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R-49-5-92-3

# SAMPLING PLAN
# FOR
# BENCH-SCALE TESTING OF AIR STRIPPING
# FOR CONTAMINATED GROUNDWATER
# UNIT 10
# MARINE CORPS AIR STATION
# CHERRY POINT, NORTH CAROLINA

## SUBMITTED TO:
## DEPARTMENT OF THE NAVY
## ATLANTIC DIVISION
## NAVAL FACILITIES ENGINEERING COMMAND
## NORFOLK, VIRGINIA

**SUBMITTED BY:**
**HALLIBURTON NUS ENVIRONMENTAL CORPORATION**

**CONTRACT NUMBER N62470-90-D-7630**
**HALLIBURTON NUS PROJECT NUMBER 9K46**

## AUGUST 1992

HALLIBURTON NUS
*Environmental Corporation*

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**SUBMITTED FOR HALLIBURTON NUS BY:**

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**PROJECT MANAGER**

**APPROVED FOR SUBMISSION BY:**

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# 1.0 INTRODUCTION

HALLIBURTON NUS Environmental Corporation, under contract to the Department of the Navy (Navy Contract No. N62470-90-D-7630) will be issuing a subcontract for the performance of bench-scale treatability study of air stripping. The bench-scale treatability study will be conducted on the contaminated groundwater found at Unit 10 at the Marine Corps Air Station (MCAS), Cherry Point, North Carolina. The scope of work for the treatability study is detailed in the Work Plan (HALLIBURTON NUS, June 1992). This Sampling Plan describes the work involved in the collection of the samples to be used in the Treatability Study. This collection of all samples will be performed by HALLIBURTON NUS.

# 2.0 SCOPE OF WORK

## 2.1 OBJECTIVE

The objective of this limited sampling effort is to collect and ship representative contaminated groundwater samples from Unit 10 to the selected vendor for treatability study testing purposes. The treatability study test results will ultimately be used to assist in developing the detailed design of an air stripping treatment facility for the contaminated groundwater at Unit 10.

## 2.2 DATA REQUIREMENTS

The samples will be analyzed by the selected treatability study vendor. HALLIBURTON NUS personnel will only need to record the temperature and pH of the groundwater as the samples are being collected.

## 2.3 SAMPLING RATIONALE

The samples will be collected by HALLIBURTON NUS personnel from existing monitoring wells found to be contaminated during past investigations. During the RCRA Facility Investigation (RFI), a representative concentration was established for each contaminant of concern for risk assessment purposes. In addition, the Work Plan for the treatability study identified design concentrations for each organic contaminant of concern. An attempt will be made to collect samples that simulate either the design concentrations or the representative concentrations, as appropriate. As noted in the Work Plan (HALLIBURTON NUS, June 1992), if the concentrations in the representative sample are not between 90 to 100 percent of the design concentrations or the representative concentrations, the contaminated groundwater can be spiked by the treatability study vendor at their facility in an attempt to simulate the design concentrations. Table 2-1 identifies the maximum concentration, the representative concentration and the design concentration for each contaminant of concern.

# 3.0 SITE MANAGEMENT PLAN

## 3.1 SITE MANAGEMENT

The work proposed here will be implemented in accordance with previous activities at Unit 10, MCAS, Cherry Point. The HALLIBURTON NUS Project Manager, Mr. Gregory Zimmerman, will be responsible for assigning necessary personnel to this task.

## 3.2 SCHEDULE

The HALLIBURTON NUS Scope of Work for the subject field activities is limited. The collection of the representative groundwater sample is expected to take 2 days depending on the recharge capacity of the selected monitoring wells. The representative sample will be collected within 14 days of notice to proceed. All samples will be shipped to the selected vendor via express mail so that analyses/treatability testing can begin the next day. An attempt will be made to coordinate this sampling event with other field activities being conducted at MCAS, Cherry Point.

