavement exists at the site and overland flow is expected to be minimal. Some surface water runoff does collect in the excavated open holes. No permanent groundwater monitoring wells exist at Site 85, but 12 potable water supply wells have been identified within a one-mile radius of the study area.

1.3 SITE HISTORY

Site 85 was used as a battery dump during the 1950's. Battery remnants, possibly from the Korean War, were uncovered during road grading and remain visible in selected areas. The batteries are generally in piles along the side of the unimproved roads. The battery piles are

2.0 *REMEDIAL ACTION OBJECTIVES*

In accordance with Section 121(d)(1) of CERCLA, remedial actions must attain a degree of clean-up which assures protection of human health and the environment. Remedial goals have been based on meeting an Applicable or Relevant and Appropriate Requirement (ARAR), or a site-specific risk based action level. Soil remedial goals were established based on risk-based action levels for the protection of public health or groundwater

2.1 REMEDIAL ACTION OBJECTIVES FOR SOIL

The purpose of the non Time Critical Removal Action is to remove the battery piles from Site 85. Approximately one foot of soil will be removed form under each battery pile. No risk-based clean up goals were established for this site, therefore, the clean up goals will be Industrial Soil Risk-Based Criteria (RBCs) developed by the USEPA Region III and EPA recommended goals for lead. Institutional controls will be applied for this site. The clean up goals are listed below:

CLEAN UP GOALS BASED ON RBCS AND EPA RECOMMENDED CRITERIA

Inorganic Contaminant	*Concentration (mg/kg)*
Aluminum	1,000,000
Arsenic	3.8
Antimony	820
Barium	140,000
Beryllium	1.3
Boron	180,000
Cadmium	1,000
Chromium III	1,000,000
Chromium IV	6100
Cobalt	120,000
Copper	82,000
Iron	610,000
Lead	400
Manganese	41,000
Mercury	610
Nickel	41,000
Vanadium	14,000
Zinc	610,000

2.2 DESCRIPTION OF THE REMEDIAL ACTION

The non Time Critical Removal Action will consist of excavating the battery piles and one foot of soil underneath the battery piles. Characterization samples of the batteries/soil will be collected to determine the disposal requirements. Composite confirmatory samples will be collected from each area upon completion of the battery pile and soil excavation. Upon receipt of favorable confirmatory sample analyses, the excavation areas will be regraded to drain and revegetated.

3.3 PROTECTION OF TREES AND SHRUBS

Prudent steps will be taken to protect trees and shrubs outside of the excavation zone as necessary. Trees and shrubs within the excavation zone will be cut down to ground level and removed by OHM. However, the tree stumps or roots within the excavation zone will not be removed. All trees and shrubs removed as a result of the construction activities will be cut into manageable pieces and moved from the project site so as not to interfere with operations. Precautions will be taken to minimize the construction activities' impact on existing vegetation and will include but not be limited to:

- Utilization of existing or temporary construction roads only
- Closely supervised equipment operators with an emphasis placed on preservation of vegetation in non-work areas
- Proper guidance of heavy equipment and truck operators by site personnel to minimize damage to adjacent vegetation not directly affected by construction activities
- Utilization of equipment appropriately designed and sized for precise excavation

3.4 RESTORATION

Upon completion of the field construction activities, disturbed areas will be regraded and seeded at 5 pounds per 1000 square feet. Fertilizer will be provided at 25 pounds per 1000 square feet.

3.5 WATER RESOURCES PROTECTION

The waterways which could possibly be impacted by construction activities if proper sediment and erosion protection measures are not taken include the upper reaches of the New River. To protect against damage, stormwater surface run-off leaving the site will be controlled by temporary erosion/sediment control techniques such as berms, silt fencing and grading. The area of bare soil exposed at any one time by construction activities will be minimized.

3.5.1 Erosion Sediment Control

Prior to disturbance of native vegetation and soils, temporary erosion/sediment control will be established on the down gradient side of each excavation. Control techniques to be utilized will involve silt fencing.

Silt fencing will be installed with the fabric a minimum of 6 inches below grade and extending 36 inches above grade and fastened to posts no more than 6 feet apart. The posts will be installed with a minimum of 24 inches below grade and extend a minimum of 36 inches above grade. Fabric will be attached to the up-slope side of the posts using 1-inch staples or tie wires. Silt fences will be inspected after every rain and daily during extended rain fall. Accumulated sediment will be removed before the depth reaches 12 inches.

3.5.2 Spill Control

Measures will be taken to prevent chemicals, fuels, oils, greases, bituminous materials and contaminated materials from entering streams, rivers or lakes. Absorbents will be available to solidify any leaks outside containment and any soil contaminated with fuel spills will be immediately removed and placed into appropriate containers and sampled to determine proper disposition.

3.6 DUST AND AIR POLLUTION CONTROL

3.6.1 Air and Noise Monitoring

Personnel and ambient air monitoring will be conducted as necessary in order to determine airborne dust and contaminant levels. Ambient air monitoring will be conducted at working locations and on occasion at the perimeter of the project site. This ensures that respiratory protection is adequate to protect personnel against the contaminants that are encountered as well as ensuring that harmful levels of airborne contaminants are not leaving the site.

OHM will only perform operations of heavy equipment during daylight hours to minimize the impact of off-site noise pollution. Noise exposure to off-site residents or personnel is expected to be minimal. Hearing protection for on-site workers will still be implemented if necessary as specified in the SHSP.

3.6.2 Particulate Emission Controls

Specific measures to be taken to minimize particle emissions for major activities during site construction include the following:

Soil Excavation, Handling, Site Grading and Transportation

- Apply water to work and traffic areas as necessary to minimize dust emissions
- Cover stockpiles with sheeting to minimize wind and/or stormwater erosion
- Move and load soil for transport within the site that limits free fall of material and is least likely to generate dust emissions
- Halt dust-generating work when on-site wind conditions exceed 35 miles per hour

Movement of Equipment

- Water traffic areas as required to minimize dust emissions
- Designate equipment traffic patterns to minimize travel distance and vehicular dust emissions
- Limit vehicle speed to minimize dust emissions

3.6.3 Burning

No burning will be performed on-site. In the event of a fire on-site, work will stop immediately and the MCB Camp Lejeune fire department will be notified.

3.7 POST-EXCAVATION CLEANUP

All excavation equipment will be decontaminated in a pad prior to demobilizing from the site. Decontamination will consist of scraping and pressure-washing to remove visible soil and debris from tires and undercarriage of vehicles and heavy equipment. Decontamination liquids will be containerized, sampled, analyzed, and disposed. The site will then be turned over to the Base.

- **Temporary Facilities Installation** - OHM will utilize its office trailer already located at Lot 203 as an administrative area and command center.

- **Excavation Limits** – The horizontal extent of excavation will coincide with the physical area covered by the battery piles. The total vertical extent of excavation will be from the top of the pile to one foot below the ground surface or until all visible evidence of the battery piles are removed. The areas to be excavated will be delineated and visibly marked for easy recognition using paint and/or wooden stakes. Visibly marking the excavation areas allows for better determination of the work/safety zones and clearly defines the work area for the equipment operator.

- **Clearing** - Trees located within the excavation zones will be cut and staged in a convenient location for pickup by the Forestry Service. The under growth and tree limbs removed in the excavation areas will be disposed at the base landfill.

- **Erosion and Sedimentation Control** - OHM will establish controls to prevent erosion and sedimentation through the use of sediment fencing and diversion berms. In this manner, OHM will mitigate the spread of contamination to other areas and minimize run-off into the active work area. Silt fencing will be placed along the down gradient sides of each excavations. Clean soil will be used to construct a berm on the up gradient side of the excavation areas to prevent the intrusion of surface water into the excavation prior to backfill. The Environmental Protection Plan included with this RAWP provides details on environmental controls.

- **Install Construction Fences** - OHM personnel will erect safety fencing around the planned excavations. Fencing will be 4 feet high, bright orange, polyethylene, mesh fence to prevent personnel from accidentally entering the open excavation. Additional fencing will be placed around monitoring wells located in close proximity to construction activities.

- **Decontamination Areas** - Personnel and equipment decontamination areas will be provided within the Contamination Reduction Zones (CRZ) upon exiting the contaminated working areas. The Site-Specific Health and Safety Plan addresses these areas in detail.

5.0 *FIELD ACTIVITIES*

The approximate limits of contaminated surface soils for the battery piles are as indicated on Figure 2. Baker obtained samples from Site 85 to approximate the limits of excavation. The non-time-critical removal action will consist of excavating the battery piles and one foot of soil underneath the battery piles.

5.1 EXCAVATION LIMITS

Baker drawing C-2 Excavation Plan will be used to establish initial location of the site on battery debris piles. The horizontal extent of excavation as each location will coincide with the physical area covered by the battery piles. The total vertical extent of excavation will be from the top of the pile to one foot below the ground surface or until all visible evidence of the battery piles are removed. The areas to be excavated will be delineated and visibly marked for easy recognition using paint and/or wooden stakes.

5.2 CLEARING

Trees located within the excavation zones will be cut into salable lengths and staged in a convenient location for pickup by the Forestry Service. The under growth , tree limbs, and other non-salable non-contaminated debris removed in the excavation areas will be disposed at the base landfill. Contaminated debris will be disposed at selected disposal sites.

5.3 EXCAVATION

The approximate dimensions of contaminated soils within Site 85 will be marked prior to beginning excavation. Underground utilities in the excavation area will be located. Care will be exercised when excavating around existing monitoring wells/utilities not to disturb or compromise their integrity. The contaminated soils in the excavation areas will be removed to the pre-determined dimensions as identified in the excavation limits effort. Initial excavation depth for these soils will be a maximum of 1 foot. A tracked excavator equipped with a 1/2 cubic yard bucket will carefully excavate the soil. Excavation depths will be manually monitored with a graduated rod or tape measure to avoid any over excavation of soil. Excavated soil will be directly loaded into transport vehicles, weighed, and transported to the selected treatment/disposal facility. Off-site disposal is planned for the excavated soils. After excavation to the specific limits, a visual inspection will be performed on the surrounding soil. If the visual inspections reveal evidence that additional contaminated soil may exist, OHM will consult with the NTR to discuss and/or recommend the extent of additional excavation. Exposed excavation areas with no evidence of contaminated soil will

undergo confirmation sampling and analysis with samples routed to the designated off-site analytical laboratory for confirmatory analysis as discussed in the Sampling and Analysis Plan (SAP).

5.4 SITE RESTORATION

Once the contaminated materials have been removed and confirmation sampling has verified attainment of the Remedial Action Objectives, OHM will begin site restoration activities. Due to the current use of the site as a tank maneuvering area, backfill will not be imported for the shallow excavation areas. Disturbed/excavated areas will be regraded to drain.

Upon completion of grading/shaping of the disturbed areas, seeding will be performed. Grass seed matching existing vegetation will be placed at the rate of 5 pounds per 1,000 square feet over topsoil areas. Fertilizer, Type I, Class 2, 10-10-10 analysis will be applied at the rate of 25 pounds per 1,000 square feet. Mulch and water will be applied as required to obtain an acceptable stand of grass.

Based on the materials identified that will require off-site disposal, the T&D Coordinator, and the project manager, and procurement personnel, have reviewed potential vendors to pre-qualify transportation and disposal vendors based on:

- Notice of Violation (NOV) status
- Ability to handle the wastes identified
- Cost effectiveness of the available transportation and disposal options
- Past experience
- SB and SDB contract goals

At this time OHM has identified the following qualified vendors to provide transportation and disposal of wastes from this site:

Disposal and Transportation

- Waste Management
  Kernersville, North Carolina

- Browning-Ferris Industries
  Charlotte, North Carolina

- Addington Environmental
  Greensboro, North Carolina
- Base Landfill
  MCB Camp Lejeune

All bids will be obtained based on a written solicitation and all bid responses will be in writing. All bids will be made in conjunction with OHM's procurement department. A condition of OHM's purchase order will be that the selected vendors must provide OHM with addresses, the name of a single point of contact, EPA ID numbers, permit verification, insurance verification, NOV status, and any other qualifying data necessary.

