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Baker

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August 31, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, Virginia 23511-2699

Attn: Mr. Lance Laughmiller
Navy Technical Representative
Code 18224

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0269
Recovery System Work Plan, Building LP-20 Site
Naval Base, Norfolk, Virginia

Dear Mr. Laughmiller:

Baker Environmental, Inc. (Baker) has prepared a brief Work Plan (WP) for sampling activities associated with the two groundwater remediation systems in operation at the Building LP-20 site, Naval Base, Norfolk, Virginia. This WP was requested by LANTDIV in the review comments received August 3, 1994. As instructed on August 29, 1994, three (3) copies each of this WP have been included with the Draft Final Project Plans submitted to LANTDIV and Ms. Sharon Waligora (Code N4) of the Naval Base Environmental Programs Department.

Baker appreciates the opportunity to provide support to LANTDIV on this important program. If you have any further questions or comments, please do not hesitate to contact me at (412) 269-2026.

Sincerely,

BAKER ENVIRONMENTAL, INC.

David J Mamrose

David J. Mamrose, P.E.
Project Manager

DJM:med

Enclosures (Work Plan - Recovery System Sampling Activities)

cc: Ms. Ollie Glodis, Code 02116 (w/o enclosures)
Ms. Lee Anne Rapp, Code 183 (w/o enclosures)
Ms. Sharon Waligora, Code N4 NBN (with three enclosures)

WORK PLAN

RECOVERY SYSTEM SAMPLING ACTIVITIES

BUILDING LP-20 SITE
NAVAL BASE, NORFOLK, VIRGINIA

CONTRACT TASK ORDER 0269

AUGUST 31, 1994

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared By:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

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1.0 INTRODUCTION

This Work Plan (WP) has been developed by Baker Environmental, Inc. (Baker) for groundwater recovery system sampling activities to be conducted in the vicinity of Building LP-20 at Naval Air Station (NAS), Norfolk, Virginia. The services to be performed are part of the Remedial Investigation/Feasibility Study (RI/FS) which is currently underway for Building LP-20 under the Navy CLEAN Contract No. N62470-89-D-4814, Contract Task Order (CTO) 0269. This project is being managed through the Naval Facilities Engineering Command, Atlantic Division (LANTDIV).

This WP is an addendum to the Draft Final Project Plans prepared for the Building LP-20 RI/FS (Baker, August 1994). The project plans presents the methods to assess the horizontal and vertical extent of organic and metals contamination. This WP addendum addresses sampling activities associated with the groundwater recovery systems.

1.1 Background Information

Building LP-20 is located within the NAS in Norfolk, Virginia. The site is situated in a heavily developed area which includes industrial and military activities.

Building LP-20 and surrounding buildings provide support for aircraft operations including maintenance and repair activities. To provide this support, several areas in the vicinity of Building LP-20 utilize solvents, aviation fuel, and other forms of petroleum products. Metal plating operations were previously performed within Building LP-20 but have been discontinued (date unknown). The plating operations have since been relocated to Building LP-23/24.

Several previous environmental investigations have been performed in the vicinity of Building LP-20. These investigations have been directed to evaluating the extent of petroleum contamination suspected to originate from both the fuel farm and underground storage tanks (USTs) located in the vicinity of the site. The following environmental consultants have performed activities in the vicinity of Building LP-20:

- Harding Lawson Associates, 1986
- O'Brien and Gere (O&G), December 1988

- O&G, December 1989
- ATEC Environmental Consultants, Inc. (ATEC), February 1991
- Environmental Science and Engineering (ESE), July 1991
- Foster Wheeler Enviresponse, Inc. (FWE), October 1991
- ESE, March 1994

Figure 1 illustrates the locations of monitoring wells installed during the previous environmental investigations.

The earlier investigations indicate that free product was present in the vicinity of Building LP-20. As a consequence, two product recovery systems were installed in December 1988. The location of the recovery systems is also shown on Figure 1.

Both remediation systems consist of four groundwater recovery wells equipped with a pneumatic pump to recover both groundwater and free product fluids from each well. Fluids pass to an oil/water separator before being discharged to a subsurface drain. Free product from the oil/water separator is collected in an aboveground storage tank (AST).

1.2 Objective

The objective of the proposed activities is to assess the performance and effectiveness of the groundwater recovery and treatment systems. This information shall be used to determine if the systems are recovering and treating contaminants other than petroleum compounds. The chemical nature of the recovery system discharge into the subsurface drain will also be evaluated to determine what levels of contaminants are being discharged.

2.0 TECHNICAL APPROACH - FIELD ACTIVITIES

This section briefly describes the methods which will be used to collect and analyze fluid samples from the Building LP-20 recovery systems. Additional descriptions of sample collection, shipment, analyses, and evaluation are included in the Draft Final Project Plans prepared for the RI/FS.