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# 4.0 FIELD SAMPLING PLAN

## 4.1 GENERAL FIELD OPERATIONS

This Field Sampling Plan is a guidance and procedure plan for conducting the limited sampling at Unit 10. Additional guidance can be found in the appropriate sections of Compendium of Field Operations Methods, (NUS and CH2M Hill, 1987), RCRA Groundwater Monitoring Technical Enforcement Guidance Document, (USEPA, 1986), Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Program, (NEESA, June 1988), the Field Operations Plan (FOP); Units 5, 10, 16, and 17, (NUS, 1990), and the Health and Safety Plan; Units 5, 10, 16, and 17 (NUS, 1990).

Site-specific items of note for the subject work are described in the following subsections.

## 4.2 MOBILIZATION/DEMOBILIZATION

The field team must review this document, as well as the Health and Safety Plan and the FOP for Units 5, 10, 16, and 17, if necessary, prior to mobilization. In addition, a field team orientation meeting will be held prior to sampling activities to familiarize personnel with the scope of field activities.

Equipment mobilization will include setup of sampling equipment, as well as health, safety, and decontamination equipment, and obtaining sample containers from the selected vendor. The Field Operations Leader (FOL) will coordinate the mobilization activities and make any necessary equipment purchases or rentals in order to conduct the field work.

## 4.3 SAMPLE HANDLING

Sample handling includes the field-related considerations connected with the selection of containers, preservatives, allowable holding times, and the analyses requested. The analyses requested are detailed in the Work Plan developed for the treatability study. The selected vendor will provide information as to the quantity of sample required and will also provide the necessary containers. All samples will be cooled to 4°C during shipment and no other preservatives will be required.

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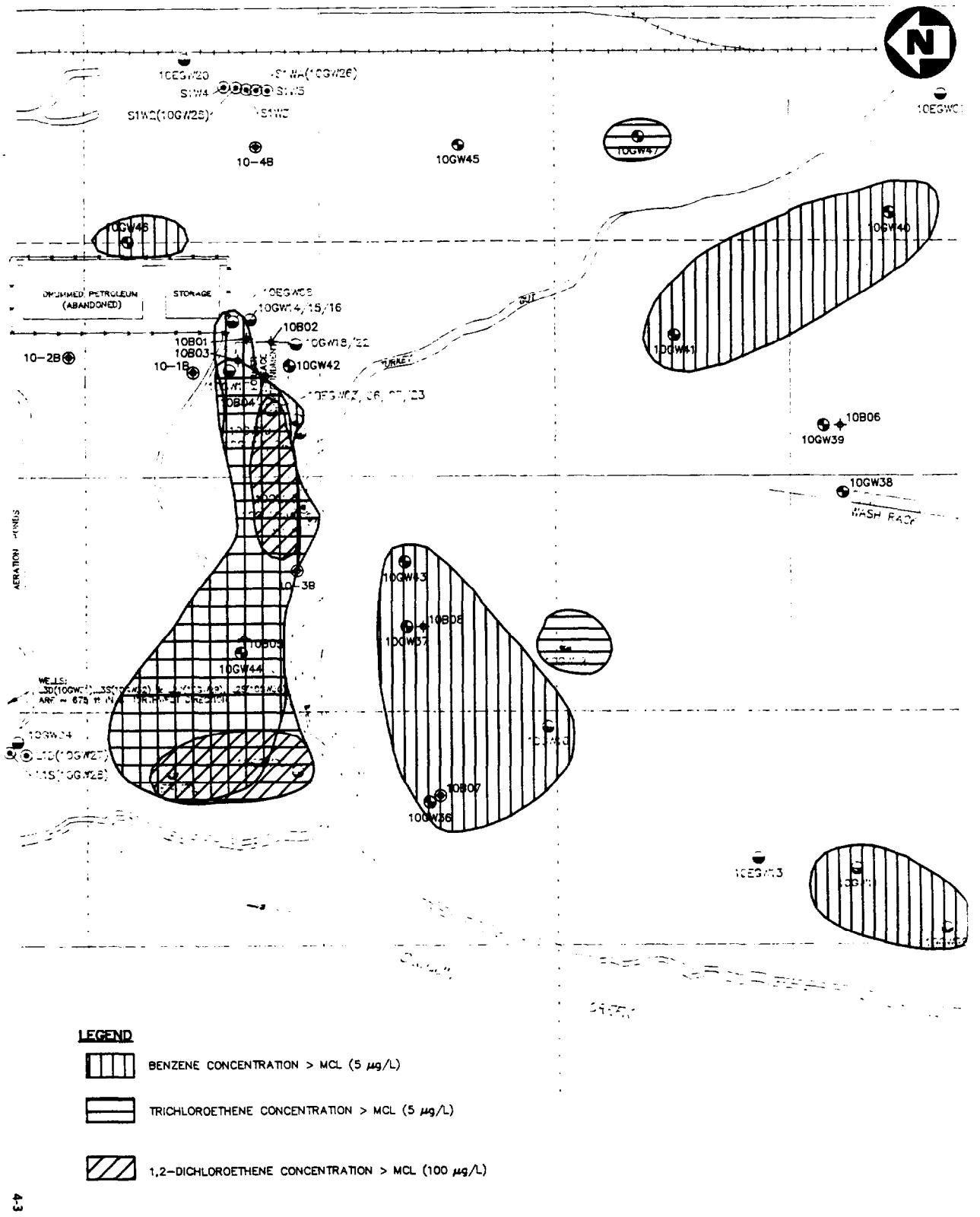