6.3 PREPARATION OF REQUIRED DOCUMENTATION

OHM will prepare (or oversee the preparation of) all paperwork associated with off-site disposal for review and signature by LANTDIV and MCB Camp Lejeune representatives. This will include TSDF waste profiles, hazardous waste manifests, land disposal restriction (LDR) forms, labels, and all other paperwork. The selected vendor(s) will be required to provide all labels, manifests, LDR forms, and other shipping paperwork. A completed

example of these forms will be provided for OHM's review and approval at least one week in advance of the scheduled start of shipments. After these documents are reviewed by OHM, they will be provided to the Navy's representative for review and signature. Final copies of all labels, manifests, LDR forms, and other shipping paperwork will be received by OHM's on-site personnel at least 5 days in advance of the scheduled shipment dates.

Written verification that the proposed disposal sites are permitted to accept the contaminated materials specified is required for the disposal vendors with their approvals. A written verification that all vehicles and containers were decontaminated prior to leaving the disposal site will be provided within three days of receipt of the waste materials. A written verification that wastes were actually delivered to the disposal site will be provided within seven days of receipt of waste materials. A certificate of destruction will be provided within seven days of the date of actual waste disposal and for final payment of all invoices.

6.4 WASTE PACKAGING

OHM plans to excavate and load all soils directly into transport vehicles. This will be a continuous operation and wastes will be transported directly to the disposal facility at that time. No provision will exist for on-site stockpiles or on-site storage.

6.5 SHIPPING

The Site Supervisor will contact the selected vendor and schedule waste pick-ups in a timely manner to coordinate with the project schedule. Prior to shipment of wastes, OHM's on-site personnel, in conjunction with the T&D coordinator, will complete the attached Waste Disposal Activities Checklist. This checklist is to be completed for each waste shipment leaving the site. A copy of the completed form will be provided to the NTR prior to waste transportation and with the Close-out Report.

OHM will maintain chronological organized files of weight tickets, manifest copies, LDR forms, and other shipping paperwork for each shipment. OHM will also maintain a database of all pertinent information regarding each off-site shipment. Copies of the manifest file and database printouts will be provided to the LANTDIV and MCB Camp Lejeune representatives upon request and at the completion of the project.

OHM Corporation

Waste Disposal Activities Checklist

Job Name: _____ No. _____
Waste Name: _____
Profile Number: _____
Work Order: _____

Waste Type:

[ ] Dry solid
[ ] Wet solid / sludge
[ ] Liquid
[ ] Other (specify _____)

Shipment Form:

[ ] Drums (size/type _____)
[ ] Tankers
[ ] Dump trailers
[ ] Rolloffs
[ ] Other (specify _____)

Estimated Quantity: _____

Number of Loads: _____

Disposal Facility: _____
Address _____

Phone _____

EPA ID# _____

Contacts _____

Transporter: _____
Phone _____

EPA ID# _____

Contacts _____

See attached pages for:

- Checklists
- Drum labeling instructions (if applicable)
- Example manifests & LDR forms
- Drum or container lists
- Shipping tracking forms
- Special instructions

The site supervisor should review this material and the attached pages prior to performing work.

Notifications, Forms, Manifests & other Shipping Papers Checklist

Checklist of forms, notifications, manifests, and other paperwork associated with various federal, state and facility requirements & regulations. These items will be started by the T&D Coordinator but the site supervisor should review each for completion & inclusion with the shipment.

Checked off on

[ ] Determine if special state manifests are required. (AL, AR, LA, SC, & TX in the south) ___/___/___

[ ] Verify current manifests are being used? Get current ones if not. ___/___/___

[ ] Land Disposal Restriction notification(s) ___/___/___
- [ ] Facility LDR form required [ ] YES [ ] NO
- [ ] State LDR form required [ ] YES [ ] NO
- [ ] Current forms available and attached?
- [ ] Background information & data to complete form(s) in place?
- [ ] Forms completed & reviewed for accuracy
- [ ] Forms signed by OSC/Client?
- [ ] Forms included with material to be sent with shipment (i.e. manifest, etc.)

[ ] Verify information or examples for manifests & labels is compiled & attached. ___/___/___

[ ] Prepare manifests & LDR forms, and have them checked for accuracy. (The disposal facility will review and verify the accuracy and completeness of these forms.--SEND THEM ADVANCED COPIES!!!) ___/___/___

[ ] Prepare drum labels, hazard class labels, & compile list of drum markings required. Labeling instruction sheets attached? ___/___/___

[ ] Arrange for client/OSC signatures on manifests & LDR forms. ___/___/___

Disposal Facility & Transporter Checklist

Activities conducted by the T&D Coordinator relating to scheduling and transporting waste to disposal facilities. These items will be started by the T&D Coordinator but the site supervisor should review each for completion.

Checked off on

[ ] All approvals in place, or all facilities chosen? ___/___/___
[ ] Disposal windows lined up? Facilities have agreed to a specific receipt date, or have agreed to allow transporter to schedule material. ___/___/___
Spoke with _____

[ ] Project management informed of final scheduling plans? ___/___/___
[ ] Client/OSC informed of final scheduling plans? ___/___/___
[ ] Field personnel informed of final scheduling plans? ___/___/___

[ ] Three bids obtained for all disposal facility? ___/___/___
[ ] Disposal 3-bid approved & signed by client? ___/___/___
[ ] PO requisition for disposal completed & submitted? ___/___/___
[ ] Disposal vendor(s) given POs? ___/___/___

[ ] Three bids obtained for all transportation? ___/___/___
[ ] Transportation 3-bid approved & signed by client? ___/___/___
[ ] PO requisition for transportation completed & submitted? ___/___/___
[ ] Transportation vendor(s) given POs? ___/___/___

[ ] Transporter(s) are clear on the following: ___/___/___
- [ ] Arrival times & dates
- [ ] Delivery times & dates
- [ ] Equipment required
- [ ] Types of trucks expected
- [ ] Directions to site
- [ ] Road & driving conditions at site
- [ ] Site contacts & phone numbers
- [ ] Subs are OK provided OHM informed
- [ ] Billing and contracting details

Drum Checklist

The site supervisor should review each of these for completion before loading drums on the truck.

		Checked off on
[ ]	Drums have been checked against inventory--there are no extra or missing drums?	___/___/___
[ ]	Drums are in good shape--or they have been overpacked? [ ] No leaks [ ] No dents greater than silver dollar size [ ] No creases greater than six inches [ ] No lid, ring or bung damage [ ] No damage to the seams or chimes [ ] No waste on the outside of the drum [ ] No large discolored areas on the drum	___/___/___
[ ]	ALL drums are numbered with the numbers on the top AND side?	___/___/___
[ ]	ALL drums have a complete waste label--either a yellow & red hazardous waste label or green non-hazardous label	___/___/___
[ ]	Drums have hazard class labels (if required) on their tops AND sides?	___/___/___
[ ]	Drums have approval numbers written on the top AND side	___/___/___
[ ]	Drums have the TSDF name written on the side?	___/___/___
[ ]	If multiple trucks are used, an inventory record of which drums were loaded onto each truck is being made?	___/___/___

Drum Labeling Checklist

The site supervisor should review each of these for completion before loading drums on the truck.

Checked off on

[ ] Site supervisor has sufficient quantities of the appropriate drum labels? ___/___/___
- [ ] Hazardous waste labels (yellow & red)
- [ ] Non-hazardous labels (green)
- [ ] Hazard class labels (i.e. flammable liquid, etc)
  (which _____)
  (_____)

[ ] Site supervisor has completed drum labels or has reviewed drum labeling instructions? ___/___/___

[ ] Information on the drum labels is complete and matches the information on the manifest--This particularly important to double check when more than one manifest or truck is being used. Manifest numbers and other information will vary from truck to truck and manifest to manifest. Drum labels must match the specific manifest and the specific truck they are loaded onto. ___/___/___
- [ ] Generator's name
- [ ] Generator's address
- [ ] Generator's EPA ID number
- [ ] DOT shipping name (Hazardous waste labels only)
- [ ] EPA waste codes (Hazardous waste labels only)
- [ ] Manifest number(s) (Hazardous waste labels only)
- [ ] Accumulation Start Date (Hazardous waste labels only)

Manifest Checklist

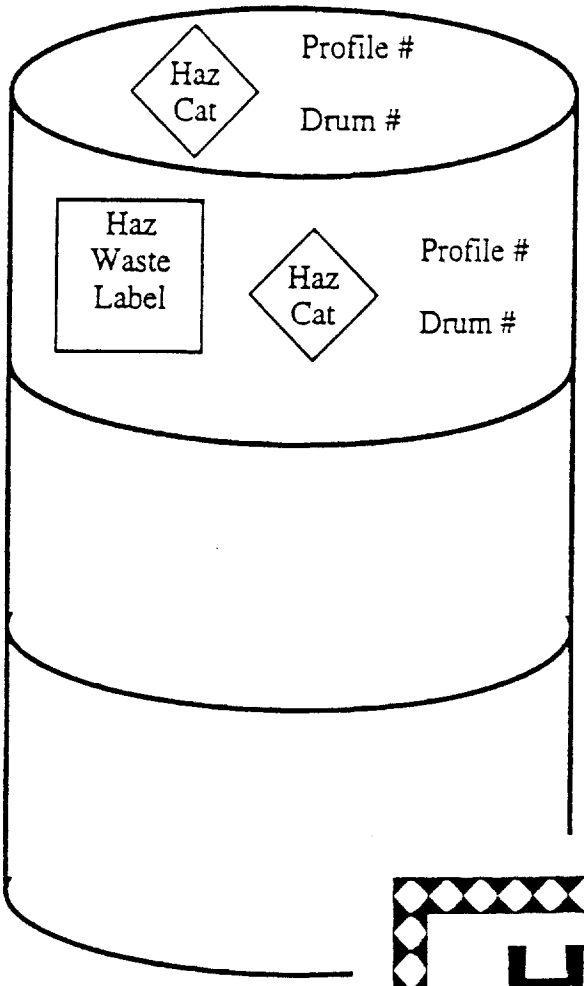
Activities conducted by the Site Supervisor relating to manifests, LDR forms and other pre-shipment paperwork.

