Proposal to:

Perform an Environmental Evaluation of the Wayside Area, Naval Weapons Station Earle, Colts Neck, NJ

Submitted by:

HALLIBURTON NUS Environmental Corporation
910 Clopper Road
Gaithersburg, MD 20877

10 January 1992

Submitted to:

U.S. Naval Facility Engineering Command
Northern Division, Code 0223
Environmental Contracts Branch
Building 77-L, U.S. Navy Yard
Philadelphia, PA 19112-5094

In Support of:

Contract No. N62472-90-D-1298
"Navy C.L.E.A.N." Contract Task Order No. 37

HALLIBURTON NUS
Environmental Corporation

910 CLOPPER ROAD • P.O. BOX 6032 • GAITHERSBURG, MARYLAND 20877-0962 • (301) 258-6000

January 10, 1992
GC-PP-92-0070

Naval Facilities Engineering Command
Northern Division, Code 0232
Environmental Contracts Branch
Building 77-L, U.S. Navy Yard
Philadelphia, PA 19112-5094

Attention: David P. Rule, Contracting Officer

Reference: Contract No. N62472-90-D-1298, Navy "CLEAN"
Contract Task Order No. 37

Subject: Transmittal of Proposal to Perform an Environmental Evaluation of the Wayside Area, NWS Earle, Colts Neck, NJ

Dear Mr. Rule:

HALLIBURTON NUS Environmental Corporation is pleased to submit the enclosed cost-plus-award-fee proposal to perform the subject services in response to the referenced statement of work. Our offer is valid for 60 days following submission.

Should you have any questions regarding any aspect of this proposal, please feel free to call me at (301) 258-8644.

Sincerely,

Patricia A. Patton

Patricia A. Patton
Senior Contract Specialist
Government Contracts

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1.0 INTRODUCTION

1.1 OVERVIEW

This document is the proposal for Contract Task Order (CTO) 0037, under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62472-90-D-1298. This CTO requests that the HALLIBURTON NUS Environmental Corporation (HALLIBURTON NUS) Team prepare a Work Plan for Field Work for Environmental Evaluation of 'Wayside' for the Naval Weapons Station Earle, Colts Neck, NJ and carry out the field sampling. Deliverables will include the Work Plan and a Report on the results of the field sampling. ENSR Consulting and Engineering, under subcontract to HALLIBURTON NUS, will be the technical lead for this CTO.

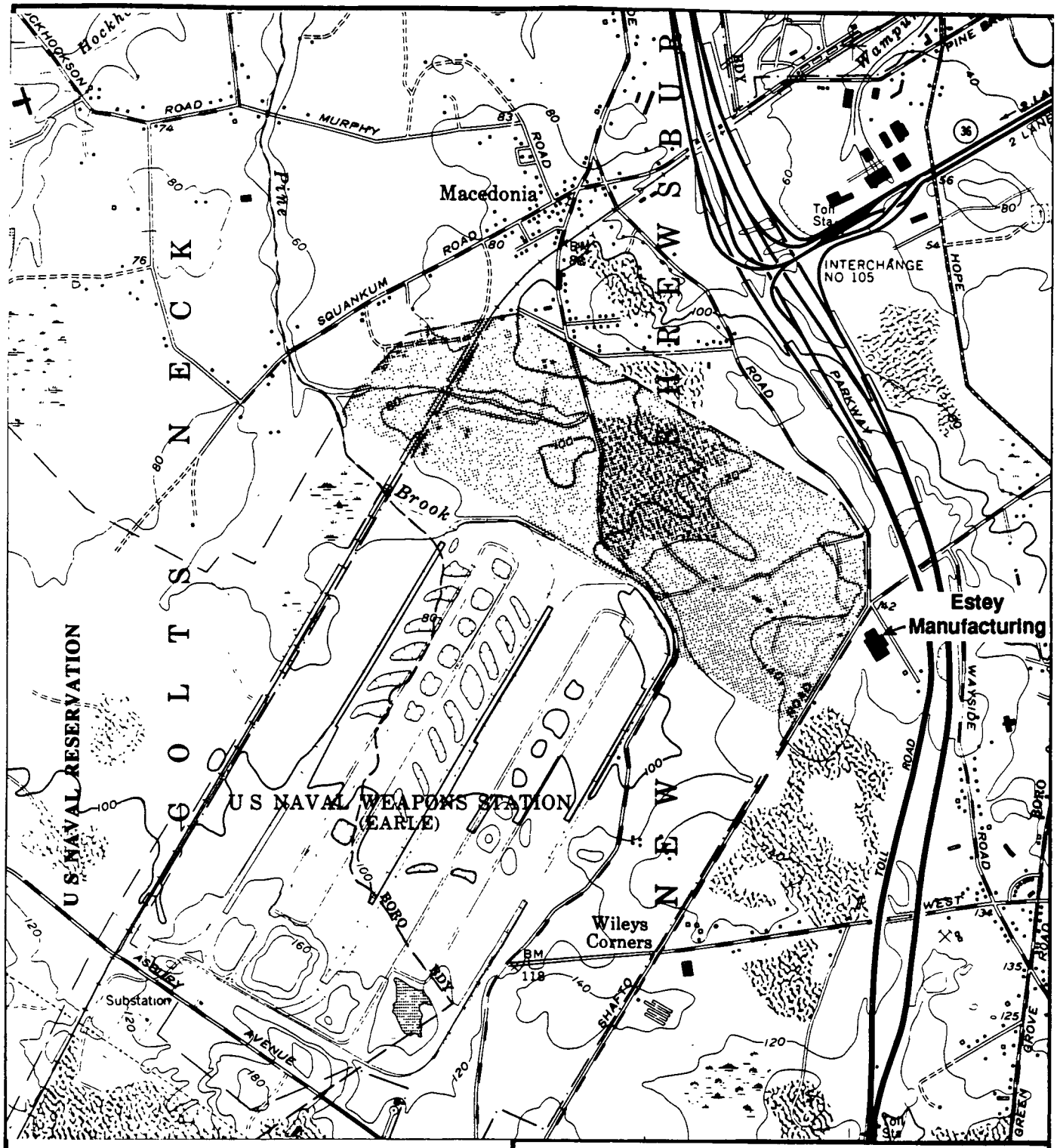
The purpose of this proposal is to define the scope of work, the estimated budget and the project schedule for the HALLIBURTON NUS Team to prepare the above deliverables and conduct Field Investigations. An organization chart is shown in Section 2.0 and resumes of key staff assigned to this project are provided in Appendix A.

1.2 BACKGROUND

NWS Earle is located in the Town of Colts Neck, New Jersey. The Wayside Area of the Naval Weapons Station (NWS) Earle (Figure 1-1) is approximately 440 acres, and has been used by the Army for approximately 45 years for training exercises and testing of communications and electronics equipment. The Navy is currently evaluating the use of the Wayside Area for siting 500 units of Navy family housing and two schools. The objective of the environmental evaluation conducted to date was to locate areas of known or potential contamination that might render portions of the site unsuitable for housing or schools.

In November 1991 an Environmental Evaluation of "Wayside" (Contract No. N62472-90-D-1298 CTO No. 010) was completed for the Navy by ENSR Consulting and Engineering under subcontract to HALLIBURTON NUS Environmental Corporation. The Environmental Evaluation did not find any areas which would be unsuitable for housing or a school based on the study criteria. It did, however, recommend field testing at selected locations which may warrant remediation prior to development.

To carry out this additional testing the Navy has requested development of a work plan to be followed by the field investigation program. Although no major problem areas have been identified, the Navy has notified USEPA of the work completed to date and it is anticipated that EPA will review the results of the field tests. The work plan, therefore, will be developed in accordance with the Site Inspection (SI) section of Standard Installation Restoration (IR) Scope



ENSR Consulting and Engineering

FIGURE 1-1

WAYSIDE AREA

EARLE WEAPONS STATION
Monmouth County, New Jersey

DRAWN: SOR	DATE: August 22, 1991	PROJECT NO.:	REV:
FILE NO.:	CHECKED:		

of Work. It will be based on the detailed recommendations made in the Environmental Evaluation of "Wayside".

1.3 PROPOSAL ORGANIZATION

This proposal for the preparation of the Work Plan for and Field Work for Wayside will consist of four additional sections as follows:

Section 2 - Project Organization
Section 3 - Scope of Work
Section 4 - Estimated Budget
Section 5 - Project Schedule

The pertinent CLEAN documents to be referred to in the preparation of field work plans and subcontractor agreements are: (i) Quality Control Management Plan (August 1991), (ii) the Health and Safety Management Plan (August 1991), (iii) Contract Management Plan (August 1991), and, (iv) Standard Operating Procedures (SOP) developed by HALLIBURTON NUS.