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FIGURE 4-1

UNIT 10 - GENERAL ZONES OF GROUNDWATER CONTAMINATION
MCAS, CHERRY POINT, NORTH CAROLINA

NUS CORPORATION

concern, individual containers will be composited in the field with minimal mixing and turbulence to avoid the loss of volatiles. Consideration will be given to using a glass funnel with tubing to limit volatilization when pouring the samples into the sample containers. The monitoring wells of concern must be purged prior to sampling. Purge water will be containerized in contractor-supplied 55-gallon drums and stored at a location designated by MCAS, Cherry Point NREA personnel.

A sample of the Unit 10 representative groundwater will be simulated by mixing equal parts of contaminated groundwater from monitoring wells 10GW03 and 10GW05. These wells were selected because the groundwater contains several compounds, that are difficult to spike at concentrations closest to the design concentrations. Table 4-1 presents the analytical results from the latest sampling round for these wells. Due to volatilization concerns, it is preferable to address one or two containers at a time (i.e., half fill one or two containers with well 10GW03 groundwater, cap the container(s), then move to well 10GW05 to complete filling the container(s) until all containers are filled).

## 4.6 SAMPLE PACKAGING AND SHIPPING

The FOL will be responsible for ensuring that the samples are packaged and shipped in accordance with previously referenced documents and requirements specified herein. Sampling requirements of note are as follows:

- Sample containers must be completely filled so that no head space exists.
- Each sample container must be labeled by Sample ID Number (See Section 4.3), as well as time and date, temperature, and pH.
- Avoid open exposure of sample to atmosphere, light, or heat.
- Shipping procedures must comply with DOT regulations (49CFR 171-179)
- Time between sample collection and shipment should be minimized to the extent possible.

The samples will be shipped to the selected vendor via overnight express service. Along with the shipment, a completed and signed Chain-of-Custody form will be sent. The completed Chain-Of-Custody form will be included in the appendix of the vendors report.

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# 5.0 HEALTH AND SAFETY

During the sample collection and shipment, health and safety requirements must be in accordance with the Health and Safety Plan (HASP) established for previous field activities (NUS, 1990). Of major importance is Section 4.0 of the HASP which mandates a task-specific training session, conducted immediately prior to field activities. Volatile organics are present in significant concentrations at Unit 10 and, therefore depending on monitoring instrument readings, respiratory protection may be required.

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# REFERENCES


HALLIBURTON NUS Environmental Corporation, June 1992. Work Plan/Request for Proposal for Bench-Scale Testing of Air Stripping for Contaminated Groundwater at Unit 10. D-49-3-92-13, Pittsburgh, Pennsylvania.

Naval Energy and Environmental Support Activity (NEESA), June 1988. Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B. Port Hueneme, California.

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USEPA, December 1989. Risk Assessment for Superfund, Volume I, Human Health and Evaluation Manual. EPA 540/1-89/002. Office of Emergency and Remedial Response. Washington, D.C.