		Where to look	Checked off on
[ ]	Site supervisor has sufficient quantities of the appropriate manifests?		___/___/___
[ ]	Site supervisor has completed manifests or has reviewed manifest preparation instructions?		___/___/___
[ ]	Is a unique manifest number assigned to each manifest?	Section 1.	___/___/___
[ ]	Generator, Transporter, and Disposal facility information (including EPA id numbers, addresses, & phone numbers) complete & accurate--does it match sample manifests or manifest preparation instructions?	Sections 3-9 & A-H	___/___/___
[ ]	DOT description complete & accurate?	Section 11 lines a-d	___/___/___
[ ]	Number of containers, quantities, unites complete & accurate? Have the correct abbreviations been used?	Sections 12-14 lines a-d	___/___/___
[ ]	"Additional Description" section (including approval numbers and work order numbers) is complete & accurate?	Section J	___/___/___
[ ]	"Handling Codes" section (including emergency response guidebook codes) is complete & accurate?	Section K	___/___/___
[ ]	"Special Handling" section (including emergency phone number, and other special instructions) is complete & accurate?	Section 15.	___/___/___
[ ]	Client has signed manifest?	Section 16	___/___/___
[ ]	Transporter has signed manifest?	Section 17	___/___/___
[ ]	OHM has retained last page or a copy of manifest for our records?		___/___/___

[ ]	LDR form is complete & included with manifest?	___/___/___
[ ]	LDR form has been signed by client?	___/___/___

HAZARDOUS WASTE DRUM LABELING INSTRUCTIONS

(THESE LABELS ARE REQUIRED TO TRANSPORT WASTE DRUMS)



Waste Group _____

Profile Number _____

Hazard Category (check all applicable)
[ ] Flammable Liquids (Class 3)
[ ] Oxidizers (Class 5.1)
[ ] Poison (Class 6.1)
[ ] Corrosive (Class 8)
[ ] Miscellaneous (Class 9)
[ ] Other _____

SEE EXAMPLE LABEL BELOW...
NOTE: Label layouts may differ

Drums must be in good condition, this means:
- No leaks
- No dents greater than silver dollar size
- No creases greater than six inches
- No lid, ring or bung damage
- No damage to the seams or chimes
- No waste on outside of drum

Drum Numbers for these instructions:

_____
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_____
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_____

Comments:

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_____

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

GENERATOR INFORMATION:

NAME _____

ADDRESS _____ PHONE _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. / MANIFEST DOCUMENT NO. _____ / _____

ACCUMULATION START DATE _____ EPA WASTE NO. _____

_____
_____
_____

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

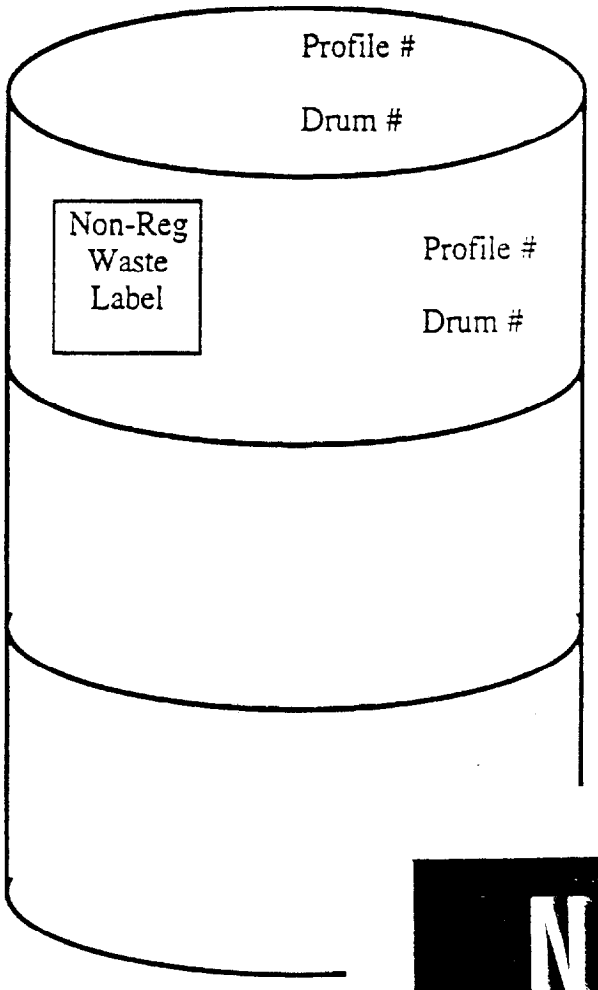
HANDLE WITH CARE!

STYLE CFWM6

Printed by Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800)621-5808

NON-HAZARDOUS WASTE DRUM LABELING INSTRUCTIONS

(THESE LABELS ARE REQUIRED TO TRANSPORT WASTE DRUMS)



Waste Group _____

Profile Number _____

SEE EXAMPLE LABEL BELOW...
NOTE: Label layouts may differ

Drums must be in good condition, this means:
- No leaks
- No dents greater than silver dollar size
- No creases greater than six inches
- No lid, ring or bung damage
- No damage to the seams or chimes
- No waste on outside of drum

Drum Numbers for these instructions:

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Comments:

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NON-REGULATED WASTE

OPTIONAL GENERATOR INFORMATION

SHIPPER _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CONTENTS _____

_____

_____

_____

NON-REGULATED WASTE

THIS WASTE IS NOT REGULATED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

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Appendix A

Site Specific Health and Safety Plan

1.0 SCOPE OF WORK

The objective of this project is to delineate, remove, and dispose of metals contaminated soil located at Site 85 The Camp Johnson Battery Dump at MCB Camp Lejeune, North Carolina.

Five soil samples were procured by Baker and screened for metals. Based on sampling results, it is estimated that approximately 250 cubic yards of soil will require excavation and disposal.

The remediation work will consist of the following task:

- Task 1 Mobilization and site preparation
- Task 2 Clearing
- Task 3 Obtain soil samples
- Task 4 Excavate contaminated soil and batteries/restore site
- Task 5 Loadout/transport contaminated soil and batteries
- Task 6 Decontaminate equipment
- Task 7 Demobilization

2.0 *ORGANIZATION AND AUTHORITIES*

The Project Supervisor is responsible for the safe implementation of field activities and is ultimately responsible for site safety.

The Regional Health and Safety Manager is responsible for providing guidance to the Site Safety Officer (SSO) and Project Supervisor on the implementation of the site safety plan. The SSO is responsible for implementing the site safety plan on-site and enforces the plan by performing routine site inspections. The SSO has the authority to immediately shut down site operations where unsafe conditions or practices are observed and takes the lead during site emergencies. Site personnel are responsible for following the requirements of this plan and the directions of the SSO. OHM subcontractors may either develop and implement their own site safety plan or comply with the OHM site safety plan. The following personnel are designated to perform these job functions.

- Project Manager:
  Jim Dunn
  (770) 734-8072

- Site/Project Supervisor:
  Randy Smith
  (910) 451-2390 (onsite)

- Site Safety Officer:
  Randy Smith
  (910) 451-2390 (onsite)

- Health and Safety Manager:
  Robert A. Brooks
  (770) 453-7671

3.0 *HAZARD EVALUATION*

3.1 CHEMICAL HAZARDS

Site 85 soil is contaminated with heavy metals. Care should be taken not to inhale or ingest contaminated soil or particulates.

3.2 PHYSICAL HAZARDS (HEAT/COLD STRESS, NOISE, FIRE, AND EXPLOSION)

Heat stress; manual lifting/back strain, noise, heavy equipment operations heat stress

Weather and Heat Stress
The combination of warm ambient temperature and use of protective clothing anticipated during site operations, the potential for heat stress is a concern. The potential exists for:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Heat stroke, heat cramps, and heat exhaustion are covered in detail during OHM's 40-hour OSHA 29 CFR 1910. 120 approved pre-employment course. In addition, this information is discussed during a safety "tailgate" meeting before each work day. Workers are encouraged to increase consumption of water and electrolyte-containing beverages, such as Gatorade, during warm weather. Water and electrolyte-containing beverages will be provided on-site and will be available for consumption during work breaks.

An action level for heat stress has been established at 75°F ambient temperature when site personnel are wearing chemical protective clothing during the performance of field activities. The following work/rest schedule is recommended, with personnel drinking fluids (tepid water and/or electrolyte) at rest periods consistent with their fluid loss:

Ambient Temperature (degrees F)	Work Period (minutes)	Rest Period (minutes)
75-80F	120	15
80-85F	90	15
85-90F	60	15
90-95F	30	15
95-100F	15	15

The above work/rest schedule is only a guideline for use during field activities when personnel are wearing protective clothing. The actual work/rest schedule will be determined by conducting pulse monitoring before and after the work period and by performing daily pre/post work shift body weights. The action level for adjusting the work/rest schedule

would be 110 beats per minute (bpm), obtained immediately after the work period in a seated, shaded position. When a person's pulse exceeds 110 bpm, that person is undergoing heat stress, which will require the work period to be reduced in 15 minute intervals, while maintaining the same rest period, until post work period pulse monitoring is maintained below 110 bpm. In addition, should a person's body weight change at the end of the work day by more than 1.5 percent, the work period must be reduced in 15 minute intervals, while maintaining the same rest period, until no daily body weight changes greater than 1.5 percent are observed.

Field activities, in which site personnel are required to wear chemical protective clothing at ambient temperatures higher than 95 degrees F, will be avoided, whenever feasible, by scheduling these activities during the work day to avoid peak ambient temperatures (10 a.m. - - 2 p.m.). Site personnel who have experienced a heat-related illness (heat cramps, heat exhaustion) will be restricted to Level D tasks for a minimum of one day after illness occurrence and will return to tasks requiring chemical protective clothing only with the concurrence of the attending physician. Site personnel will follow OHM's Standard Operating Procedure (SOP) for heat stress prevention.

Task 2 – Clearing

Principle Steps Set up brush hog and tractor; use of chainsaws	
Potential Hazards Involved	**Hazard Control Measures**
Slips, trips, and falls	• Tools and debris must be picked up • Spills will be cleaned up immediately • Personnel shall not walk or climb on equipment not designed as walking surfaces • Follow OHM SOP for Slips, Trips and Falls (No. 2-4 & 2-9)
Exposure to hazardous materials	• Follow this SHSP, Section 3 and 5
Flammable liquids	• Spills will be cleaned up immediately • Approved safety can must be used • No smoking signs are required in storage and fueling areas • Suitable storage area must be designated on temporary job sites • Follow OHM SOP for Solvents and Flammable Liquids (No. 7- • 9)
Chainsaw cutting hazard	• Provide training and follow the manufacturer's operations manual • Wear chain saw chaps, hearing, and face shield protection
Falling trees, limbs, and debris from power mower	• Keep personnel away from tree felling and mowing operations
Vehicular safety hazard	• All vehicles must be operated in a safe and legal manner • Seat belts must be worn while driving • Personnel shall drive at posted speed limits or at safe speeds • Follow OHM SOP for Vehicle Safety (No. 2-1)
Noise	• Follow SOP for Hearing Conservation Program (No. 3-3) • Personnel will wear hearing protection above 85 dBa • Personnel will be included in a hearing conservation program

Task 4 - Excavate Contaminated Soil and Batteries/Site Restoration

Potential Hazards	Hazard Control Measures
Struck by, against heavy equipment, flying debris, protruding objects	• Restrict entry to the work area to authorized personnel • Wear hard hats, safety glasses with side shields, or splash/face shields and goggles, and steel-toe safety boots at all times
Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 pounds maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large awkward Loads
Slips, trips, falls	• Clear walkways of equipment, construction debris and other materials • Mark, identify or barricade other obstructions • Use body harness and lifeline when working 6 feet or more above the ground • Use approved ladders in accordance with OHM Health and Safety Procedures
Inhalation and contact with hazardous substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear specified level of protection
Fire/explosion	• Eliminate sources of ignition from the work area • Prohibit smoking • Provide ABC (or equivalent) fire extinguishers in all work areas, flammable storage areas, generator and compressor facilities • Store flammable liquids in well ventilated areas • Post "NO SMOKING" signs • Store combustible materials away from flammables • Store all compressed gas cylinders upright, caps in place when not in use • Separate Flammables and Oxidizers by 20 feet
Excavation care-in	• All underground installations will be located and marked • All materials must be kept 2 feet from the excavation edge • Daily inspections of the excavations will be conducted by a competent person and soil type determined • The OHM excavation permit will be used • Excavations for piping trenches and others requiring personnel entry will not be greater than 4 feet deep • Excavations with potential hazardous atmosphere must be tested O2/LEL/Toxic • Follow OHM SOP for excavation
Utility (electric/gas)	• Locate all buried utilities prior to excavation operations • Maintain 15-foot buffer between heavy equipment and overhead electrical utilities

Task 5 – Loadout and Transport Contaminated Soil and Batteries

Potential Hazards	Hazard Control Measures
Struck by, against heavy equipment, flying debris, protruding objects	• Restrict entry to the work area to authorized personnel • Wear hard hats, safety glasses with side shields, or splash/face shields and goggles, and steel-toe safety boots at all times
Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 pounds maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large awkward loads
Slips, trips, falls	• Clear walkways of equipment, construction debris and other materials • Mark, identify or barricade other obstructions • Use body harness and lifeline when working 6 feet or more above the ground • Use approved ladders in accordance with OHM Health and Safety Procedures
Inhalation and contact with hazardous substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear specified level of protection
Vehicle	• Operate in a safe and legal manner • Wear seat belts • Drive at posted and safe speeds

5.0 PERSONAL PROTECTIVE EQUIPMENT

The following Levels of Protection are designated for each task performed in site work zones, based on the hazards posed by each task. Modifications of these Levels of Protection are provided for those tasks with specific personal protective equipment requirements. An upgrade/downgrade in the designated Level of Protection may only be instituted for those tasks' where more than one level of protection is specified (i.e., Mod D/C) and only after air monitoring results justify the upgrade/downgrade, based on the action levels listed in this plan. For those tasks where more than one level of protection are specified (i.e., Mod D/C) the first level of protection (Mod D) is the initial level of protection required for the task, with the second level (Level C)being either the downgrade or upgrade level of protection.