2.0 PROJECT ORGANIZATION

2.1 OVERVIEW

The proposed project organization presented in Figure 2-1 includes the necessary technical and administrative support to ensure preparation of the Environmental Evaluation Work Plan and Field Investigations for NWS Earle in a manner which meets the technical and contractual requirements identified in Section 1.0.

Ms. Gail Scott will serve as Project Manager (PM) for this CTO and will manage the work effort on a day-to-day basis. She will ensure that all technical, cost and schedule objectives are met. Mr. William Tambo is the ENSR Designated Lead and has overall responsibility for ENSR's Contract with HALLIBURTON NUS. His main responsibilities will include manpower resourcing and schedule oversight.

Supporting Ms. Scott will be Ms. Sylvie Rice who will be the Task Leader for the Field Sampling Effort.

Resumes for the above key ENSR staff are included in Appendix A.

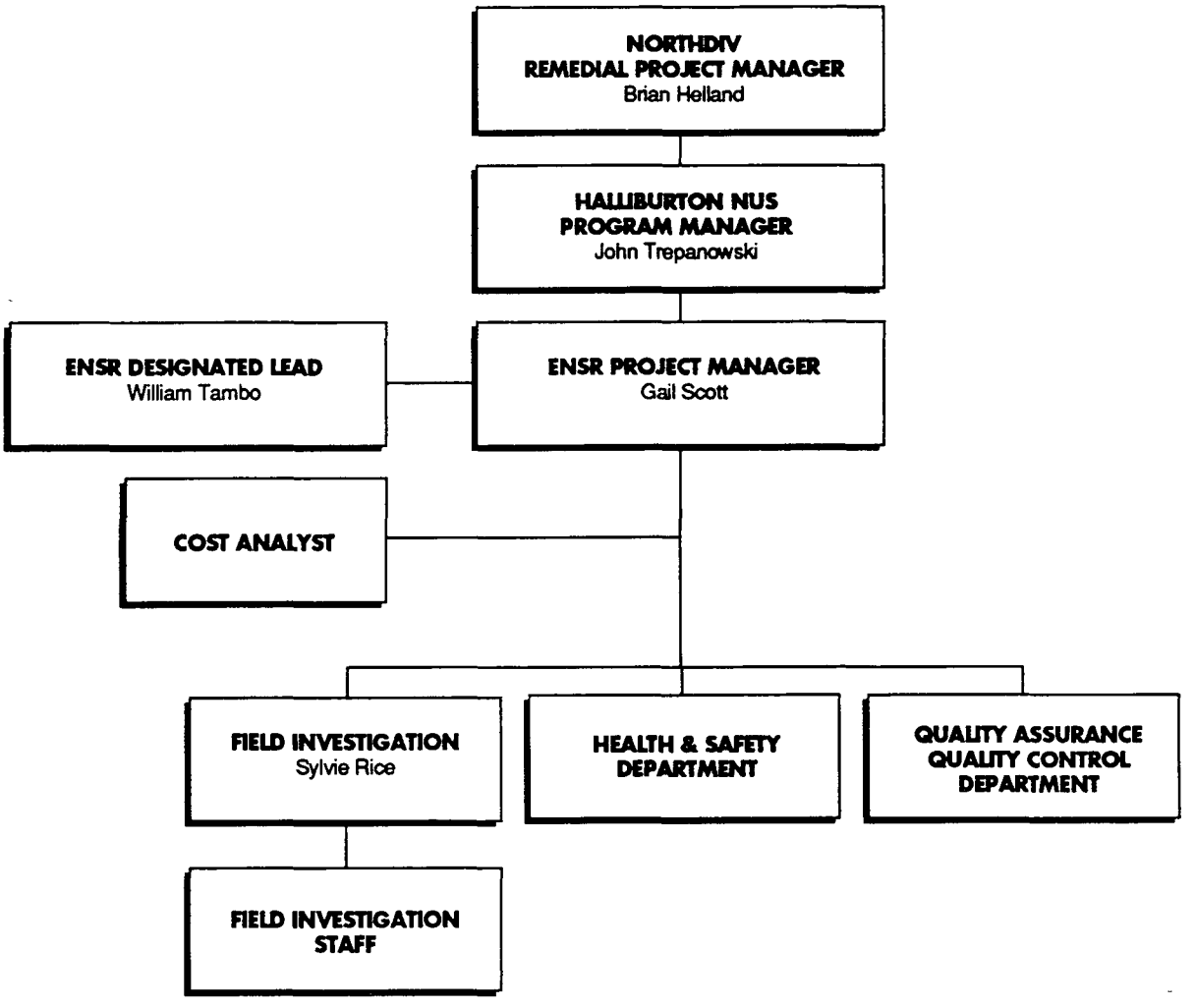


FIGURE 2-1

HALLIBURTON NUS Project Organization Chart

M920058

3.0 SCOPE OF WORK

3.1 OVERVIEW

The scope of work proposed herein for preparing a Work Plan and then implementing the Field Work at Wayside area of NWS Earle is in response to the Statement of Work - "Field Work for Environmental Evaluation of 'Wayside', Naval Weapons Station Earle, Colts Neck, New Jersey" dated 18 November, 1991.

3.2 PROPOSED SCOPE OF WORK

The scope of work for this project consists of two major tasks: (1) Preparation of a Field Investigation Work Plan and (2) Implementation of the Field Work. This latter task consists of Task 2.1, Implementation of the Sampling Program, and Task 2.2, Preparation of a Report on the Results of the Field Work.

3.2.1 Task 1 - Preparation of Field Investigation Work Plan

A work plan will be prepared for the field investigation program based on the detailed recommendations included in the Environmental Evaluation for 'Wayside' prepared by ENSR as part of the HALLIBURTON NUS Team (November 7th report). This effort will include preparation of a draft work plan document for submission to the Navy. The draft work plan will be submitted on 7 February, 1992, in accordance with the time frame specified in the CTO. This assumes that a Notice to Proceed will be received by 17 January. Comments will be received from the Navy on 21 February, 1992. The final work plan will be prepared based on written comments from the Navy. Because of the detailed recommendations available in the November 7th report it is assumed that comments will be minor. The final work plan will be submitted 28 February, 1992.

The work plan will be organized generally as shown in Table 3-1 and will include the elements identified below:

- A statement of objectives of the field investigations and a summary of findings from the November 7th report.
- A projected work schedule identifying tasks and subtasks and schedule for completion.
- A list of project deliverables.
- A compilation of available information for the soils, geology, hydrogeology, past operations, stored materials and suspected contamination (based on the November 7th report and information collected as part of the environmental evaluation).

TABLE 3-1

Work Plan Outline

SECTION

1.0 INTRODUCTION
- 1.1 BACKGROUND
- 1.2 PROJECT DESCRIPTION

2.0 SITE MANAGEMENT PLAN
- 2.1 SITE CONTROL
- 2.2 PROJECT ORGANIZATION AND RESPONSIBILITIES
- 2.3 SCHEDULE AND DELIVERABLES

3.0 FIELD SAMPLING PLAN
- 3.1 SITE BACKGROUND
- 3.2 SAMPLING OBJECTIVES
- 3.3 SAMPLE LOCATION AND FREQUENCY
- 3.4 SAMPLE DESIGNATION SYSTEM
- 3.5 SAMPLING EQUIPMENT AND PROCEDURES
- 3.6 SAMPLE HANDLING AND ANALYSIS

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- 4.1 PROJECT DESCRIPTION
- 4.2 PROJECT ORGANIZATION AND RESPONSIBILITY
- 4.3 QUALITY ASSURANCE OBJECTIVES
- 4.4 SAMPLING PROCEDURES
- 4.5 SAMPLE CUSTODY
- 4.6 CALIBRATION PROCEDURES
- 4.7 ANALYTICAL PROCEDURES
- 4.8 DATA REDUCTION, VALIDATION, AND REPORTING
- 4.9 INTERNAL QUALITY CONTROL
- 4.10 PERFORMANCE AND SYSTEM AUDITS
- 4.11 PREVENTATIVE MAINTENANCE
- 4.12 DATA ASSESSMENT PROCEDURES
- 4.13 CORRECTIVE ACTION
- 4.14 QUALITY ASSURANCE REPORTS/DOCUMENTS