2.1 Treatment System Sampling and Analysis

Fluid samples will be obtained from influent and effluent streams of both recovery systems. Therefore, a total of four samples will be collected and analyzed for the specified chemical parameters listed below. If the recovery system influent piping cannot be easily accessed, the water sample may be obtained directly from one of the four recovery wells associated with the recovery system. The effluent sample will be obtained directly from the discharge piping before it enters the drain. Specific points of sample collection will be determined in the field and documented appropriately.

Each fluid sample will be analyzed for the following chemical parameters:

- Target Compound List (TCL) volatile organic compounds (VOCs)
- TCL semivolatile organic compounds (SVOCs)
- Target Analyte List (TAL) metals (both total and dissolved fractions)
- Cyanide
- Total suspended solids (TSS)
- Total dissolved solids (TDS)
- Total organic carbon (TOC)
- Dissolved oxygen (DO)

The VOCs, SVOCs, cyanide, and metals will be analyzed using NEESA Level D quality control. A detailed list of the chemical parameters which will be analyzed are presented in Table 7-1 of the Quality Assurance Project Plan (QAPP) prepared for the Building LP-20 RI/FS. The remaining analyses (TSS, TDS, TOC, DO) will be performed using NEESA Level C quality control.

One duplicate water sample will be obtained during the recovery system sampling activities for quality assurance/quality control (QA/QC) purposes. This duplicate sample will be analyzed for:

- TCL VOCs
- TCL SVOCs
- TAL metals (total and dissolved)
- Cyanide
- TSS
- TDS
- TOC
- DO

The same level of quality control will be performed for the duplicate sample as for the four environmental samples.

No additional QA/QC samples such as trip blanks or matrix spike/matrix spike duplicate (MS/MSD) will be obtained during the recovery system sampling activities. It is anticipated that sampling will occur at the same time as other groundwater sampling activities for the Building LP-20 RI/FS. As trip blanks and MS/MSDs will be collected in association with RI/FS sampling activities, additional QA/QC samples will not be necessary for the treatment system sampling program. A summary of the treatment system sampling program is provided on Table 1.

In addition, rinsate blanks will not be collected in association with treatment system sampling activities. As fluid samples will be obtained by direct fill, a rinsate is not required.

All samples will be appropriately preserved and packaged with ice prior to transport to the analytical laboratory. Sample preservation and handling will be conducted as described in the Sampling Analysis Plan (SAP) and QAPP which have been prepared for this RI/FS. The preservation methods, types of containers, and analytical methods are summarized on Table 2.

2.2 Sample Numbering

Each sample number will include a four-character prefix (LP20) to designate the site location (Building LP-20). A two letter designation (recovery system - RS) will be used next to denote sample origin. This designation will be followed by a single number, 1 or 2, to indicate the actual recovery system. The system number will be followed by the letter "I" to designate the influent sample, or the letter "E" to designate the effluent sample.

The following is an example of the numbering system which will be used for recovery system sampling activities:

Recovery System No. 1

LP20 RS1I - Influent sample
LP20 RS1E - Effluent sample

Recovery System No. 2

LP20 RS2I - Influent sample
LP20 RS2E - Effluent sample

Additionally, the field duplicate sample will be labeled (LP20-DUP01, 02, 03, etc.) in association with duplicate samples obtained during RI/FS field activities. As described in the project plans, the sample with which the duplicate is associated will be noted in the field logbook.

2.3 Chain-of-Custody and Sample Shipping

Proper chain-of-custody (COC) documentation will be maintained for all samples from the time of collection until they are shipped to the analytical laboratory. Samples will be transported by overnight courier to arrive before noon the following day. The only exception is that samples shipped on Saturday will not arrive at the laboratory until Monday noon.

2.4 Documentation

A single notebook will be dedicated to the investigation, and will serve as a daily logbook. This logbook will include the activities associated with both the RI/FS and treatment system sampling. Additional requirements are provided in the RI/FS project plans.

2.5 Field Change and Corrective Action

If changes become necessary due to field conditions (access to sampling location, system not in operation, etc.), the proposed changes will be communicated to the Navy Technical Representative (NTR) for the project. The COMNAVBASE and NADEP representatives will also be contacted. Upon agreement, any required change will be implemented and documented, with the documentation placed in the project file.

2.6 Field Instrument Calibration

Field instruments will be used to measure the specific conductance, pH, and temperature of the fluid samples collected. Equipment calibration will be performed at the frequency and using the directions recommended by the manufacturer of each respective piece of equipment.

3.0 TECHNICAL APPROACH - POST SAMPLING ACTIVITIES

After the groundwater treatment samples have been collected and all analytical results received, further evaluation of the results will be performed by Baker.