NO CHANGES TO THE DESIGNATED LEVEL OF PROTECTION BELOW SHALL BE MADE FOR THOSE TASKS WHERE ONLY ONE LEVEL OF PROTECTION IS SPECIFIED WITHOUT AN AMENDMENT TO THIS PLAN AND THE APPROVAL OF THE REGIONAL HEALTH AND SAFETY MANAGER/DIRECTOR

- Task 1: Mobilization/Site Preparation
  Level of Protection: Level D

- Task 2: Clearing
  Level of Protection: Level D with chain saw chaps, hearing protection, face shield and foot coverings; Level C for soil intrusive activities

- Task 3: Obtain Soil Sample
  Level of Protection: Level C with Tyvek

- Task 4: Excavate Contaminated Soil and Site Restoration
  Level of Protection: Excavate Level C with Tyvek; site restoration Level D

- Task 5: Loadout and Transport Contaminated Soil
  Level of Protection: Level C with Tyvek Truck driver; Level D

- Task 6: Decontaminate Equipment
  Level of Protection: Pressuring washing Level Modified D with sarans and face shield dry brushing; Level Modified D with Tyvek

- Task 7: Demobilization
  Level of Protection: Level D

Personal protective equipment requirements for the above designated Levels of Protection is as follows:

LEVEL B
Respiratory Protection: SCBA or Airline Respirator w/ 5 min. egress

6.0 DECONTAMINATION PROCEDURES

Personnel and equipment decontamination procedures will be developed, communicated to site personnel, and implemented on-site before work commences in the EZ. Standard work practices that minimize personnel and equipment contamination may include one or more of the following, where feasible: avoiding obvious areas of contamination on-site; using remote handling/sampling equipment; covering instruments/equipment; wearing disposable outer garments; and enclosing contaminant source with sheeting/overpacks.

All personnel exiting the EZ will perform personnel decontamination procedures. Contaminated disposable clothing will be bagged or drummed and disposed of accordingly. Contaminated equipment will be decontaminated using a high pressure washer, steam cleaner or other appropriate washing techniques. The decontamination areas will have two layers of 10 mil polyethylene sheeting in place. Wash water will be collected and disposed of accordingly. The SSO will monitor these decontamination procedures to determine their effectiveness and will take corrective measures when warranted.

The following personnel decontamination sequence will apply for standard Level B and C protection:

(1) Equipment Drop
(2) Outer Boot Wash/Removal
(3) Outer Glove Wash/Removal
(4) Remove SCBA/SAR & Egress (B)
(5) Remove Outer Coverall
(6) Remove one pr. latex gloves
(7) Remove Respirator Face piece
(8) Wash/Sanitize Respirator
(9) Remove Inner Gloves
(10)Field Wash Hands, Face, Neck

- Stop work activities and evacuate the EZ in an upwind direction.

- Assemble in the SZ and account for personnel. Dispatch a response team equipped with appropriate PPE (minimum Level B protection) and rescue unaccounted personnel.

- Contact off-site emergency response services.

8.7 EMERGENCY DECONTAMINATION PROCEDURES

Personnel will be decontaminated to the extent feasible (gross decon or deluge shower) but life saving and first aid procedures take priority over personnel decontamination efforts. Standard personnel decontamination procedures apply for those injuries deemed non-life threatening by the SSO.

8.8 EMERGENCY MEDICAL TREATMENT AND FIRST AID

In the absence of reasonably accessible medical services, an SSO trained in first aid by the American Red Cross or the equivalent will be available on-site to render first aid. An industrial first aid kit available on-site, with its contents approved by OHM's consulting physician. The contents of the first aid kit will be checked by the SSO weekly, with expendable items replaced when used.

8.9 EMERGENCY ACTIONS

If actual or suspected serious injury occurs on-site implement the following emergency actions:

- Remove the exposed/injured person(s) from immediate danger.

- Render first aid if necessary. Decontaminate injured after critical first-aid has been administered.

- Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.

- Other personnel in the work area shall be evacuated and assembled at the SZ until the SSO determines that it is safe to resume work.

8.10 RESPONSE FOLLOW-UP

The SSO must complete an incident investigation form for site emergencies within 24 hours of the incident and submit/fax it to their Division Manager. Incidents involving potential Lost Time Accident (LTA) injuries, overexposure incidents, or emergencies causing site evacuations must be reported within 24 hours after incident occurrence to:

Robert A. Brooks
Regional Health and Safety Manager

Phone: 609-588-6423 (work)
Pager: 800-818-2185
Fax: 609-588-6300

The SSO will identify the cause(s) of the incident and take action to prevent reoccurrence. The SSO will also evaluate the effectiveness of the site's emergency response procedures and institute corrective actions when warranted.

8.11 EMERGENCY EQUIPMENT ON-SITE

The following emergency equipment are located on-site:

- Fire Extinguishers @ OHM Vehicle
- Industrial First Aid Kit @ OHM Vehicle
- Portable Eye wash/Shower @ OHM Vehicle

8.12 EMERGENCY CONTACTS

The following emergency contacts will be identified during project mobilization and conspicuously posted in the SZ.

Hospital: USMC Base Hospital (on Base)
Brewster Drive, MCB Camp Lejeune (910) 451-1840

Onslow County Hospital (off Base)
317 Western Blvd., Jacksonville, N.C. (910) 577-2240

Fire Department: 911 (on Base)

Police Department: 911 (on Base) (910) 451-3855 (off Base)

Location and route to hospital: see attached map

On Base

1. Proceed north on Holcomb Boulevard and turn left.
2. Base hospital is approximately ½ mile ahead on right
3. Follow signs to the emergency room entrance

Off Base

1. Proceed north on Holcomb Boulevard and exit MCB Camp Lejeune through the main gate.
2. Follow Highway 24 West (approximately 2.5 miles) to Western Boulevard and turn right (north)
3. Continue on Western Boulevard (approximately 1.5 miles) to the fifth stoplight and the hospital is on the left side of the street
4. Follow signs to the emergency room entrance

A map depicting the route to the Onslow County Memorial Hospital and the Base Naval Hospital will be posted in each trailer.

9.0 SITE SAFETY PLAN CERTIFICATION

This site safety plan complies with the appropriate sections of 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response". Only site personnel meeting the training and medical surveillance requirements of 29 CFR 1910.120 are authorized to perform hazardous waste operations or emergency response at this site. This Site Safety Plan has been approved by Robert A. Brooks.

Appendix B

Construction Quality Control Plan

Exhibit 9.1

Definable Features of Work
The Camp Johnson Battery Dump, MCB Camp Lejeune, North Carolina

Specification Section:	Definable of Feature of Work:
01115, 01575	Mobilization and Site Preparation
01115, 01575, 02231	Clear and Grubbing
01115, 01575, 01430	Obtain Soil Samples
01115, 01575, 02315	Excavate Contaminated Soil and Batteries/Restore Site
01115, 01575, 02223	Loadout/Transport Contaminated Soil and Batteries
01115, 01575	Decontaminate Equipment
01115, 01575	Demobilization

Appendix C

Sampling and Analysis Plan

2.0 PROJECT MANAGEMENT

2.1 PROJECT OBJECTIVE AND SCOPE OF WORK

The project objective is to perform a non Time Critical Removal Action at the Site 85 The Camp Johnson Battery Dump at MCB Camp Lejeune, North Carolina. These measures include excavation delineation, removal, disposal, and site restoration. All soil that has metals concentrations greater than the remediation levels will be removed and disposed.

2.2 PROJECT TASK DESCRIPTIONS

The project tasks applicable to the SAP are the following:

- Excavation delineation
- Soils and batteries excavation
- Confirmation sampling and analysis to document that cleanup criteria have been met
- Sample and analyze water from decon operations, stormwater runoff, dewatering operations, etc.
- Sample and analyze "incidental waste" generated from site activities
- Perform surveillance and technical audits of site sampling activities
- Validation of analytical confirmation results

In the event that additional material not indicated on the drawings is encountered that may be dangerous to human health, the Navy Technical Representative (NTR) will be informed immediately and consulted for further actions.

2.3 PROJECT ORGANIZATION

The project manager is the primary focal point for control of the project activities. The project manager will be supported by the QA Management team which will provide reviews, guidance, and technical advice on project execution issues. Members of this staff will be on an "as-needed" basis to assist in smooth project execution. The project manager will be supported by the project team consisting of a supervisory, health and safety, technical, and QA/QC staff to ensure that the project is safely executed in compliance with applicable laws, regulations, statutes, and industry codes. Individuals of the project team are responsible for fulfilling appropriate portions of the project QA program, in accordance with assignments made by the project manager. The project manager is responsible for satisfactory completion of the project QA program. Specific responsibilities may be assigned by the project manager to the deputy project manager and other members of the project staff.

- Initiating corrective actions for non-conformance identified on-site.

Project Chemical QA Officer - Theresa D. Rojas

The chemical QA officer is responsible for implementing the project chemical QA program. She is responsible for informing the project manager of any site-specific QA issues. Her responsibilities include, but is not limited to, the following:

- Reviewing subcontractor's QA Manuals and/or Laboratory Quality Management Plans (LQMPs) and if possible, performing audits on the labs.

- Certifying the level of QA that has been achieved during the generation of analytical data.

- Initiating and overseeing all audit functions.

- Stopping work if quality objectives are not being met.

- Initiating investigations for nonconformances, identifying appropriate corrective actions, and performing follow-up audits to ensure that the corrective actions were successful.

Project Chemist – TBD

The project chemist is responsible for implementing the project plans and ensuring that the quality assurance and data quality objectives are being met for the project. He/she is also responsible for informing the chemical QA officer of any site-specific problems and for coordinating QA efforts with the contracted laboratory. His/Her specific responsibilities include, but are not limited to, the following:

- Determining if the project and data quality objectives are being met.

- Evaluating chemical data for technical validity and ensuring adherence to published guidelines.

- Analyzing and interpreting all subcontracted technical and laboratory results.

- Implementing QA/QC procedures.

3.0 SAMPLING

3.1 SAMPLING METHODS AND PROCEDURES

The following sections describe sampling locations, frequencies, sample matrices, and measurements of parameters of interest. Table A-1 "Sampling Summary" in Appendix A presents a summary of these items.

3.1.1 Excavation Confirmation Sampling

After excavation of the contaminated areas, confirmation samples will be collected from each of the removed battery pile areas. Since the side walls of the excavated areas will be approximately 1 foot deep, no side wall samples will be collected. Confirmatory soil samples will be collected from the floor of the excavated areas. One confirmatory sample will be collected for every 500 square feet, or fraction thereof, of the base of the excavation. The analytical results will be compared to the remediation action objectives to confirm that the contaminated soil has been removed.