APPENDICES
- A ACRONYMS AND ABBREVIATIONS
- B HEALTH AND SAFETY PLAN
- C HALLIBURTON NUS STANDARD OPERATING PROCEDURES

- A site map showing known existing conditions plus proposed sampling locations at Wayside. The map will be compiled from existing maps in the November 7th report. No topographic site survey is proposed to be conducted as part of this task.
- A site specific narrative detailing the sampling and analysis proposed for the identified sampling sites. This section will describe the rationale for the proposed sampling activities as well as standard sampling procedures for the sampling. The analytical methods and requirements for preservatives, holding times and sampling containers will be included. Sampling locations and sample type and number will be as identified in the recommendations of the November 7th report. The sampling procedures will conform to NJDEP and USEPA requirements. USEPA requirements will be given precedence if there is a conflict between the two.
- An organizational chart for the HALLIBURTON NUS Team to implement the field investigations - including titles and telephone numbers.
- A site specific Quality Assurance/Quality Control (QA/QC) Plan prepared by the HALLIBURTON NUS Team and submitted to the Navy for approval. This QA/QC Plan will be prepared specifically for the activities intended to be conducted at EWS Earle. The Plan will cover not only field sampling to be conducted on-site but also laboratory procedures. A Navy approved laboratory contracted under a Basic Ordering Agreement with the HALLIBURTON NUS Team will be used for all analyses. The QA/QC Plan will specify that all data be retained in the event that data validation is required at some future date. Data validation is not included in this scope.
- A site specific Health and Safety Plan (HASP) for the field investigations to be conducted at NWS Earle.

It should be noted that no borings or monitoring wells are called for in the November 7th report and none are planned to be included in this work plan.

3.2.2 Task 2 - Implementation of the Field Work

Task 2.1 Implementation of the Sampling Program

Field Work will be undertaken for the areas shown on Figure 3-1 and in Table 3-2 in accordance with the final work plan prepared in Task 1. No additional areas are proposed to be included in this field work effort. The sampling activities will be carried out as shown in Table 3-3. The field effort is assumed to require: a field crew of five (5) including the geophysicist for three (3) ten-hour days and a field crew of four (4) for two ten-hour days, plus the task leader for five (5) ten-hour field days, and the project manager one day. The site and the number of samples to be

TABLE 3-2

Areas for Additional Investigation
Wayside Area NWS Earle

Structure/Area	Recommendations for Sampling/Remediation
CECOM-EMI Building	Sample septic system for VOCs. Army to remove underground storage tank and sample soil beneath tank for petroleum hydrocarbons.
Group of Buildings near former building R (M, N, O, Q, R)	Sample septic system for VOCs. Army to remove underground storage tank and sample soil beneath tank for petroleum hydrocarbons at building N. Install monitoring wells and sample groundwater for petroleum hydrocarbons in vicinity of former underground tank at building R.
Pistol Range	Sample soil for lead.
Potential waste disposal area southwest of Pistol Range	Conduct geophysical investigations and trenching to evaluate the presence or absence of buried materials.
Cleared area in southeastern corner of Wayside Area	Conduct geophysical investigations and trenching to evaluate the presence or absence of buried materials.
Buildings G, D, Z, B5, C4, and C5	Sample insulation materials for asbestos.
Observation towers B2 and B7	Sample stained areas at base of posts for creosote.
Buildings A through D, A1, A2, F, G, M, O. S. Y, and Z	Collect paint chip samples for lead analysis.
Two above ground tanks	Sample soil beneath tanks for petroleum hydrocarbons, VOCs, and metals.
Empty transformer pads WA-007, WA-008, WA-015, WA-016 and WA-045	Sample soil for PCBs.

VOCs - Volatile Organic Compounds

TABLE 3-3

Sampling Activities
Wayside Area NWS Earle

Location	Sampling Equipment	Sample Type	Maximum Number of Samples	Analyses[1]	EPA Method
Septic tank near CECOM-EMI Building	Backhoe to locate septic tank Backhoe or hand auger	Water Sludge Soil samples (6-8', 10-12')	2 2 6	TCL/TAL	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals
Septic tank near former Building R	Backhoe to locate septic tank Backhoe or hand auger	Water Sludge Soil samples (6-8', 10-12')	2 2 6	TCL/TAL	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals
Pistol Range	Hand Auger	Surface soil and bullets (0-1') Subsurface soil (2-4')	2 2 6	TAL metals TCLP metals TAL metals	CLP SOW Methodology (App C; 3/90 rev.)
Potential waste disposal area southwest of pistol range	Magnetometer EM-31 Backhoe	Soil samples/waste material (if waste material is found)	5	TCL/TAL	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals
Cleared area in southwestern corner of Wayside area	Magnetometer EM-31 Backhoe	Soil samples/waste material (if waste material is found)	5	TCL/TAL	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals
Buildings B5, C4, C5, D, G and Z		Insulation material	6	Asbestos	Approved NIOSH methods
Observation towers B2 and B7	Shovel or trowel	Composite surface soil samples	2	TCL SVOCs TPH	CLP SOW (App C; 3/90 rev.) SVOCs; TPH (418.1)
Buildings A, A1, A2, B, C, D, F, G, M, O, S, Y, and Z		Lead Paint Chips	13	Lead	CLP SOW Methodology (App C; 3/90 rev.)
Empty transformer pads WA-007, WA-008, WA-015, WA-016 and WA-045	Shovel or trowel	Composite surface soil samples (0-1')	5	PCBs	CLP SOW (App C; 3/90 rev.) PCBs

TABLE 3-3 (Continued)

Location	Sampling Equipment	Sample Type	Maximum Number of Samples	Analyses[1]	EPA Method
Two above ground storage tanks	Shove, trowel and/or hand auger	Composite surface soil samples (0-1') Subsurface soil sample (2-4')	2 2	TPH, TAL Metals TPH, TCL, VOCs, TAL Metals	CLP COW (App C; 3/90 rev.) VOCs, Metals, TPH (418.1)
Background soil samples	Shovel, trowel and/or hand auger	Surface soil grab samples	2	TCL/TAL	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals
QA/QC Samples[2]		Duplicates Equipment blanks Field blanks Trip blanks	1/10/media/anal. 1/day 1/source/event 1/cooler	TCL/TAL TPH Asbestos	CLP SOW (App C; 3/90 rev.) VOCs, SVOCs, Pest/PCBs, Metals, TPH (418.1); NIOSH methods (asbestos)

[1]TCL/TAL includes TCL organics (VOCs, SVOCs, Pesticides/PCBs) and TAL inorganics and cyanide (March 1990).
[2]QA/QC assumes Level D QC.

taken are very large. Based on experience with sampling programs of this magnitude crews of 2 will be required at each sampling location for safety and because of the distances and large amount of paper work involved with many of the sample types. Two crews are proposed in order to complete the actual sampling in a one week period. Level D Personal Protection will be provided.

Disposable sampling equipment will be used whenever possible. It is assumed that the subcontractor's backhoe and all other sampling equipment will be decontaminated prior to arrival on site. Since hazardous waste is not expected to be encountered, the backhoe will not be steam cleaned between sampling areas. If such waste is encountered, provisions for steam cleaning between areas and appropriate sampling and disposal of decontamination materials will need to be made. This will be considered a scope change.

It is assumed that a decontamination area will be available at NWS Earle for decontaminating non-disposable sampling equipment at the end of each day.

It is assumed that the personal protection equipment will be disposed of at NWS Earle as non-hazardous waste.

No topographic survey will be carried out as part of this task. Field measurements required to prepare the site maps will be made using tape measures.

It has been assumed that the test pits will be subcontracted by HALLIBURTON NUS. Contractor bid specifications will be prepared by ENSR.

Task 2.2 Preparation of a Report on the Results of the Field Work

An interim report on the results of the field sampling program will be prepared for submission to the Navy. The interim report is estimated to be submitted on May 8, 1992. Comments will be received from the Navy on June 5, 1992. The final report will be prepared based on written comments from the Navy personnel, will be submitted on June 19, 1992. The report will include:

- Sampling methodology used.
- Deviations from the work plan, if any.
- Site drawings showing sampling locations and delineation of contamination. Utilities will be indicated based on data from the November 7th report. The data for preparation of geologic profiles and fence diagrams will not be collected as part of this sampling effort.
- Sampling results compared and evaluated with respect to established local, state and federal regulatory standards.

- Quantification and determination of extent of residual soil contamination, if possible, and identification of additional field investigation required for design of remediation measures.