3.1 Data Validation

An independent data validator will perform data validation activities. The VOC, SVOC, cyanide, and metal samples collected during the field investigation will be analyzed using NEESA Level D quality control. The remaining analyses (TSS, TDS, TOC, DO) will be performed using NEESA Level C quality control. Data review procedures specified by NEESA 20.2-047B will be followed to ensure that raw data are not altered and that an audit trail is developed for those data which require reduction.

Specific QA/QC procedures for validation are presented in the QAPP. One hundred (100) percent of the analytical data generated during the field investigation will be validated.

3.2 Sample Tracking/Evaluation

Services will be provided by a data management system contractor. The data management contractor sends validated data back to the data manager by way of electronic disk deliverable. The data manager will enter the appropriate validation qualifiers from the hard copy. The data manager then subdivides the data set into respective media and performs statistics such as frequency of detection, minimum detected value, maximum detected value, arithmetic and geometric means, and upper 95 percent confidence intervals to the mean. These data are then complied into report quality hard copy deliverables for use in the systems report.

3.3 Systems Evaluation Report

The results of the groundwater treatment sampling activities will be presented in a brief report including:

- Description of sampling activities and locations
- Tables summarizing results of field testing activities
- Tables summarizing analytical results
- Copies of validated analytical data

The groundwater treatment system sampling report will also include a simple schematic of both recovery systems which will identify the sample collection locations.

TABLES

TABLE 1

SUMMARY OF ENVIRONMENTAL SAMPLES
BUILDING LP-20 RECOVERY SYSTEM
CONTRACT TASK ORDER 0269

Sample Location	Sample Media No. of Locations	No. of Samples Per Location	TCL VOCs	TCL SVOCS	TAL Metals (Total)	TAL Metals (Dissolved)	Cyanide	Water Chemistry Subset
Recovery System No. 1	Water - 2	1	2	2	2	2	2	2
Recovery System No. 2	Water - 2	1	2	2	2	2	2	2
Duplicate Sample	Water - 1	1	1	1	1	1	1	1
Total Number of Samples			5	5	5	5	5	5

Notes: Water Chemistry subset includes: Total suspended solids, total dissolved solids, total organic carbon, dissolved oxygen.
No rinsate or matrix spike/matrix spike duplicate samples will be collected.

TCL - Target Compound List
VOCS - Volatile Organic Compounds
SVOCS - Semivolatile Organic Compounds
TAL - Target Analyte List