For each discreet grab samples, remove the top 2 inches with a SS spoon and then place 6 spoonfuls of soil into a stainless steel (SS) mixing bowl. The composite sample will be thoroughly mixed and homogenized using the quartering technique and a 4-oz jar will be filled with the composite sample.

Sampling equipment will be thoroughly cleaned between samples using decontamination procedures described in Section 3.5. Field sampling personnel will wear disposable sampling gloves during sampling and will change gloves between sample locations to minimize the potential for cross-contamination. Other PPE may be required for sampling per the site HASP. Contact with sample will be avoided to minimize the potential for cross-contamination. The samples will be analyzed by the off-site laboratory as described in Section 4.0. Table A-1 in Appendix A summarizes the required analysis for the confirmation samples.

Areas where the off-site confirmation samples exceed the remediation goals or limits will be further excavated and re-sampled following the procedures above. Areas where the off-site confirmation samples meet the cleanup criteria can be restored. Restoration will only occur after receipt of off-site confirmation results.

3.1.2 Waste Characterization Sampling

Waste characterization samples shall be collected for the purpose of determining handling, transportation, and disposal requirements and for determining personal and environmental protection and monitoring requirements. One characterization sample shall be collected for every 500 cubic yards of excavated soil.

The composite characterization sample shall consist of six (6) discreet grab samples representative of the material being sampled. Discreet samples will be collected using a stainless steel (SS) bucket auger. Each discreet grab sample will be of the soil from 0-6 inches. The composite sample will be composed of six discreet grab samples placed in a SS bowl and thoroughly mixed and then homogenized by the quartering technique using a clean SS spoon. One 4-oz jar will be filled for the composite sample. The sample will be analyzed at the off-site laboratory as described in Section 4.

3.1.3 Contractor Generated Waste Samples

Samples may be required for the decontamination fluid or PPE wastes for disposal analysis. If samples are required, Table A-1 in Appendix A lists the required analysis for disposal of these materials. Depending on the disposal facility, additional analysis may be required.

Aqueous wastes (waters from decontamination activities, stormwater runoff, and dewatering activities) will be collected by direct fill from the holding containers. PPE wastes will be collected using scissors or knives.

3.2 SAMPLE IDENTIFICATION

The samples collected on-site will be provided with a unique sample designation. The number will serve to identify the site, location, and specific sample identification number. The sample designation format will be as follows:

CLXXX-NNN-DD

where:

CL = Camp Lejeune
XX= Delivery Order for the project (013)
NNN = Sequential number starting at 001
DD = QC identifier

If sample is a field QC sample, the following designations will be added as a suffix

FB - Field Blank
RB- Equipment Rinsate Blank
(Duplicates must not to be identified to the laboratory)

Sample location information will be included in the sample description area of the COC. This will include the grid location, the sample point associated within the grid and the depth of the sample in inches. Additional samples in the same grid point but deeper will be given new sample designations. Sample sequential numbers are not to be duplicated. Duplicate samples will be sent to the off-site laboratory blind. The latest OHM COC has been designed so that the cross-reference of the duplicate to the original sample can be included on the last page of the COC that does not go to the laboratory.

3.3 SAMPLE PRESERVATION AND HOLDING TIMES

Samples collected for off-site analyses will be sent to the laboratory within 24 hours after collection to ensure that the most reliable and accurate answers will be obtained as a result of the analysis. The holding time begins from the date and time of collection in the field.

Usually all environmental and treatment system samples, except for aqueous samples for metals, will be preserved to a temperature of 4°C prior to shipment to the analytical laboratory, using ice or refrigeration. The soil samples for metal analysis on this project do require cooling to 4°C. Other sample preservation requirements and holding times applicable to the sample matrix and analyses are listed in Appendix A, Table A-1.

3.4 FIELD QC SAMPLES

The appropriate number of field QC samples, as specified in the NFESC, 1996 document will be collected during this project. These samples will include field blanks, equipment rinsate blanks and field duplicate samples. These samples will be collected at the following frequencies and analyzed for the parameters listed in Appendix A, Table A-1:

- Field Blanks (Ambient Blanks) – Field blanks , sometimes referred to as ambient blanks, are samples of contaminant-free media (reagent grade water) which are prepared at the site and handled in the field in the same manner as all other field samples. Field blanks are collected during the course of field sampling and, to the extent possible, in the actual sampling locations. Field blanks are collected by placing contaminant-free medium (reagent grade water) in the same type of container as field sample. Field blanks are preserved and stored in the same manner as field samples. At a minimum, one field blank per contiguous site from each sampling event

is collected and is analyzed for those interfering contaminants that could potentially be present in ambient air at the sampling site. Approximate number of field blank samples planned to be collected is presented in Appendix A, Table A-1.

- Equipment Rinsate Blank – Equipment rinsate blanks are the final analyte-free water rinse from equipment cleaning collected daily for each matrix sampled. An equipment rinsate blank is collected in the same type of sample containers, and in all other ways is handled in the same manner as other field samples. The equipment rinsate blank must be collected during the sampling event (after collection of at least one field sample) after the sampling equipment has been decontaminated and prior to collection of the next field sample.

- All equipment that comes into contact with field samples must be decontaminated prior to use. The use of disposable equipment is acceptable, but does not obviate the requirement for decontamination prior to use, or the requirement for collection of equipment rinsate blanks. Equipment rinsate blanks for disposable equipment are collected by passing contaminant-free medium through or over the decontaminated equipment. One equipment rinsate blank is collected per day, per sampling event for each matrix sampled that day. Equipment rinsates are analyzed for the same parameters as the sample collected that day. Approximate number of equipment blank samples planned to be collected is presented in Table A-1, Appendix A.

- Field Duplicate – Duplicates for soil samples are collected, homogenized, and split. All samples except volatiles are homogenized and split. Volatiles are not mixed, but select segments of soil are taken from the length of the core and placed in 4 oz glass jars. The duplicates for water samples are collected simultaneously. Field duplicates must be collected at a frequency of one sample per day per matrix or 10% of the field samples per matrix for NEESA Level C QC requirements. All the duplicates should be sent to the primary laboratory responsible for analysis, along with the samples. Approximate number of field duplicates planned to be collected are presented in Table A-1, Appendix A. Duplicates will be sent to the off-site laboratory blind.

- Trip Blank -- Trip blanks are defined as samples which originate from analyte-free water taken from the laboratory to the sampling site and returned to the laboratory with the volatile samples. One trip blank should accompany each cooler containing aqueous and non-aqueous volatile samples, should be stored at the laboratory with the samples, and analyzed by the laboratory. Trip blanks are only analyzed for volatile

organic compounds and may not be required for this project if disposal samples are not taken. Approximate number of trip blank samples planned to be analyzed is presented in Table A-1, Appendix A.

3.5 DECONTAMINATION

All sampling equipment (hand augers, spoons, stainless steel/glass mixing bowls, etc.) will be decontaminated before sampling commences, between each sample location, and prior to leaving the site. The procedures for decontamination of equipment according to NEESA 20.2-047B are as follows.

1) Remove gross contamination by scraping or brushing.

2) Clean with tap water and phosphate-free laboratory detergent (liquinox), using a stiff brush to remove all surface contaminants.

3) Rinse thoroughly with tap water.

4) Rinse with 1:1 nitric acid (HNO3) metals grade (metal samples only).

5) Rinse thoroughly with tap water.

6) Rinse thoroughly with deionized/distilled water.

7) Rinse twice with reagent grade isopropanol or methanol.

8) Rinse thoroughly with organic-free water and allow to air dry. (Do not rinse with deionized/distilled water. If organic-free water is not available, allow equipment to air dry.)

9) Wrap equipment with aluminum foil prior to storage or transportation to sample locations.

Decontamination fluids will be collected in properly labeled 55-gallon drums, and staged in a secure area until final disposal unless other arrangements are made.

3.6 CROSS-CONTAMINATION MINIMIZATION

Cross-contamination is the introduction of contaminants into the sample through the

sampling and/or sample-handling procedures. It can cause an otherwise representative sample to become non-representative. The most important means of minimizing cross-contamination are as follows:

- Sampling expendables, i.e., sample gloves, pipettes, string, dip jars, etc., must not be reused. Used expendables should be labeled so they are not confused with non-contaminated trash

- Minimum contact should be made between the sampler and the sample medium. For example, a sampler should not touch the sample during while loading the sample in the container.

- Sample collection activities should proceed progressively from the least contaminated area to the most contaminated area.

- Sampling equipment should be constructed of Teflon, stainless steel, or glass that has been properly precleaned for collecting samples. Equipment constructed of plastic or PVC should not be used to collect samples for trace organic analyses.

- Any tools used in sampling must be carefully decontaminated prior to first use and after each use.

- Activities that could contaminate samples are prohibited in the sample handling and preparation area. These activities and the possible contaminants include:

Activity	Possible Contaminants
Smoking	Poly Aromatic Hydrocarbons
Spraying for insects	Pesticides, oils, solvents
Spraying for weeds	Herbicides, oils, solvents
Refueling	BTEX, hydrocarbons
Painting and paint stripping	Solvents

3.7 SAMPLE LOG BOOK

It is necessary for the sampling crew to maintain daily field notes. Items that must be

included are sampling protocol, any changes to the procedures, meetings, instructions, safety precautions, personnel protection, and activities pertaining to the samples. The person taking notes must be knowledgeable enough about these activities to know which details are important.

- Repetition of information recorded in other permanent logs should be avoided, but enough should be recorded to present a clear and accurate picture of technical activities. At a later date, should a question arise concerning a specific event or a procedure used, it will be answered from these notes. The following information should be logged into the logbooks and/or database:

- Date and time of sampling

- Sample number, locations, type, matrices, volumes, sample ID and descriptions, type and number of sample containers, names and signatures of individuals performing sampling tasks, Chain-Of-Custody (COC) and air bill numbers, preservatives, and date samples were sent

- Name of laboratories and contacts to which the samples were sent, turn around time (TAT) requested, and data results, when possible

- Termination of a sample point or parameter and reasons

- Unusual appearance or odor of a sample

- Measurements, volume of flow, temperature, and weather conditions

- Additional samples and reasons for collecting them

- Levels of protection used (with justification)

- Meetings and telephone conversations held with LANTDIV, NTR, regulatory agencies, project manager, or supervisor

- Details concerning any samples split with another agency

- Details of QC samples collected

These notes must be dated and signed (each page) for validity. All logbooks will be bound and pre-numbered. All log book entries will be made with indelible ink and legibly written. The language will be factual and objective. No erasures will be permitted. If an incorrect entry is made, the error will be crossed out with a single strike mark, initialed, and dated. When audits are performed, the auditor's remarks and decisions must also appear in these notes. These audits should be followed up by written report submitted by the auditor, including opinions and conclusions. A copy of this report should be placed in the project file and one copy kept in the sampling file for easy reference. This information will also be entered in to the data base program that been prepared for the site. It will be entered daily by the field chemist or sample technician. This person will be the point of contact for all sampling and analytical information. Report outputs from the database is an acceptable substitute for the sample logbook.

3.8 SAMPLE LABELS

Any samples placed into a sample container will be identified by a sample label. Sample label will identify the following information:

(1) PROJECT NUMBER
(2) DATE- Month, day, year
(3) TIME- Military time
(4) SAMPLE NUMBER- See Section 3.2 for designations
(5) SAMPLE DESCRIPTION
(6) SAMPLER- Sampler's name
(7) PRESERVATIVES
(8) ANALYSIS REQUIRED- See Appendix A, Table A-1

The information described above should be printed neatly using an indelible marker. After the sample is taken and the label is securely attached, the sample is logged into the sample log book. An example of a sample label is presented in Appendix B.