Included with the above tasks are hours associated with the project management. The project manager assigned to this project will oversee technical and administrative aspects related to the field investigative activities and deliverables preparation. Adherence to the project schedule by accelerating or overlapping of tasks and subtasks, as necessary, and coordinating ENSR resources and subcontracted services for smooth, efficient operations is of primary importance. The project manager will continuously interface with ENSR/HALLIBURTON NUS program managers and contracts officers in order to maintain a current status of the project budget, milestones for deliverables submissions, and CLEAN Program issues that impact the performance and completion of the project.

4.0 ESTIMATED BUDGET

The estimated project costs for the HALLIBURTON NUS Team to conduct the defined Tasks 1 and 2 are outlined on Tables 4-1 through 4-5.

The subject budget assumes that all task work will be completed within the project schedule presented in Section 5.0 and will meet the key milestones for submission of deliverables to the Navy established by the CTO. This budget may need to be revised or expanded based on the review of existing information, findings during the field activities and/or additional requirements by the Navy or regulatory agencies. Any extended review of deliverables by the Navy or regulatory agencies would likely cause the proposed schedule and estimated costs to be exceeded.

It should be noted that preliminary Draft and preliminary Final copies of the Work Plan will be submitted to HALLIBURTON NUS for review and comment prior to submission of the Draft and Final Work Plan to the Navy for similar reviews and comments. It is assumed that only one round of revisions will undertaken for each of these four submittals.

A similar assumption is made for the reviews and revisions of the Report on the Results of the Field Work.

Labor rates used for this estimate are the Base Hourly Rates specified in the CLEAN contract. Actual hourly salaries of HALLIBURTON NUS Team staff may vary from these rates but will remain within the not-to-exceed rates specified in the Contract unless prior written consent of the Navy is obtained. Overhead, G&A and fixed fee are those specified in the Contract.

CONTRACT PRICING PROPOSAL COVER SHEET

1. Solicitation/Contract/Modification No.: N62472-90-D-1298

FORM APPROVED OMS NO.9000-0013

NOTE: This form is used in contract actions if submission of cost or pricing data is required. (See FAR 15.804-6(b))

2. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)

HALLIBURTON NUS Environmental Corporation
910 Clopper Road
Gaithersburg, MD 20777

3A. Name and Title of Offeror's Point of Contact
Patricia A. Patton
Senior Contract Specialist

3B. Telephone No.
(301) 258-8644

4. Type of Contract Action (Check)

	A. New Contract		D. Letter
	B. Change Order		E. Unpriced Order
	C. Price Revision/ Redetermination	X	F. Other (Specify) Task Order Proposal

5. Type of Contract (Check)
[ ] FFP [ ] CPFF [ ] CPIF [X] CPAF
[ ] FPI [ ] OTHER

6. Proposed Cost (A+B=C)

A. Cost	B. Profit/Fee	C. Total

7. Place(s) and Period(s) of Performance
Site: Naval Weapon Station Earle, Colts Neck, NJ

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer. (Continue on reverse)

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. REF.
	Environmental Evaluation of the Wayside' Area; NWS Earle, Colts Neck, NJ CTO No. 37	1	$184,312	See att.

9. PROVIDE NAME, ADDRESS AND TELEPHONE NUMBER FOR THE FOLLOWING (If available)

A. Contract Administration Office
DCMAO, Baltimore (301) 339-4962
200 Towsontown Blvd. West
Towson, MD 21204-5299
ATTN: John Novotny

B. Audit Office
DCAA, Dorothy Awosika, (301) 427-5544
Silver Spring Branch Office, Metro Plaza II
8403 Colesville Road, Suite 620
Silver Spring, MD 20910-3312

10. Will you require the use of any Government Property in the performance of this work? (If "Yes," identify.)
[ ] Yes [X] No

11. Do you require Government Contract Financing to perform this proposed contract? (If "Yes," complete Item 11B)
[ ] Yes [X] No

11B. Type of Financing (check one)
[ ] Advance Payments [ ] Progress Payments
[ ] Guaranteed Loans

12. Have you been awarded any contracts or subcontracts for the same or similar items within the past 3 years? (If "Yes," identify item(s), customer(s) and contract No.)
[ ] Yes [X] No

13. Is this proposal consistent with your established estimating and accounting practices and procedures and FAR Part 31 Cost Principles? (If "No," explain)
[X] Yes [ ] No
See Attached

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA (Public Law 91-379 as amended and FAR Part 30)

A. Will this contract action be subjecct to CASB regulations? (If "No," explain in proposal)
[X] Yes [ ] No

B. Have you submitted a CASB Disclosure Statement (CASB DS-1 or 2)? (If "Yes," specify in proposal the office to which submitted and if determined to be adequate)
[X] Yes [ ] No EPA, Washington D.C. 4/5/90 Revised 10/18/91

C. Have you been notified that you are of may be in noncompliance with your disclosure statement of cost accounting standards? (If "Yes," explain in proposal)
[X] Yes [ ] No
See attached

D. Is any aspect of this prposal incosistent with your disclosed practices or applicable cost accounting standards? (If "Yes," explain in proposal)
[ ] Yes [X] No

This proposal is submitted in response to the RFP, contract modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date and conforms with the instructions in FAR 15.804-6(b) (2), Table 15-2. By submitting this proposal, the offeror, if selected for negotiation, grants the contracting officer or an authorized representative the right to examine, at any time before award, those books, records, documents and other types of factual information regardless of form or whether such supporting information is specifically referenced or included in the proposal as the basis for pricing, that will permit an adequate evaluation of the proposed price.

15. Name and Title (Type)
Patricia A. Patton, Sr. Contract Specialist

16. Name of Firm
HALLIBURTON NUS Environmental Corporation

17. Signature Patricia A. Patton

18. Date of submission
January 10, 1991

DATE: 10 January 1992
FIRM: HALLIBURTON NUS
CONTRACT: N62472-90-D-1298 CTO# 037
LOCATION: Wayside Area, NWS Earle, Colts Neck, New Jersey
TITLE: Environmental Evaluation CTO #37

RATES:	
P4	29.88
P3	21.53
P2	17.62
P1	13.39
T2	12.67
ADM	10.80
OVH	115.00%
G&A	8.70%
FEE	10.00%
FEE	5.00%

HALLIBURTON NUS COST SUMMARY

ELEMENT OF COST

	GEO	CHM	H&S			COST
DIRECT LABOR	P3	P3	P2	ADM	TOTAL	
Task 1.A--Draft WP	3	3	3	2	11	
Task 1.B--Final WP	2	2	1	2	7	
Task 2.1A--Specs	2	2		2	6	
Task 2.2A--Drt Rpt	8	6		2	16	
Task 2.2B--Fnl Rpt	2	2		2	6	
Subtotal	17	15	4	10	46	
Rate	21.53	21.53	17.62	10.80		
Cost	366	323	70	108	867	867

OVERHEAD at 115%	998
SUBTOTAL	1,865

OTHER DIRECT COSTS

	1A	1B	2.1A	2.2A	2.2B	Total	
Phone @ $6/call	18	18	12	18	12	78	
Repro @ $.07/pg	35	35	7	28	28	133	
Mail @ $4/pck	16	16	8	16	16	72	
CADD/WP@ $10/hr	30	20	10	30	20	110	
Subtotal	99	89	37	92	76	393	393

SUBTOTAL OF DL, OVH, and ODCs	2,258
G&A at 8.7%	196
SUBTOTAL	2,454
FEE at 10% (excludes travel)	245
TOTAL HALLIBURTON NUS COST AND FEE	2,700

SUBCONTRACTOR COSTS

ENSR CONSULTING	71,172
ANALYTICAL ESTIMATE	81,117
EXCAVATION ESTIMATE	7,100
SUBTOTAL	159,389
G&A ON SUBCONTRACTORS AT 8.7%	13,867
SUBTOTAL	173,256
FEE AT 5% (NOT TAKEN ON TRAVEL)	8,356
TOTAL COST AND FEE ASSOCIATED WITH SUBS	181,612
TOTAL COMBINED PROJECT COST AND FEE	184,312

TABLE 4-1
SUMMARY OF COSTS

DATE:	8 JANUARY 1992	RATES:	
FIRM:	HALLIBURTON NUS	P4	45.90
CONTRACT:	N62472-90-D-1298	P3	27.25
LOCATION:	COLTS NECK, NJ	P2	18.16
		P1	10.38
TITLE:	NWS EARLE	T2	0.00
		ADM	0.00
		OVH	111.00%
		G&A	18.00%
		FEE	8.00%

