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0310-1/15/86-00685

AN RSH COMPANY

**ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.**

January 15, 1986

ESE No. 85 275 1000

Ms. Cherryl Barnett
Department of the Navy
Atlantic Division, Code 1143
Naval Facilities, Engineering Command
Building IIA, Gilbert Street
Norfolk, Virginia 23511

RE: Contract No. N62740-85-B-7972, Confirmation Study, U.S. Naval Complex,
Puerto Rico

Dear Ms. Barnett:

Enclosed is the progress report for the period of December 16, 1985
through January 15, 1986, and three copies of the revised Work and Safety
Plan.

Please do not hesitate to call me if you have any questions regarding
these submissions.

Sincerely,



Russell V. Bowen, P.E.
Project Manager

RVB/njb

enclosure

cc: Mike Keirn, ESE
Lisa Bare, ESE

MONTHLY PROGRESS REPORT

PERIOD 12/16/85 THROUGH 1/15/86

U.S. NAVAL COMPLEX, PUERTO RICO
CONFIRMATION STUDY

WORK ACCOMPLISHED

1. Finalized Work and Safety Plan, and forwarded the Plan to the E.I.C.
2. Completed laboratory analyses for those samples shown in Table 1, and continued analyses of remaining samples. A brief discussion of the analytical data is presented in Attachment 1.
3. Collected surface water, sediment, and soil samples at Sites 1 and 8.
4. Installed two monitor wells at Site 5 (outside of area potentially containing archaeological sites).

PROBLEMS ENCOUNTERED

None

PERCENTAGE OF WORK COMPLETED

Approximately 37 percent.

PLANS FOR FOLLOWING MONTH

1. Complete all ground water, surface water, sediment, and soil sampling.
2. Complete all monitor well installation and surveying.
3. Continue laboratory analyses of samples.

2/2/02
2/2/02

CONFIRMATION OF ANY CLARIFICATIONS OR TECHNICAL GUIDANCE

In the process of GC/MS analysis of several of the sediment and soil samples collected to date, up to 30 unknown peaks have appeared on the total ion chromatogram indicating potential contamination by compounds not included in the parameter list for this project. Therefore, it is recommended that an effort be made to identify these unknown peaks by initially performing an unknowns analysis on one soil or sediment sample. The results of this initial identification would provide data upon which a decision could be made to continue with identification of the unknowns for additional samples. The initial unknowns analysis to identify up to 30 unknown peaks in one soil or sediment sample will cost \$900.00 (\$30.00 per peak). A description of the proposed methodology for the unknowns analysis is presented in Attachment 2.

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Table 1. Confirmation Study - U.S. Naval Complex, Puerto Rico - Laboratory Analyses Completed as of 12/31/85

<u>Site</u>	<u>Type of Sample*</u>	<u>Analysis</u>
<u>NAVSTA Roosevelt Roads</u>		
5	SW	pH, mercury
	SE	pH, percent moisture
6	SW	pH, mercury
	SE	pH, percent moisture
	S	pH, percent moisture
7	S	percent moisture, oil and grease
9	SE	percent moisture
12	SW	pH, oil and grease, EDB
14	SW	pH, oil and grease, EDB, lead (one sample only)
	SE	pH, percent moisture, oil and grease, lead
15	S	percent moisture
16	S	percent moisture, oil and grease
18	SE	percent moisture
	S	percent moisture
<u>NSGA Sabana Seca</u>		
6	SE	percent moisture
	S	percent moisture
7	SW	pH, mercury, lead
	SE	pH, percent moisture

*SW = surface water
 SE = sediment
 S = soil

ATTACHMENT 1

PRELIMINARY EVALUATION OF DATA AVAILABLE AS OF 12/31/86

CONFIRMATION STUDY, U.S. NAVAL COMPLEX, PUERTO RICO

NAVSTA ROOSEVELT ROADS

SITE 5, ARMY CREMATOR DISPOSAL AREA

The EPA water quality criteria for pH in coastal waters in the vicinity of Site 5 ranges from 7.3 to 8.5, except when caused by natural phenomena. A pH of 6.93 was recorded in one of the surface water samples (Sample 5SW1).