3.9 CUSTODY SEALS

Custody seals are narrow strips of adhesive tape of glass fiber used to demonstrate that no tampering has occurred. They may be used on sampling equipment, sample transport containers, and individual sample containers. They should be signed and dated by the sampler and placed from one side, across the top, and to the other side of the sample container or across the openings of the sample transport containers. An example custody seal

is presented in Appendix B.

3.10 CHAIN-OF-CUSTODY PROCEDURES

In order to generate legally defensible data of the samples collected throughout the project, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. To maintain and document sample possession, chain-of-custody procedures are followed as described below:

A sample is under your custody if:
(1) It is in your actual possession, or
(2) It is in your view, after being in your physical possession, or
(3) It was in your physical possession and then you locked it up to prevent tampering, or
(4) It is in a designated secure area

An example of a COC form is presented in Appendix B. The following information is required on the COC:

(1) Project Name
(2) Project Location- City and State in which the project site is located
(3) Project Number
(4) Project Contact-OHM employee responsible for overseeing the sampling operation. This person should be the individual to whom questions are to be directed or verbal results are given (Project Manager, Site supervisor, or Project Chemist)
(5) Site Telephone Number- The telephone number of on-site office trailer or number where person responsible for samples can be contacted.
(6) Sample Date-Month, Day, Year
(7) Sample Time- Military time
(8) Sample Identification- Sample number and location
(9) Sample Type-Designation of sample as grab or composite
(10) Sample Description- Sample matrix, and a brief description of the sampling location
(11) Sample Preservation- Preservatives used
(12) Analytical Parameters Requested -- Analytical parameter, method numbers, and specific compounds of interest, if applicable.
(13) Air bill Number
(14) Laboratory -- Laboratory where samples are to be sent
(15) Laboratory Phone -- Telephone number of laboratory
(16) Laboratory Contact -- Contact person for laboratory

(17) Relinquished By -- Signature of sender (OHM)
(18) Date Relinquished -- Date samples were relinquished
(19) Accepted By -- Signature of acceptor
(20) Date Received -- Date samples were accepted
(21) Turnaround Time -- Turnaround times requested or date the results are required from the lab
(22) Sampler's Signature -- Signature of sampler

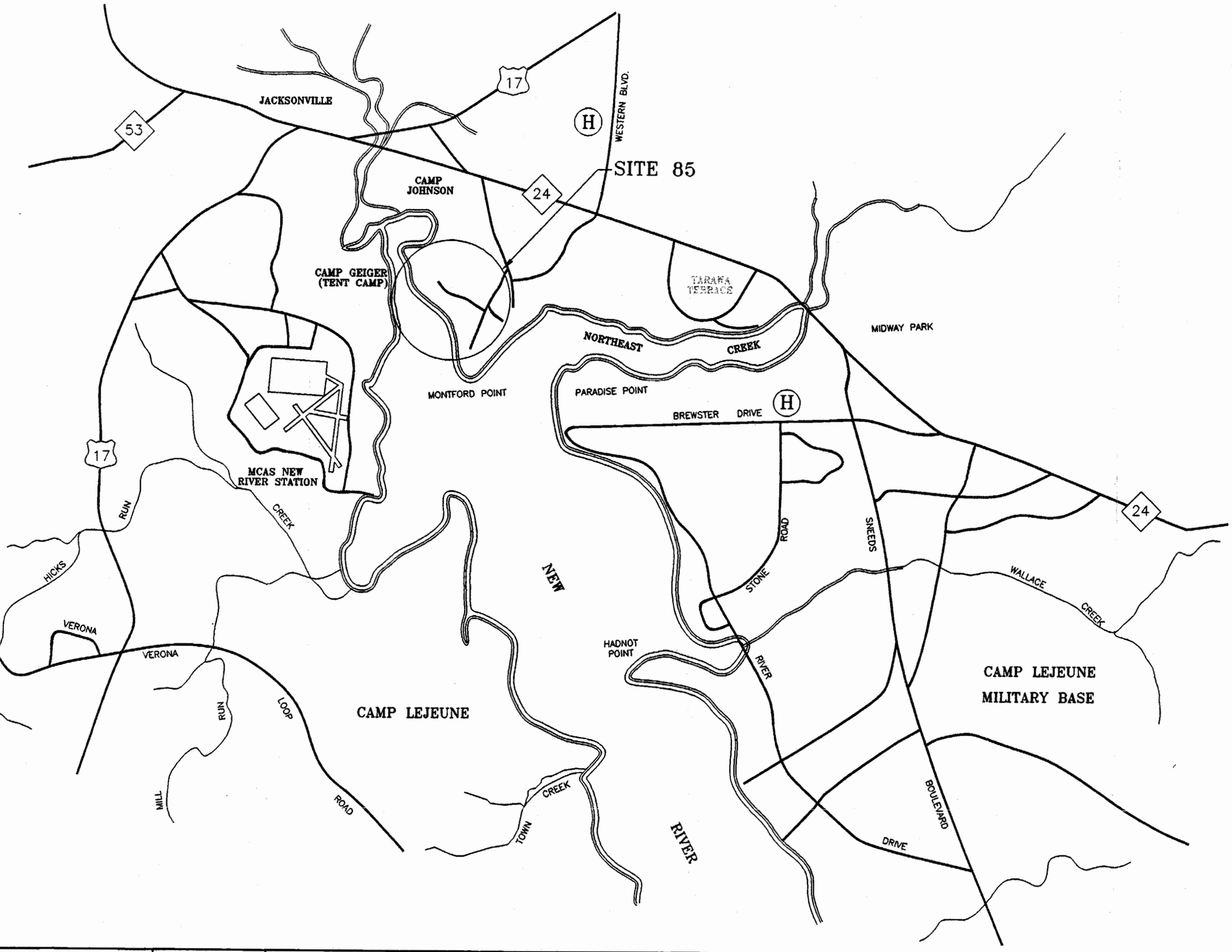
The COC will be sealed in a ziploc bag and taped in place on the underside of the top of the sample transport container (cooler).

3.11 PACKAGING, HANDLING, AND SHIPMENT OF SAMPLES

Samples will be packaged as to minimize shifting of the samples during shipment. An absorbent, such as vermiculite or kitty litter, will be placed at the bottom of the shipment container in order to absorb any liquids in the event of sample breakage. All samples will be individually placed into appropriately sized ziploc bags and sealed.

Samples, which must be kept at 4°C, will be shipped on ice in insulated containers. Ice will be placed in a container such as a ziploc bag and sealed so that water will not fill the shipping container as the ice melts. The ice will be double bagged to insure the ice does not leak. Aqueous samples for metals analysis, except hexavalent chromium, shall not be shipped or stored under refrigeration.

Samples will be shipped via an overnight shipping agency to the appropriate laboratory. IATA regulations will be followed as they are more applicable to OHM's method of sample shipment. Instructions for filling out shipment documentation are included in Appendix B. These instructions are for shipping samples with unknown or limited hazards. All information will be entered as directed. No changes or substitutions to these instruction will be made irrespective of their significance. A copy of the OHM sample shipping label is included in Appendix B.



00521 II BIZ

OHM Remediation Services Corp. Norcross, Georgia A Subsidiary of OHM Corporation	AT FULL SCALE (IF NOT 2"-SCALE ACCORDINGLY)	REVISIONS	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SUBMITTED: _____ PROJECT MANAGER DATE:	CADD FILE:	ZONE / REV. 1 — DESCRIPTION — BY: – — DATE: 7/25/97 — APP.	ATLANTIC DIVISION
APPROVED: _____ SR. PROJECT ENGINEER DATE:	DRAWN: J. LANGE		NAVAL STATION — NORFOLK, VIRGINIA
APPROVED: _____ OFF MANAGER DATE:	DESIGNED: –		CONTRACT No. N62470-97-D-5000 — DELIVERY ORDER NO. 0013
	CHECKED: J. DUNN		OHM PROJECT 20736 — MARINE CORPS BASE
	CHECKED:		

FIGURE 1

VICINITY AND LOCATION MAPS
SITE 85 CAMP JOHNSON

CAMP JOHNSON BATTERY DUMP

DRAWING NUMBER: –
SHEET NUMBER: of
DATE: 7/25/97

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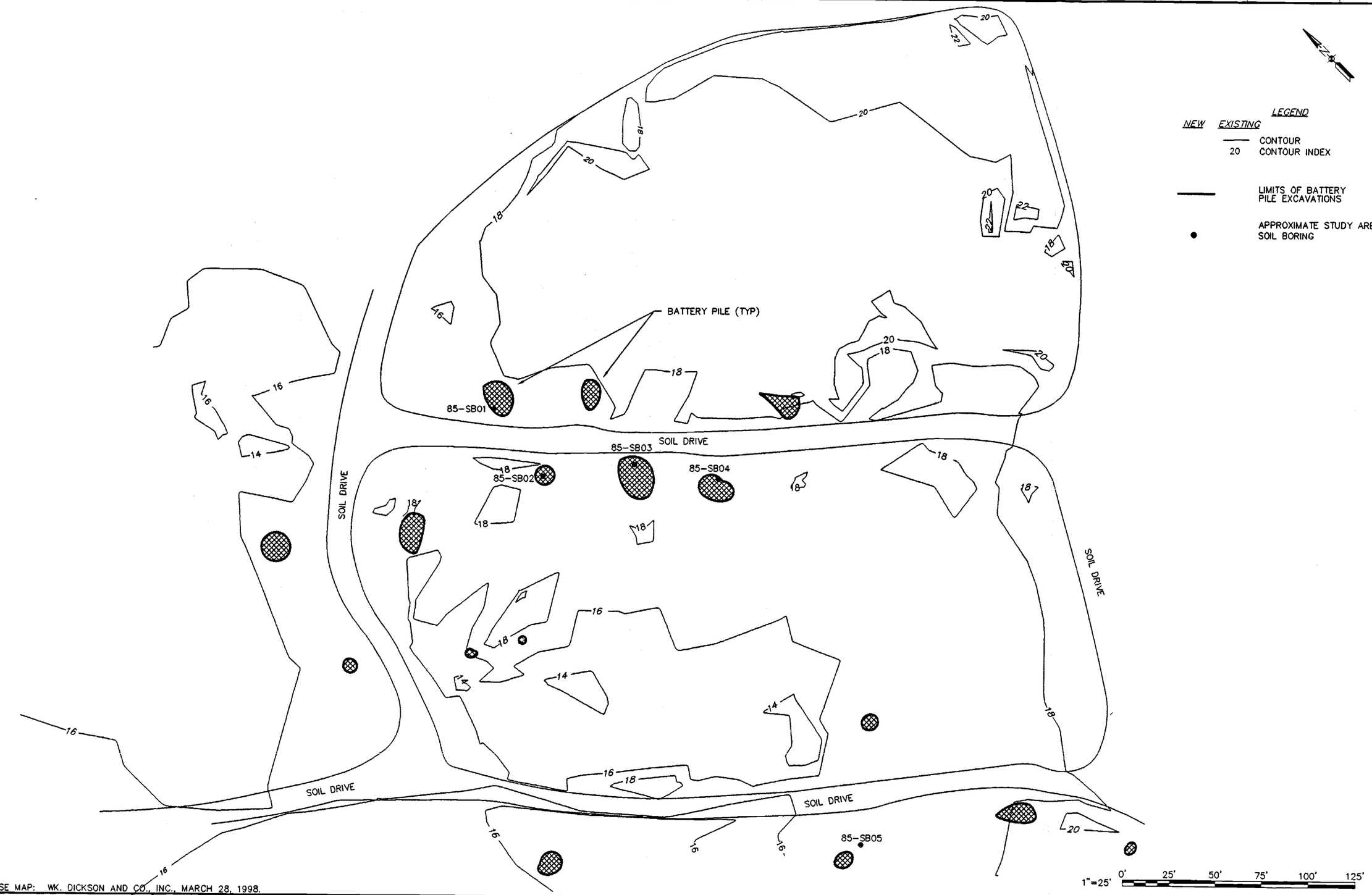

SOURCE OF BASE MAP: WK. DICKSON AND CO., INC., MARCH 28, 1998.