PROJECT COST SUMMARY

ELEMENT OF COST	COST
DIRECT LABOR	19,062
OVERHEAD at 111 %	21,159
SUBTOTAL	40,221
OTHER DIRECT COSTS	
TRAVEL	6,129
ALL OTHER ODCs *	9,882
SUBTOTAL	16,011
DIR. LABOR, OVERHEAD, AND ODCs	56,232
G&A AT 18 %	10,122
SUBTOTAL OF ALL COSTS	66,354
SUBTOTAL OF ALL COSTS (EXCEPT TRAVEL)	60,225
FEE AT 8 % OF COSTS (EXCEPT TRAVEL)	4,818
TOTAL ENSR ESTIMATED COST AND FEE	71,172
TOTAL ESTIMATED PROJECT COST	71,172

TABLE 4-2

SUMMARY OF DIRECT LABOR

RATES:	P4:	$45.90	P1:	$10.38
	P3:	$27.25	T2:	$0.00
	P2:	$18.16	ADM:	$0.00

LABOR CATEGORY	RATE	HOURS	COST
DESIGNATED LEAD (P4)	45.90	8	367
PROJECT MANAGER (P4) *	27.25	76	2,071
CONTRACTS MANAGER (P3)	27.25	6	164
TASK LEAD (P3)	27.25	240	6,540
QA/QC STAFF (P2)	18.16	21	381
HEALTH & SAFETY (P2)	18.16	73	1,326
GEOPHYSICS STAFF (P2)	18.16	98	1,780
SAMPLER (P2)	18.16	110	1,998
TASK STAFF (P1)	10.38	204	2,118
PUBS (P2)	18.16	30	545
PUBS (P1)	10.38	30	311
CADD STAFF (P2)	18.16	67	1,217
COST ANALYST (P1)	10.38	12	125
SECRETARIAL (P1)	10.38	8	83
TOTAL:		983	19,024
ESCALATION ON DIRECT LABOR: (2.00%) **			38
TOTAL DIRECT LABOR			19,062

P-LEVEL SUMMARY	
STAFF	HOURS
P4	84
P3	246
P2	399
P1	254
TOTAL	983

* PROJECT MANAGER IS TECHNICALLY QUALIFIED AS A P4
BUT WILL BE BILLED AS A P3 FOR THIS PROJECT

**BASED ON AN EIGHT PERCENT (8%) ANNUAL SALARY INCREASE
PROVISION DURATION OF WORK APPROXIMATELY FOUR (4) MONTHS

TABLE 4-3

	TASK/SUBTASK	DES LEAD P4	PROJ MGR P3	CONT MGR P3	TASK LEAD P3	QA/QC P2	H & S P2	GEOPH P2	SAMP P2	SAMP P1	PUBS P2	PUBS P1	CADD P2	COST ANALYST P1	SECR. P1	TOTA LABO
1.0																
	A. draft workplan subtotal	1	14	2	32	16	20	8	32		8	8	16	3	2	162
	Site Mgt Plan		2		4				4							10
	Field samp. Plan		3		20			8	28				12			71
	QA/QC		2		2	16										20
	Health & Safety Plan		2		2		20									24
	Review & Publication	1	5	2	4						8	8	4	3	2	37
	B. final workplan	1	8		8	1	1	4			2	2	1		1	29
2.1	A. field prep/bid specs		2	2	16	4	2	4	12	2					2	46
	B. geophysics/sample collecti	2	20	2	54		50	42	58	132				3		363
2.2	A. draft report subtotal	2	20		100			40		60	12	12	40	3	2	291
	Methodology		3		28			10		10						51
	Site Drawings		3					15		10			30			58
	Sampling Evaluation		3		40			15		40						98
	ID Contamination		4		28											32
	Review & Publication	2	7		4						12	12	10	3	2	52
	B. final report	2	12		30				8	10	8	8	10	3	1	92
	TOTAL:	8	76	6	240	21	73	98	110	204	30	30	67	12	8	983

5 days in field + travel time; 10 hour field days)
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TABLE 4-3a

Expenses Breakout
Task 2 Field SI Activities
Health & Safety Equipment

Health & Safety Equipment	Quantity	Unit Rate/ Unit Price	Total
HNu (rental)	1	$175/wk (1)	$175.00
Tyvek®	100	$78/case of 25	$312.00
Chemical Resistant Boots	6 (pr.)	$17/pair	$102.00
Nitrile Gloves	60 (pr.)	$1/pair	$60.00
Latex Gloves	4 (boxes)	$7/box	$28.00
Hearing Protection	1 (box)	$34/box	$34.00
MSA Respirator Cartridges (GMP)	2 (boxes)	$28.35	$56.00
Respiratory Wipe Pads	1 (container)	$14.25/container	$15.00
Anti-Bacterial Wipes	1 (container)	$9/container	$9.00
Anti-Bacterial Eyewash Station	1 (container)	$5/container	$5.00
Miscellaneous (tape, towels, decon. buckets, soap, brushes, etc.)	-	-	$200.00
			Total: $996.00

TABLE 4-3b

Expenses Breakout
Task 2 Field SI Activities
Sample Collection Equipment

Sampling Equipment	Quantity	Unit Price ($)	Total
D.I. Water	10 gal	2.00/gal	$20.00
Carboys (rental)	1	5.00/ea	$5.00
Assorted tools (rental)	1 set	50.00/wk	$50.00
Disposable scoops	20	2.00/ea/wk	$40.00
3 mil poly tarp	1 roll	100.00/ea	$100.00
Duct tape	20 rolls	5.00/ea	$100.00
Liquinox	1 bottle	10.00/ea	$10.00
Methanol	1/2 case	60.00/cs	$30.00
Pressure sprayer (rental)	3	9.00/wk	$27.00
Buckets	3	10.00/ea	$30.00
Brushes	3	5.00/ea	$15.00
Squirt bottles (rental)	9	2.00/ea/wk	$18.00
Kimwipes	6 boxes	5.00/bx	$30.00
Bucket auger (rental)	2	5.00/ea/wk	$10.00
Power auger (rental)	1	70.00/wk	$70.00
Trash bags	4 boxes	4.00/box	$16.00
Calibration gas	1 cyl	65.00/cyl	$65.00
Magnetometer	3	100.00/day	$300.00
EM31	1	300.00/week	$300.00
Wooden Stakes	250	1.00/ea	$250.00
Portable Phone	2	25.00/week	$25.00
Walkie Talkies	2	$30.00/week	$60.00
TOTAL COST ESTIMATE - $1571			

TABLE 4-4

SUMMARY OF OTHER DIRECT COSTS

TASK	COST	
1.0 WORK PLAN AND MILESTONES:		
TRAVEL	0.00	
PHONE/FAX	37.50	25 15 min calls @ .10
MAIL	300.00	2 sets 6 mailings@$25
REPRODUCTION	170.00	34copies 100pages ea @.05
WORD PROCESSING	300.00	20hr @ $15
EXPENSES	40.00	
SUBTOTAL TASK 1	847.50	
2.0 FIELD WORK AND REPORT:		
TRAVEL		
Transportation		
Airfare to Newark	2500.00	5 pers @ $500 roundtrip
ENSR Van	425.00	5 days @ 85/day
Cars	600.00	2 for 5 days, 1 for 2 days @ $50
Per Diem	952.00	(5p*5d)+(1p*2d)+(1p*1d) @$34
Hotel	1652.00	(5p*5d)+(1p*2d)+(1p*1d) @ $59
COMPUTER	1500.00	100 hr @ $15
Geophysical Interp.	1000.00	rental of ISM color graphics
Computer use	525.00	35 hrs @ $15
PHONE/FAX	108.00	50 15 min calls @ .10/min
		+ 10cell calls @ 15 min @.22/min
MAIL	750.00	35.34/25lbs
Coolers	500.00	2per day @$50
Geophysical Equip	400.00	
Reports	300.00	2 sets 6 mailings@$25
REPRODUCTION	975.00	39 copies 500pages ea @.05
WORD PROCESSING	360.00	24 hr@ $15
EXPENSES		
Health & safety Equip	996.00	
Sample Collection Equip	1571.00	
Misc	50.00	
SUBTOTAL TASK 2	15164.00	
SUBTOTAL TRAVEL TASKS 1&2	6129.00	
SUBTOTAL OTHER ODC TASKS 1&2	9882.50	
PAGE SUBTOTAL	$16,011.50	