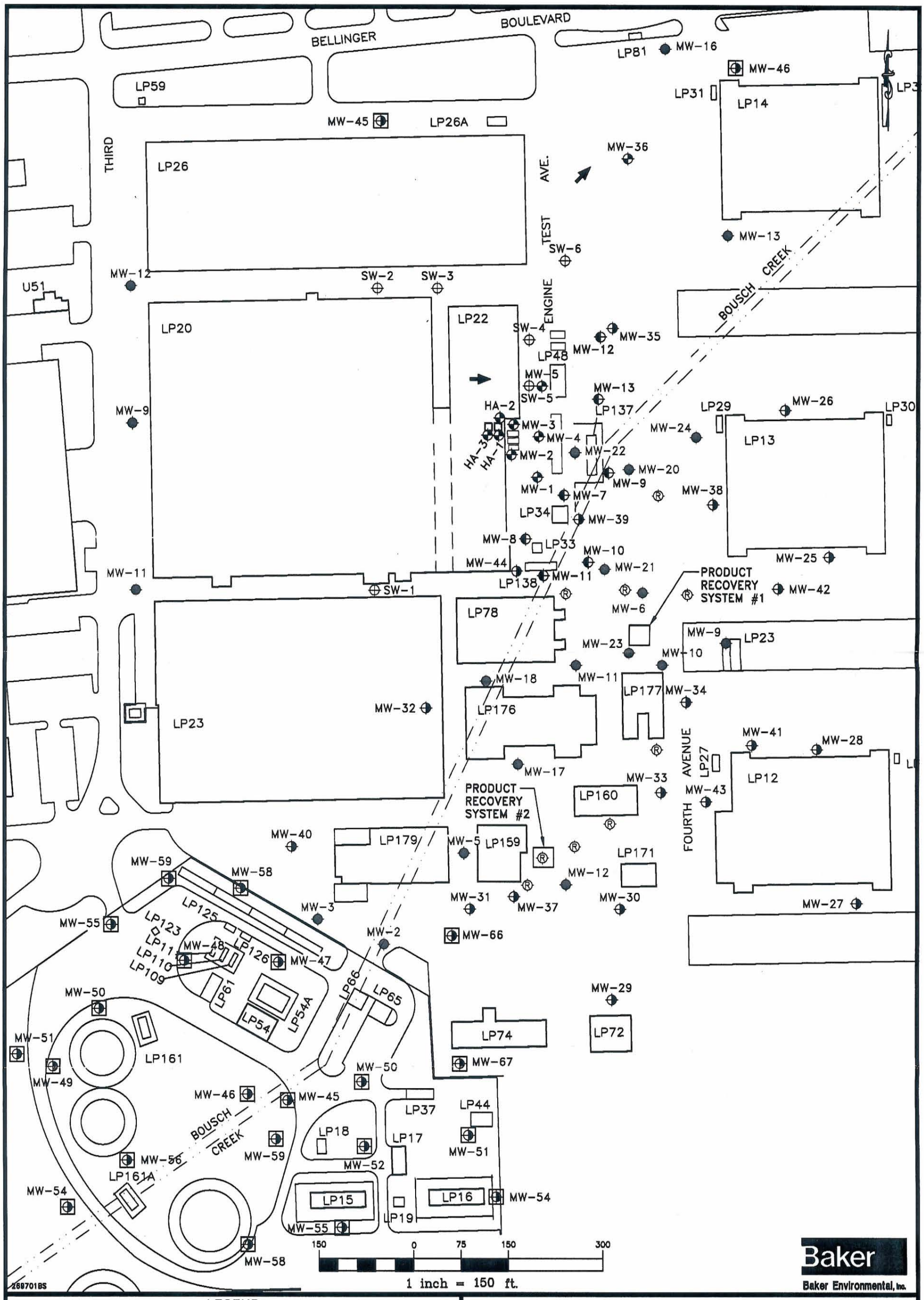
TABLE 2

SUMMARY OF CONTAINERS, PRESERVATION AND HOLDING TIMES FOR WATER SAMPLES
BUILDING LP-20 RECOVERY SYSTEM
CONTRACT TASK ORDER 0269

Parameter	Bottle Requirements	Preservation Requirements	Holding Time [1]	Analytical Method	Bottle Volume
Volatile Organic Compounds (VOCs)	glass teflon lined cap	Cool to 4°C 1:1 HCl pH <2	10 days	CLP	2 x 40 ml
Semivolatile Organic Compounds (SVOCs)	glass teflon lined cap	Cool to 4°C	Extraction within 5 days Analyze 40 days	CLP	2 x 1 liter
Cyanide	glass	Cool to 4°C NaOH to pH >12	14 days	CLP	1 x 1 liter
Metals	plastic/glass	HNO_3 to pH <2	180 days Mercury is 26 days	CLP	1 x 1 liter
Metals (Dissolved)	plastic/glass	HNO_3 to pH <2	180 days Mercury is 26 days	CLP	1 x 1 liter
Chloride	plastic/glass	Cool to 4°C	28 days	EPA 325.3	1 x 1 liter
Sulfate	plastic/glass	Cool to 4°C	28 days	EPA 375.4	1 x 1 liter
Alkalinity	plastic/glass	Cool to 4°C	14 days	EPA 310.1	1 x 1 liter
Total Suspended Solids	plastic/glass	Cool to 4°C	180 days	EPA 160.2	1 x 1 liter
Total Dissolved Solids	plastic/glass	Cool to 4°C	180 days	EPA 160.1	1 x 1 liter
Total Organic Carbon	plastic/glass	Cool to 4°C	28 days	EPA 415.1	1 x 1 liter
Dissolved Oxygen	plastic/glass	Cool to 4°C	Analyze immediately	EPA 360.1	1 x 1 liter

(1) Groundwater samples will be field filtered prior to preservation with HNO_3 for dissolved metals.
(2) Holding times for CLP methods are based on Validated Time of Sample Receipt as stated in CLP statement of work of February 1991. Holding times for Non-CLP methods are based on time of sample collection.

FIGURES



LEGEND

- MW-12 WELL INFORMATION UNKNOWN
- MW-31 MONITORING WELL INSTALLED BY O&G, DECEMBER 1988
- MW-66 MONITORING WELL INSTALLED BY O&G, DECEMBER 1989
- HA-1 MONITORING WELL INSTALLED BY ATEC, FEBRUARY 1991
- RECOVERY WELL LOCATION, DECEMBER 1988
- SW-1 MONITORING WELL INSTALLED BY ESE, JUNE/JULY 1991
- MW-1 MONITORING WELL INSTALLED BY FWE, OCTOBER 1991
- UST IN PLACE
- FORMER UST LOCATION
- ESTIMATED DIRECTION OF GROUNDWATER FLOW

SOURCE: LANTDIV, FEB. 1992

FIGURE 1

SITE PLAN
BUILDING LP-20 SITE

NAVAL BASE NORFOLK
NORFOLK, VIRGINIA