G:\LANTDIV\LEEUNE\20736\WP\FIG2.DWG

OHM Remediation Services Corp.
Norcross, Georgia
A Subsidiary of OHM Corporation

SUBMITTED: _____ PROJECT MANAGER: DATE: _____
APPROVED: _____ SR. PROJECT ENGINEER DATE: _____
APPROVED: _____ DEPT. MANAGER DATE: _____

AT FULL SCALE (IF NOT 1"=SCALE ACCORDINGLY)
CADD FILE: _____
DRAWN: J. LANGE
DESIGNED: —
CHECKED: J. DUNN
CHECKED: _____

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.
	1		—	7/25/97	

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINA
CONTRACT No. N62470-97-D-5000 DELIVERY ORDER NO. 0013
OHM PROJECT 20736 MARINE CORPS BASE

FIGURE 2
BATTERY PILE LOCATIONS SITE 85 CAMP JOHNSON
REMEDIATION OF METALS CONTAMINATED SOIL

DRAWING NUMBER: —
SHEET NUMBER: of
DATE: 7/6/98

FINAL
SAMPLING AND ANALYSIS PLAN
FOR
REMEDIATION OF SITE 85
CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

Department of the Navy
Contract No. N62470-97-D-5000
Delivery Order 0013

Prepared by:

OHM Remediation Services Corp.
Alpharetta, Georgia 30022

Roland Moreau, P.E.
Program Manager

James A. Dunn, Jr., P.E.
Project Manager

Terence A. Whitt
Manager of Field Analytical Services

OHM Project No. 20736

August 19

FINAL
CONSTRUCTION QUALITY CONTROL PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Delivery Order 0013

Prepared by:

OHM Remediation Services Corp.
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Roland Moreau, P.E.
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Kai Mak for P. Hunter
Peter N. Hunter
Program QC Manager

OHM Project No. 20736

August 1999

FINAL
SITE-SPECIFIC HEALTH AND SAFETY PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

Department of the Navy
Contract No. N62470-97-D-5000
Delivery Order 0013

Prepared by:

OHM Remediation Services Corp.
Alpharetta, Georgia 30022

Roland Moreau, P.E.
Program Manager

James A. Dunn, Jr., P.E..
Project Manager

Kai Mak for B. Brooks
Robert A. Brooks, B.S., CSP
LANTDIV Health and Safety Manager

OHM Project No. 920736

August 1999

FINAL

REMEDIAL ACTION WORK PLAN
FOR
REMEDIATION OF SITE 85
THE CAMP JOHNSON BATTERY DUMP
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Delivery Order 0013

Prepared by:

OHM Remediation Services Corp.
A member of The IT Group

11560 Great Oaks Way
Alpharetta, GA 30022-2424

OHM Project No. 920736

AUGUST 1999

2.0 *REMEDIAL ACTION OBJECTIVES*

In accordance with Section 121(d)(1) of CERCLA, remedial actions must attain a degree of clean up which assures protection of human health and the environment. Remedial goals have been based on meeting an Applicable or Relevant and Appropriate Requirement (ARAR), or a site-specific risk based action level. Soil remedial goals were established based on risk-based action levels for the protection of public health or groundwater

2.1 REMEDIAL ACTION OBJECTIVES FOR SOIL

The purpose of the non-Time Critical Removal Action is to remove the battery piles from Site 85. Approximately one foot of soil will be removed from under each battery pile. Institutional controls will be applied for this site. Risk-based clean up goals were established for this site, by Baker Environmental in the EE/CA dated 10/9/98 and are listed below:

Inorganic Contaminant	*Concentration (mg/kg)*
Aluminum	7,413
Arsenic	2.0
Barium	1,100
Cadmium	2.7
Chromium	27.2
Cobalt	940
Copper	62
Iron	7,135
Lead	270
Manganese	65
Mercury	0.13
Nickel	56.4
Vanadium	110
Zinc	1100

2.2 DESCRIPTION OF THE REMEDIAL ACTION

The non-Time Critical Removal Action will consist of excavating the battery piles and soil underneath the battery piles in a phased approach manner. Initial phase will consist of removal of battery piles and characterization of samples of the battery pile and soil underneath the pile footprint to determine the disposal requirements and extent of

5.0 *FIELD ACTIVITIES*

The approximate limits of contaminated surface soils for the battery piles are as indicated on Figure 2. Baker obtained samples from Site 85 to approximate the limits of excavation. The non-time-critical removal action will consist of excavating the battery piles, and sampling the footprint to determine the excavation limits required to excavate the soils, and excavation of soil underneath the battery piles.

5.1 PILE REMOVAL, SAMPLING AND ANALYSIS

The remediation activities will be conducted in a phased approach. The initial phase will consist of removing the battery piles, sampling and analysis of the battery piles for disposal determination and sampling and analysis of the soils within the footprints of the pile to determine the vertical limits of excavation for Phase II. Baker drawing C-2 Excavation Plan will be used to establish initial location of the site on battery debris piles. After battery piles removal and sampling activities, OHM will de-mob from the site.

5.2 EXCAVATION LIMITS

Once results of the sampling have delineated the vertical extents of contamination, OHM will re-mobilize to the site to conduct excavation activities which comprise the second phase of this approach. The horizontal extent of excavation at each location will coincide with the physical area covered by the battery piles. The total vertical extent of excavation is assumed to be approximately one foot below the ground surface or until all visible evidence of the battery piles are removed. Sampling and analysis work performed during the initial phase will determine the depth of excavation for the second phase of work.

5.3 CLEARING

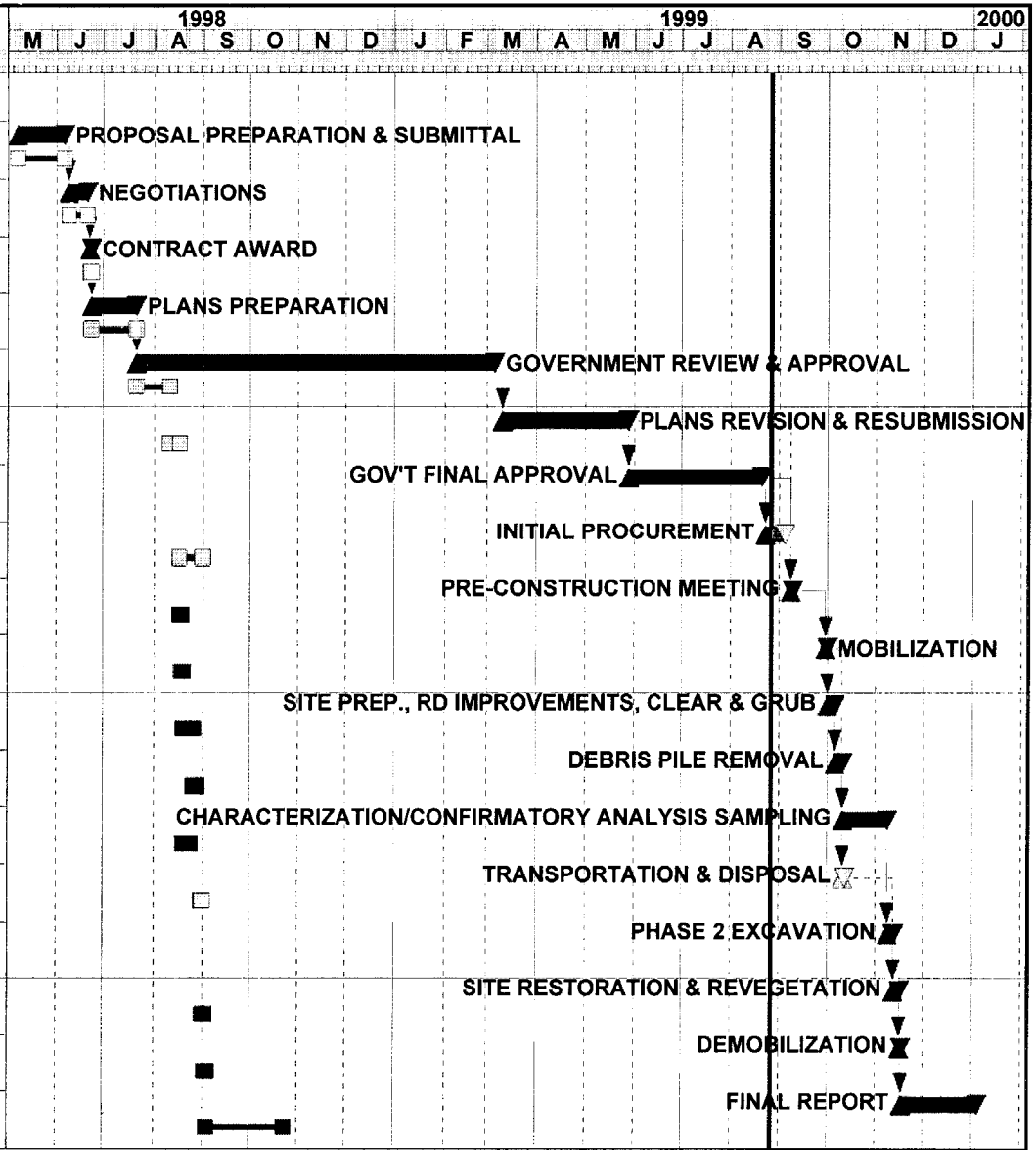
Trees located within the excavation zones will be cut into salable lengths and staged in a convenient location for pickup by the Forestry Service. The under growth, tree limbs, and other non-salable non-contaminated debris removed in the excavation areas will be disposed at the base landfill. Hazardous debris will be disposed at selected disposal sites.