TABLE 4-5a

Engineering Estimate
Task 2 Subcontractor Analytical Costs

Parameters & Tests	Number of Field Samples	QA/QC[1] Samples	Unit Cost	Total Cost
Solids: Surface Soil & Subsurface Soil				
VOC-CLP VOA	34	15	$330.00	16,170.00
SVOC-CLP BNA	34	10	$540.00	23,760.00
Pesticides-CLP Pest/PCB	37	11	350.00	15,600.00
TAL Metals - CLP Metals	42	11	400.00	21,200.00
TCLP - Metals	2	1	540.00	1,620.00
TPH - GC/FID	6	2	200.00	1,600.00
Asbestos	6	2	24.00	192.00
Lead	13	2	65.00	975.00
			Total Analytical Cost:	$81,117

[1]Conforms with Section 9.0 of the QCMP

VOC - Volatile Organic Compounds
CLP VOA - Contract Laboratory Program Volatile Organic Analysis
SVOC - Semivolatile Organic Compounds
CLP BNA - Contract Laboratory Program Base/Neutral/Acid Extractable Compounds
Pest/PCB - Pesticides/Polychlorinated Biphenyls
TAL Metals - CLP - Target Analyte List Metals
TPH - Total Petroleum Hydrocarbons

TABLE 4-5b

Engineering Estimate
Task 2 Subcontractor Test Pit Excavation

Item	Unit Cost	No. of Units	Total Cost
Mobilization/Demob.	$500.00 ea.	1	$500.00
Day Rate	$1200.00/day	5 days	$6,000.00
Steam Cleaning	$600.00 ea.	1	$600.00
			Total Excavation Cost = $7,100.00

5.0 PROJECT SCHEDULE

The proposed schedule for the preparation of the NWS for Earle is presented on a bar chart as Figure 5-1. The project activities are listed, and key time periods and deliverables are clearly identified.

The entire project for accomplishing the tasks presented in Section 3.0 will take a total of 18 weeks, based upon the schedule established by the Navy and assuming contract award by January 17, 1992. Two important assumptions to maintaining this proposed schedule and utilizing the proposed budget established in Section 4.0 are (1) that the Navy and regulatory agencies will review and comment on submittals in a timely manner and (2) that severe weather is not encountered during the actual field investigations which are scheduled to begin in early March. It should be noted that the project schedule includes submission to HALLIBURTON NUS of all deliverables for review and comment prior to submission to the Navy for similar reviews and comments.

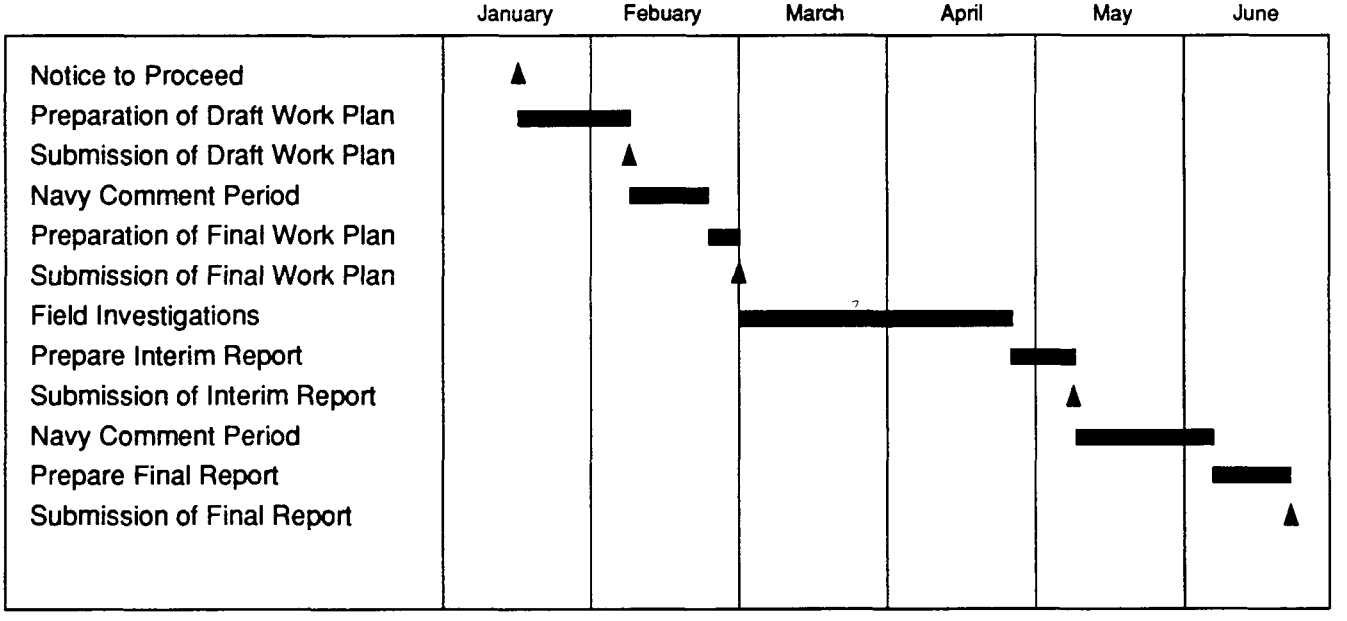

FIGURE 5-1

HALLIBURTON NUS Project Schedule

APPENDIX A

RESUMES

GAIL E. SCOTT, P.E.

PROFESSIONAL HISTORY

Howard Needles Tammen & Bergendoff
US Environmental Protection Agency - Region I
Metcalf & Eddy, Inc.

EDUCATION

MUA (Urban Affairs) Boston University
B.S. (Civil Engineering) Tufts University

PROFESSIONAL REGISTRATIONS & AFFILIATIONS

Registered Professional Engineer (P.E.) - MA, ME
American Institute of Certified Planners (AICP)
American Society of Civil Engineers (ASCE)

TECHNICAL SPECIALTIES

Ms. Scott has 22 years of experience in:

- Project Management
- Land Use Planning
- Transportation Planning
- Environmental Impact Assessment/Permits

REPRESENTATIVE PROJECT EXPERIENCE

Transportation Planning

- Massachusetts Bay Transportation Authority - South Station Transportation Center. Served as Planning Project Manager for all planning and environmental permitting activities. Reported directly to Engineering Project Manager. Coordinated staff and subcontractor activities for pedestrian capacity and impact studies, air quality impact studies, and urban and transportation planning studies for a major multimodel facility combining rail, bus and subway service. The major issues involved disposition of diesel exhaust from the covered train shed. Estimated construction cost for full build option is $160 million.

- Boston Redevelopment Authority - South Station Transportation Center. Preparation of a traffic distribution analysis and intersection capacity analysis for impacts of alternative parking garage sizes as part of a pre FRA Environmental Impact Statement for the South Station Transportation Center.

- Town of Greenfield, Massachusetts - Crosstown Connector Road. Conducted speed delay study for use in design of a crosstown connector road in Greenfield, Massachusetts.

- Massachusetts Bay Transportation Authority - Southwest Corridor Project. Assisted with public participation activities for this $200 million new urban mass transportation project. Coordinated communications between City of Boston Health Officials and design engineers during development of specifications for demolition of the 100 year old elevated orange line structure. Principal issue was lead paint.

Planning

- National Oceanographic & Atmospheric Administration - NEXRAD Radar Siting Study. Coordinated scoping and developed initial data collection plan for architectural and engineering aspects of a site selection study for 200 weather radar sites throughout continental United States.

- New Jersey Department of Transportation - Watchung Reservation Master Plan. Managed preparation of a Master Plan for Union County, New Jersey's 2000-acre Watchung Reservation to provide replacement lands for portions of the park lost to a new interstate highway. Tasks included inventory and analysis of recreation needs and site selection studies.

- Town of Plymouth, Massachusetts - Growth Management Plan. Served as principal planner. Developed a land use plan for Plymouth, Massachusetts, based on demand, land supply, land suitability and public facilities analyses. Development of the plan was guided by a formal statement of town goals and a need to provide legally defensible background for a formal growth management system. Work included presentation of plan and implementation measures at Town Meeting. Both the plan and supporting capital improvements program were adopted by the 100 member Town Meeting.