SITE 6, LANGLEY DRIVE DISPOSAL SITE

Available water quality data for pH and mercury do not indicate violations of existing EPA water quality criteria.

SITE 7, STATION LANDFILL

Soil samples taken in the drum ditch area show oil and grease contamination at levels ranging from 80 to 190 micrograms per gram (ug/g) dry weight basis.

SITE 12, TWO WAY ROAD FUEL FARM

An oil and grease concentration of 0.4 milligrams per liter (mg/L) was detected in the surface water sample collected at this site.

SITE 14, ENSENADA HONDA SHORELINE AND MANGROVES

Eight of the twelve surface water samples show oil and grease contamination with concentrations ranging from 0.3 to 2.0 mg/l.

All twelve sediment samples collected at this site show oil and grease contamination at concentrations ranging from 112 to 2,083 ug/g, dry weight basis.

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SITE 16, OLD POWER PLANT, BUILDING 38

All nine soil samples collected at Site 16 show oil and grease contamination ranging from 221 to 6,348 ug/g, dry weight basis.

NSGA SABANA SECA

SITE 7, LEACHATE PONDING AREA

Mercury and lead were not detected in the surface water sample collected at Site 7, and the pH (7.77) also did not indicate contamination. In addition, the pH of the sediment sample (7.9) does not indicate contamination.

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PROPOSED METHODOLOGY FOR UNKNOWN ANALYSIS

A computerized library search will be executed on unknown peaks in the mass chromatogram. Up to twenty peaks will be searched in samples for non-volatile analysis, and up to ten peaks will be searched in samples for volatile analysis. The probability based matching algorithm (PBM) will be used in a computerized library search of the Combined Wiley/ National Bureau of Standards mass spectral data base of over 77,000 entries. The results of this computerized search will be reviewed and validated by an experienced mass spectroscopist. Guidelines for making tentative identifications

include:

1. Ions present in the reference spectrum at levels of greater than ten percent of the most intense ion should also be present in the sample spectrum.
2. The relative intensities of the major ions in the reference spectrum should agree within plus-or-minus twenty percent of the relative intensities of the major ions in the sample spectrum.
3. Molecular ions present in the reference spectrum should also be present in the sample spectrum.
4. Ions present in the reference spectrum and not present in the sample spectrum will be reviewed for possible background contamination or co-eluting compounds.
5. Ions present in the sample spectrum but not in the reference spectrum will be reviewed for possible subtraction from the sample spectrum because of background contamination or co-eluting compounds.

In addition to the Wiley/NBS mass spectral data base, three compendia of mass spectral data are available for manual comparison with unknown spectra. These include:

1. Wiley Registry of Mass Spectral Data, Volumes I-IV, (E. Stenhagen, S. Abrahamson, F.W. McLafferty, eds., John Wiley and Sons, New York, 1974);
2. Eight Peak Index of Mass Spectral Data, Volumes I-III, 2nd Edition (Mass Spectrometry Data Centre, Aldenmaston, Reading, RG74PP, United Kingdom, 1974); and
3. Compilation of Mass Spectral Data, Volumes I and II, 2nd Edition (A. Carnu and R. Massot, Heyden, Philadelphia, Pa., 1979).

If in the opinion of the mass spectral specialist, no valid tentative identification can be made, the compound will be reported as unknown. Additional classification will be made where suitable, e.g. unknown hydrocarbon, unknown aromatic, or unknown halogenated organic.

Quantitation of unknown compounds will be based upon the integrated area of the total ion chromatogram of the unknown compound and the internal standard. When co-eluting interferences occur, the integrated areas of the base ions will be used for the internal standard and the unknown compound. A response factor of one will be used for calculating an estimated concentration for an unknown or tentatively identified compound. This approach is mandated by the impossibility of stocking or analyzing standards for the large number of possible unknowns. The resulting concentrations should be considered as order-of-magnitude estimates and not absolute concentrations.