5.4 EXCAVATION

The approximate dimensions of contaminated soils within Site 85 will be marked prior to beginning excavation. Underground utilities in the excavation area will be located. Care will be exercised when excavating around existing monitoring wells/utilities not to disturb or compromise their integrity. The contaminated soils in the excavation areas will be removed

D.O. 13: Site 85 - Battery Debris Removal

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
01000000	PROPOSAL PREPARATION & SUBMITTAL	22	07MAY98A	05JUN98A
01010000	NEGOTIATIONS	10	08JUN98A	19JUN98A
01020000	CONTRACT AWARD	1	22JUN98A	22JUN98A
02000000	PLANS PREPARATION	20	23JUN98A	20JUL98A
03000000	GOVERNMENT REVIEW & APPROVAL	15	21JUL98A	05MAR99A
03010000	PLANS REVISION & RESUBMISSION	72	11MAR99A	27MAY99A
03020000	GOV'T FINAL APPROVAL	1	28MAY99A	20AUG99A
04000000	INITIAL PROCUREMENT	10*	23AUG99A	03SEP99
04010000	PRE-CONSTRUCTION MEETING	1	08SEP99	08SEP99
05010000	MOBILIZATION	1	30SEP99	30SEP99
05020000	SITE PREP., RD IMPROVEMENTS, CLEAR & GRUB	4	01OCT99	06OCT99
05040000	DEBRIS PILE REMOVAL	3	07OCT99	11OCT99
05030000	CHARACTERIZATION/CONFIRMATORY ANALYSIS SAMPLING	20	12OCT99	08NOV99
05050000	TRANSPORTATION & DISPOSAL	1	12OCT99	12OCT99
05055000	PHASE 2 EXCAVATION	3	09NOV99	11NOV99
05060000	SITE RESTORATION & REVEGETATION	2	12NOV99	15NOV99
05070000	DEMOBILIZATION	1	16NOV99	16NOV99
06000000	FINAL REPORT	35	17NOV99	04JAN00



Project Start	01MAY98
Project Finish	04JAN00
Data Date	27AUG99
Run Date	31AUG99

Early Bar
Target Bar
Progress Bar
Critical Activity

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0899

Sheet 1 of 1

OHM Remediation Services Corporation
Site 85 - Battery Debris Removal
MCB, Camp Lejune, North Carolina

08/31/99 Update

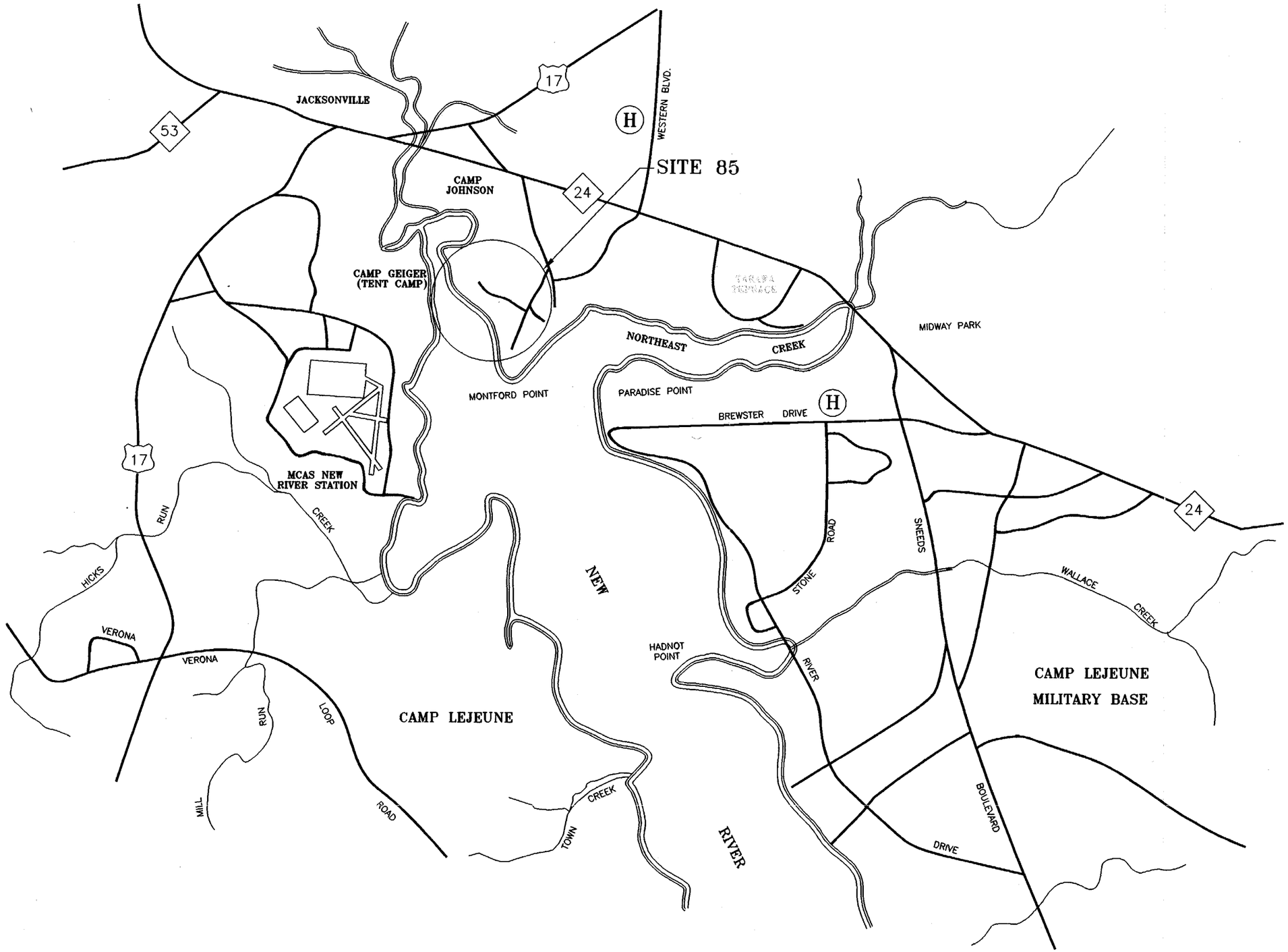
Date	Revision	Checked	Approved

Battery Piles
Camp Lejeune
Site 85, DO 0013
Project No. 920736

TABLE A-2 PROJECT QUALITY CONTROL OBJECTIVES

SAP Version 2
May 26, 1999

		Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
Method No	Analyte / Component	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
TAL METALS BY ICP		mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%
6010B	Aluminum	NA	7413	0.2	22.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Barium	NA	1100	0.2	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Cadmium	NA	2.7	0.005	0.50	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Chromium	NA	27.2	0.01	20	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Cobalt	NA	940	0.05	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Copper	NA	62	0.025	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Iron	NA	7135	0.1	3.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Lead	NA	270	0.003	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Manganese	NA	65	0.015	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Nickel	NA	56.4	0.04	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Vanadium	NA	110	0.05	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Zinc	NA	1100	0.02	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
MERCURY BY COLD VAPOR		mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%	%	%
7471A	Mercury	NA	0.13	NA	0.05	50-150	NA	<30	NA	70-130	NA	<50	NA	95	NA
TAL METALS BY GFAA		mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%	%	%
7060A	Arsenic	NA	2.0	0.005	0.5	50-150	30-170	<30	<50	74-120	74-1120	<50	<75	95	90



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OHM Remediation Services Corp. Norcross, Georgia A Subsidiary of OHM Corporation	AT FULL SCALE (IF NOT 2"-SCALE ACCORDINGLY)	REVISIONS							DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	FIGURE 1 VICINITY AND LOCATION MAPS SITE 85 CAMP JOHNSON CAMP JOHNSON BATTERY DUMP	DRAWING NUMBER: –
	CADD FILE:	ZONE	REV.	DESCRIPTION	BY	DATE	APP.		ATLANTIC DIVISION		SHEET NUMBER: of
	DRAWN: J. LANGE		1		–	7/25/97			NAVAL STATION NORFOLK, VIRGINIA		DATE: 7/25/97
SUBMITTED: ____ PROJECT MANAGER: DATE:	DESIGNED: –								CONTRACT No. N62470-97-D-5000 DELIVERY ORDER NO. 0013		
APPROVED: ____ SR. PROJECT ENGINEER DATE:	CHECKED: J. DUNN								OHM PROJECT 20736 MARINE CORPS BASE		
APPROVED: ____ DEPT. MANAGER DATE:	CHECKED:										

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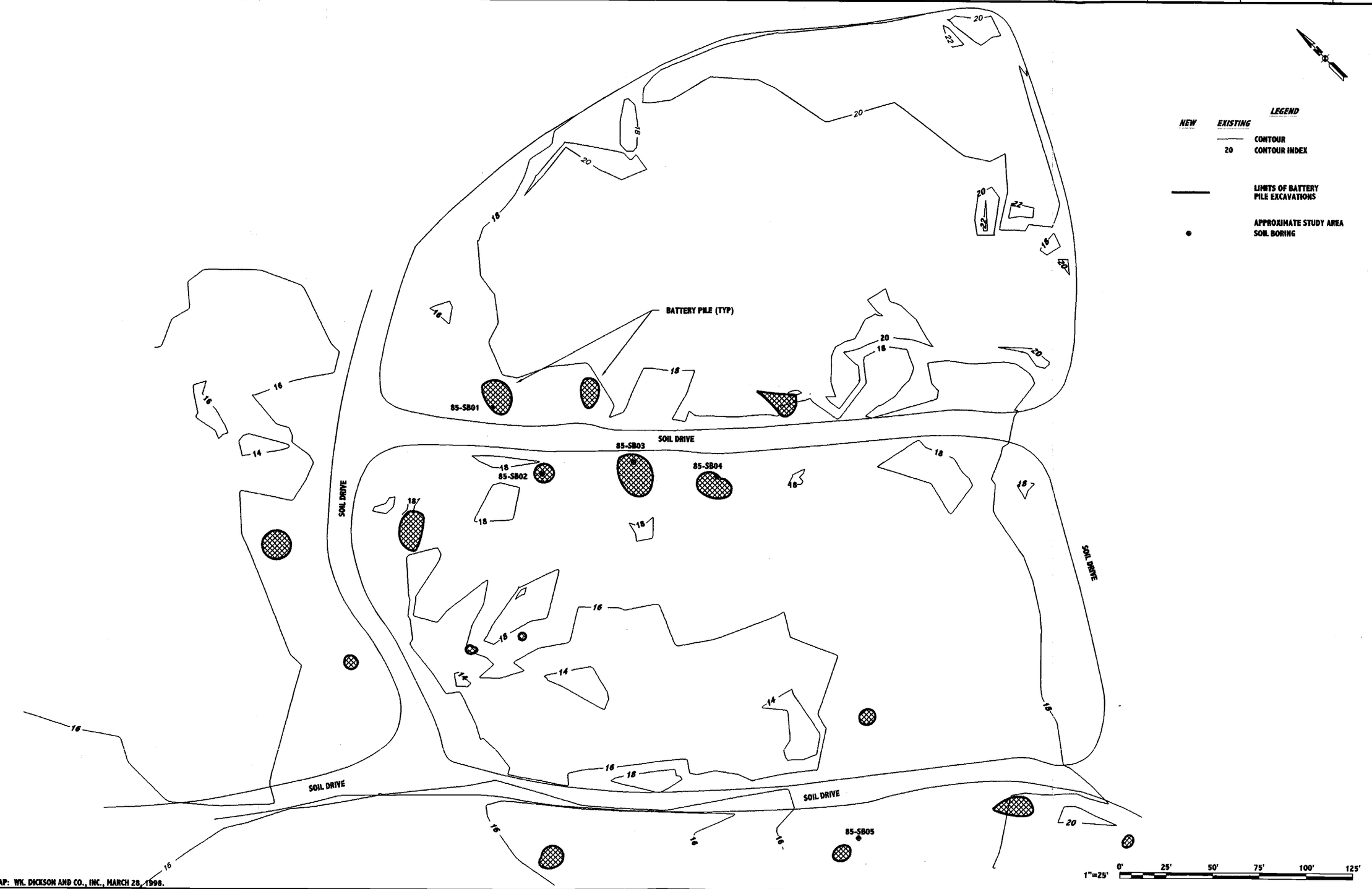

SOURCE OF BASE MAP: WK. DICKSON AND CO., INC., MARCH 28, 1998.

G:\LANTDIV\LEJEUNE\20736\WP\FIG2.DWG

OHM Remediation Services Corp.
Norcross,Georgia
A Subsidiary of OHM Corporation

SUBMITTED: _____ PROJECT MANAGER; DATE: _____
APPROVED: _____ SR. PROJECT ENGINEER DATE: _____
APPROVED: _____ DEPT. MANAGER DATE: _____

AT FULL SCALE (IF NOT 2"-SCALE ACCORDINGLY)
CADD FILE: _____
DRAWN: J. LANGE
DESIGNED: –
CHECKED: J. DUNN
CHECKED: _____

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.
	1		–	7/25/97	

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINA
CONTRACT No. N62470-97-D-5000 DELIVERY ORDER NO. 0013
OHM PROJECT 20736 MARINE CORPS BASE

FIGURE 2
BATTERY PILE LOCATIONS SITE 85 CAMP JOHNSON
REMEDIATION OF METALS CONTAMINATED SOIL

DRAWING NUMBER: –
SHEET NUMBER: of
DATE: 7/6/98