- City of San Antonio, Texas - Groundwater Resource Protection Plan. Carried out miscellaneous studies related to the evaluation of the effects of alternative development plans on the quality of the sole source Edwards Aquifer in several counties surrounding San Antonio, Texas identified drainage areas for a 1400 square mile study area. Potential sources of groundwater contamination from several types of land uses and researched potential preventive and remedial measures to mitigate contamination. Developed utility and roadway improvements necessary to support each development alternative and prepared preliminary cost estimates for use in determining fiscal impacts of each development alternative.

- Association of Oklahoma Governments - Regional Wastewater Management Plan. Served as task manager for demographic studies. Provided technical direction and assistance to staff of regional planning agency in Oklahoma City in preparing land use, population and employment projections for the four county region. This data was used as the basis of the 208 Management Plan.

- Manchester Airport Authority - Airport Master Plan. Prepared the airportwide land use element of a Master Planning effort to plan for a new terminal facility at Grenier Field in

Manchester, New Hampshire. The plan included significant elements of industrial land use as well as aviation uses.

Environmental Impact Assessment

- Chittenden County Circumferential Highway District. Served as Environmental Project Manager for environmental studies reporting directly to Engineering Project Manager for preparation of an Environmental Impact Statement for 16 miles of new highway near Burlington Vermont. Major issues included wetlands, active farmland, parkland, traffic and noise. Estimated construction cost of the proposed 4 lane roadway was $97 million.

- Massachusetts Turnpike Authority & Massachusetts Department of Public Works - Highway Improvement. Deputy project manager responsible for planning and environmental studies. Managed strategy and initial document preparation for a Draft Environmental Impact Statement for widening and relocation of Route 146 in Worcester, Massachusetts, and construction of an interchange between Route 146 and the Mass pike. Major issues included wetlands, hazardous waste, business and residential relocations and historic sites. Estimated construction cost is $100 million.

- Maine Department of Transportation - Industrial Access Road. Prepared Environmental Assessment for a 2 mile airport industrial park access road in Auburn, Maine. Major issues included noise and impacts to a paleoindian archaeological site.

- Massachusetts Bay Transportation Authority - Saugus River Bridge. Coordinated preparation of U.S. Coast Guard and Mass Wetlands permit applications for reconstruction of a railroad drawbridge across a coastal river in Saugus, Massachusetts. Major issues included national register documentation, alewife spawning and accommodation of lobstermen traffic during construction.

- Massachusetts Bay Transportation Authority - Draw 7 Railroad Bridge. Coordinated preparation of U.S. Coast Guard and Mass Wetlands permit applications for construction of a new high level railroad bridge across the Mystic River in Everett/Somerville Massachusetts. Major issues included toxicity of bottom sediment, alewife spawning maintenance of marine traffic and national register documentation of the existing draw bridge prior to demolition.

- Massachusetts Bay Transportation Authority - Draw 7 Park. Managed preparation of state and local permits for construction of a new passive recreation area along the Mystic River in Somerville, Massachusetts. Issues included wetlands, floodplains, and historic tidelands.

- Massachusetts Port Authority - Runway Safety Areas. Managed preparation of a Draft Environmental Impact Report for construction of inclined safety areas at 3 runway ends extending into Boston Harbor. Major issues included community concern and tradeoffs between runway length, safety area length and harbor intrusion.

- US Department of Agriculture - Human Nutrition Center. Carried out analysis of cumulative construction impacts from 8-9 major construction projects scheduled concurrently within a 4-5 block area. Study was part of an Environmental Impact Statement for construction of the Human Nutrition Center at Tufts New England Medical Center, Boston, Massachusetts.

- Massachusetts Bay Transportation Authority - Subway Station and Tunnel. Prepared an environmental issues report for cut and cover construction of a subway tunnel in Cambridge Street and renovation of the existing Charles Station.

- City of Plattsburgh, New York - Sewage Sludge Composting Facility. Prepared an Environmental Information Document and SEQRA Document for a sewage sludge composting facility in Plattsburgh, New York. Evaluated several types of composting processes within a very tight time schedule to the satisfaction of the New York DEC. Waste included a mixture of domestic and paper sludge. Major issues included water quality, air quality and odors. Assisted at public hearing presentation.

- Massachusetts Water Resources Authority - East Boston Pumping Station. Prepared an environmental information document for expansion and upgrading of the MWRA's 125 mgd sewage pumping station in East Boston, Massachusetts.

- Environmental Protection Agency - Environmental Review Manual. Prepared revision of EPA's Manual for Environmental Review under the 205(g) construction grants program to incorporate legislative and regulatory changes.

- Teledyne National Inc. - Southeast Mass Resource Recovery Facility. Prepared documentation for successful site assignment request for a resource recovery facility and ash disposal landfill in Rochester, Massachusetts. Issues included proximity to cranberry bogs, traffic, air quality and odors. Assisted at public hearing presentation.

- Industrial Client - Savannah, Georgia - Resource Recovery Facility. Prepared environmental information document and other permit applications for construction of a solid waste resource recovery facility near Savannah, Georgia. Major issues included air quality, traffic, wetlands and historic property impacts.

- City of Worcester, Massachusetts - Resource Recovery Facility. Preparation of an environmental issues report and public information brochure for a proposed resource recovery facility in Worcester, Massachusetts located adjacent to the user industry. Major issues included air quality, traffic and residential land use impacts.

- City of New York, New York - Owls Head Wastewater Treatment Plant. Conducted noise measurements and noise impact analysis as part of environmental impact documentation for upgrading 120 MGD Owls Head Wastewater Treatment Plant in Brooklyn, New York.

- Town of Plymouth, Massachusetts - Wastewater Collection System and Treatment Plan. Served as liaison between the town's engineers and environmental staff working for U.S. Environmental Protection Agency preparing an Environmental Impact Statement.

- Anne Arundel County, Maryland - Cox Creek Wastewater Treatment Plant. Prepared the Environmental Information Document for expansion of the Cox Creek WWTP. Analyzed environmental and socioeconomic impacts associated with three alternative process for phosphorous removal and three alternative methods for sludge treatment and disposal.

- South Essex Sewerage District - Sewer. Coordinated preparation of three wetland Notice of Intent and two Corps of Engineer permit applications and two Massachusetts Water Quality Certification applications for construction of a major relief sewer across the Bass River and Beverly Harbor, Beverly, Massachusetts.

- South Essex Sewerage District - Relief Sewer Tunnel. Coordinated preparation of a Traffic Management Plan for construction of a major relief sewer tunnel shaft within the intersection of three state highways in Beverly, Massachusetts. Work included traffic counts, selection of detour routes, analysis of traffic impacts on detour routes, and preparation of construction specification for implementation of the plan by the contractor.

- South Essex Sewerage District - Sewerage Force Main. Directed biological and socioeconomic studies supplementary to an EIS for one mile of 30 inch force main in Beverly, Massachusetts to resolve a controversy between citizens and regulatory agencies. As a result of the study, a compromise was achieved and the project was able to move forward. Major issues included impacts on tidal flats and narrow streets with large utility lines.

NPDES Permits

- Massachusetts Water Resources Authority - Waste Water Treatment Plant. Managed staff preparing NPDES and other permits for MWRA's secondary treatment plant at Deer Island in Winthrop, Massachusetts and for stormwater discharge at the former Fore River Ship Yard in Quincy, Massachusetts.

SYLVIE OLNEY RICE

PROFESSIONAL HISTORY

ENSR Consulting and Engineering
Alliance Technologies Corporation (formerly GCA)
U.S. Nuclear Regulatory Commission
Georgia Geologic Survey

EDUCATION

M.A. (Geology) Boston University
B.A. (Anthropology) Boston University

PROFESSIONAL REGISTRATIONS & AFFILIATIONS

National Water Well Association

TECHNICAL SPECIALTIES

Ms. Rice has 8 years of experience in:

- Hydrogeology and Geology
- Hazardous Waste Site Assessments
- Surface Water Investigations
- Risk Assessments
- Radioactive Waste Management

REPRESENTATIVE PROJECT EXPERIENCE

Hydrogeology and Geology

- Inactive Landfill Site - Remedial Investigation. Assistant project manager for a $1.8 million remedial investigation (RI) at a 12-acre landfill in New York which accepted municipal and industrial wastes from 1945 until 1968. Prepared the Project Operations Plan for the RI. Managed the field investigation components, including soil boring and monitoring well installations; test pit program; hydrologic testing; surface water and sediment sampling; groundwater sampling; radiologic sampling; deep soil vapor monitoring; air monitoring; and ecological study.

- Inactive Landfill - Site Investigation. Conducted a preliminary investigation, including soil boring and monitoring well installation, groundwater and surface water sampling, at a closed municipal landfill in southern New Hampshire. Developed the Phase II workplans for further investigation, based upon the initial sampling results which indicated the presence of hazardous chemicals. Oversaw the implementation of the Phase II investigation which included the installation of additional monitoring wells, test pits, groundwater and surface water sampling, and air sampling. The results of the investigation were used to develop

remedial alternatives and to determine the environmental and human health risks from contaminants at the site.

- Former Oil Refinery - Site Investigation. Conducted an assessment of an old oil refinery site in Everett, Massachusetts. Reviewed existing data and assisted in the development and implementation of a soils and groundwater sampling plan. Oversaw the installation of soil borings and monitoring wells at the site. Sampling data were used to characterize the nature and extent of contamination at the site. The results were then compared to other sites in the area.

- Proposed Landfill - Siting Study. Evaluated two limestone quarries in Oklahoma to determine their suitability for non-hazardous solid waste landfill development. The study included a detailed site reconnaissance and evaluation of site hydrology and hydrogeology using existing data and drilling two test holes in the quarry floor.

- Hazardous Waste Disposal Facilities - Groundwater Task Force. Member of the groundwater task force field team at three RCRA hazardous waste disposal facilities in Indiana, Illinois, and Ohio. Numerous groundwater samples were taken at each site under the strictest EPA RCRA sampling protocols. Samples were collected for analysis of all Appendix IX constituents. Those sampling projects were part of a nationwide study conducted by the U.S. EPA to determine overall compliance of RCRA facilities with federal regulations.

- State of Georgia - Proposed Landfill Site Evaluations . Evaluated proposed landfill sites in Georgia. Investigations included review and interpretation of existing hydrogeologic data, and soil boring and monitoring well installation. The results were used to determine the suitability of the proposed sites for solid waste disposal.

Site Assessments

- Timberlands Assessments - Eastern United States. Evaluated the potential for significant contamination problems on woodland properties ranging in size from 10 acres to 42,000 acres. Conducted and/or managed investigations of approximately 230 tracts located in South Carolina, Georgia, Tennessee, Kentucky, Virginia, West Virginia, and New Hampshire. These investigations included state and local file reviews, interviews with selected individuals and public officials, visual inspection of accessible portions of the property, and a review of aerial photographs to identify any areas of concern. These environmental due diligence studies were conducted in order to fulfill SARA's "innocent landowner" criterion, which provides a means by which a company's purchase of property could be judged to have been diligent with regard to the presence of hazardous substances.

- Real Estate Site Assessments. Conducted more than 25 site assessments in Massachusetts to determine the presence of or potential for releases of oil or hazardous materials pursuant to Massachusetts General Laws Chapter 21E superlien regulations.

- Flying J Refinery - Site Assessment. Conducted a preliminary assessment for a RCRA interim status facility in North Dakota. Assessment included a thorough review of all existing information, and interviews with federal and state agencies to identify solid waste management units and potential release pathways. The purpose of this assessment was to determine the need for further site investigations and to determine the compliance status with Federal RCRA requirements.

- Coors Brewery - Facility Assessment. Prepared a preliminary assessment of the Adolph Coors RCRA facility. This assessment consisted of a detailed review of all relevant federal and state files, including air permits, surface water discharge permits (NPDES), RCRA and CERCLA files. The results were summarized in a report and used to evaluate the facility's RCRA compliance status.

Surface Water Investigations

- Charles George Landfill Superfund Site - Wetlands Assessment. Project hydrogeologist on an interdisciplinary team for a detailed wetlands assessment of a site in Massachusetts. Conducted reconnaissance field investigations at the site, including wetlands identification, bedrock characterization, estimation of groundwater recharge/discharge relationships, and delineation of leachate migration in surface waters. The field investigations were combined with review of available information from previous groundwater investigations to define groundwater/surface water migration pathways and to determine impacts to surrounding wetlands and other receptors of contaminants migrating from a hazardous waste landfill.

- Georgia Geologic Survey - Flood Plain Management. Provided technical advice to the Flood Plain Management Unit of the Georgia Geologic Survey and assisted in the development and field testing of a method for determining flood elevations when no other flood information was available. Prepared a manual for public distribution that gave instructions on this method.

- Westwood, Massachusetts. Delineated the vegetative wetlands for the town Conservation Commission and prepared official wetlands maps to assist the town in formulating a wetlands protection district.

- South Municipal Water Supply Well Superfund Site - Wetland and Riverine Characterization. Conducted reconnaissance field investigation at this site in New Hampshire to identify wetland and riverine environments in the vicinity and to identify potential environmental pathways and the degree of exposure to contaminants. Used this information, combined with data on the ecotoxicity of the contaminants, to evaluate potential risks to the aquatic organisms found in the study area.

- City of Boston - Wastewater Sampling. Participated in a 1-month wastewater sampling project of the Boston sewer system. Took grab samples for volatile organics and oil and grease at specified substations. Also collected 24-hour composite samples for total metals, priority pollutants, BOD, and COD with ISCO samplers. Labeled all samples and completed chain-of-custody forms for each sample set. The purpose of this sampling project was to

provide engineers with pollutant data to assist them in designing the new sewage treatment plant.

- Confidential Client - Oil Spill Emergency Response. Provided oversight of emergency response and clean-up actions in a wetland in Lexington, Massachusetts which had been contaminated with No. 2 fuel oil. Remedial actions included the removal of oil-contaminated soils, characterization the extent of contamination of wetland sediments, and monitoring of long-term environmental impacts.

Risk Assessments

- Wells G&H Superfund Site - Endangerment Assessment. Project manager for an endangerment assessment conducted pursuant to the requirements of the National Contingency Plan and associated EPA guidance. Identified the extent of contamination, selected indicator compounds, identified exposure pathways, evaluated toxicity, and performed a quantitative risk assessment for a number of different exposure scenarios.

- Charles George Landfill Superfund Site - Wetlands Assessment. Hydrogeologist on an interdisciplinary team for a risk assessment conducted in conjunction with a detailed wetlands assessment at a site in Massachusetts. Characterized complex groundwater flow patterns in fractured bedrock to identify potential exposure pathways and potential receptor populations. Project manager for the production of the final report. Presented the results of the risk assessment at a public meeting in Tyngsboro, Massachusetts.

- Cold Creek/LeMoyne Superfund Sites - Endangerment Assessment. Project manager for an endangerment assessment which was conducted to assess the potential public health and environmental impacts from the contaminants found at this site in Alabama. Prepared the endangerment assessment according to EPA guidance. The results of this study were used in conjunction with other data to determine the effectiveness of different remedial alternatives at the site.

Radioactive Waste Management

- Confidential Client - Low-Level Radioactive Waste Removal. Assistant project manager for an investigation at an inactive landfill site where metallic materials had been discovered. An investigation of these piles revealed that the material consisted of low-level radioactive magnesium-thorium alloy. Developed workplans for a radioactive survey of the site. The materials were fully characterized prior to their removal and shipment to a licensed disposal facility in Utah.

- Nevada Test Site. Assistant project manager responsible for coordinating and integrating activities related to the disposal of high-level radioactive waste. Analyzed and assessed hydrogeologic information for proposed waste disposal sites in the unsaturated zone and in fractured volcanic rock, and coordinated major reviews of key documents covering numerous

technical disciplines. This information will be used to support licensing activities for a high-level radioactive waste repository.

- Crystalline Rock Project. State coordinator for the Crystalline Rock Project in Georgia. Assisted the Department of Energy in gathering all pertinent information regarding the feasibility of constructing a high-level radioactive waste repository in crystalline rocks. These data were used to identify potential sites for further investigations by screening out any unsuitable areas, such as population centers.

Publications

Hart, S., S. Olney, and M. Robinson 1983. Well Construction Diagrams for the Accelerated Groundwater Drilling Program through June 30, 1982. Georgia Geologic Survey Open File Report 84-2. Atlanta, Georgia.

Nesbit, K. and S. Olney 1983. Guidance Manual for Flood Elevation Determination in Georgia. Georgia Geologic Survey Open-file Report 84-4.

Olney, S.L., S. Farrick, M. Schweisberg, and B. Rice 1987. Impacts to Wetlands from the Charles George Landfill Superfund Site. Abs. EOS 68:16, April 21, p. 306.

Perry, S., S. Rice, and W. Sheppard 1990. Screening Timberlands for Onsite Hazardous Waste Liabilities. In: TAPPI 1990 Environmental Conference Proceedings. TAPPI Press, Atlanta, Georgia.