M67001.AR.004450
MCB CAMP LEJEUNE
5090.3a

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
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Coraopolis, Pennsylvania 15108

(412) 269-6000
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February 22, 1994

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

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0222
Contaminated Soil and Groundwater
Remedial Design, Operable Unit No. 2
MCB, Camp Lejeune, North Carolina

Dear Ms. Berry:

Regarding our discussions on February 17, 1994, Baker Environmental, Inc. (Baker), has considered three options for conducting an aquifer test at Site 82. These three options are presented below, along with the advantages and disadvantages of each option. The purpose of this evaluation is to determine the appropriateness of conducting an aquifer test, in order that a decision can be made on how to proceed with the project design.

As you are aware, Baker's Final Implementation Plan for this project (January 6, 1994) noted that aquifer characteristics from previous studies and tests would be used to estimate the necessary parameters for extraction well design and location. Baker recommended that an aquifer test not be conducted as part of the pre-design or design activities, and the Draft Design Project Plans reflected this recommendation. This recommendation was based on our review of information from previous aquifer tests conducted by Baker, and by other firms (ESE, 1988; Harned et al., 1989; O'Brien and Gere, 1988; S&ME, 1991), and groundwater modeling for potable water wells at the Base (Geophex, 1991). This information, when evaluated and compared, presents sufficient ranges of values for the major hydraulic parameters critical for determining the design and placement of extraction wells, and for estimating well production rates (See Part II, Table 3-1 of the Draft Project Plans). Baker's opinion is that an aquifer test conducted at the site would provide hydraulic parameter values within these same ranges. However, based on comments received from LANTDIV and from the Activity, Baker was asked to consider other options for determining site-specific aquifer characteristics. These options are presented below.

Option 1 - Aquifer Pump Test Performed Prior to Design of Groundwater Remediation System

An aquifer pump test would be performed to support the design of the groundwater pump and treat system. One shallow (approximately 25 to 35 feet) and one deep (approximately 150 feet) extraction well would be installed in the areas of highest contamination at Site 82. The wells would be specified (e.g., 6 to 10 inch stainless-steel) to meet the technical requirements of extraction wells anticipated for groundwater pump and treat system, and could be used as part of the permanent well field. Small diameter peizometers would also be installed to monitor water levels during the tests.

The test would be performed for a minimum of seven days for each the shallow and deep zones. Contaminated groundwater recovered during the tests would be treated on site (carbon units) and presumably discharged into Wallace Creek. Water samples would be collected during the tests to evaluate the general water chemistry, monitor contaminant levels, and insure that the groundwater is adequately treated prior to discharge.

Following the tests, the data would be evaluated to determine aquifer hydraulic parameters, the radius of influence, capture zones, and maximum sustainable flow rates. This information would be used in the design of the groundwater extraction well field, and to determine the size of the groundwater treatment system components.

It should be noted that well performance tests will be performed on each extraction well, following installation, to insure that the wells are operating as designed.

The advantages of conducting an aquifer test as part of the pre-design activities are:

- The aquifers characteristics are site-specific to the area of concern.
- The relationship between the surficial and Castle-Hayne aquifers, and the effects on the surficial aquifer caused by pumping the Castle-Hayne aquifer will be better understood.
- Site-specific aquifer parameters and other hydraulic characteristics will be available for use during the design of the extraction wells.
- The location and arrangement of the extraction wells can be determined during the design.

The disadvantages of conducting an aquifer test as part of the pre-design activities are:

- The cost of the aquifer test will be relatively high, because of the need to install a deep extraction well, and to treat and dispose of contaminated groundwater pumped during tests. Also, the test would require analytical testing of treated water prior to discharge to Wallace Creek.
- It is difficult and expensive to provide a temporary treatment system that is able to process high flow rates (approximately 200 gallons per minute). In

addition, contaminant breakthrough could occur if the equipment malfunctioned.

- The test may not provide aquifer characteristic data that are much different than information presently available from other tests conducted at the base.

- Conducting the aquifer test would increase the design project schedule and possibly impact design costs.

Option 2 - Aquifer Pump Test Conducted During Construction of Groundwater Remediation System

An aquifer pump test would be performed during the construction of the groundwater remediation system. One shallow (approximately 25 to 35 feet) and one deep (approximately 150 feet) extraction well would be installed in the areas of highest contamination at Site 82. The project design would specify extraction wells (e.g., 6 to 10 inch stainless-steel) to meet the technical requirements of extraction wells anticipated for groundwater pump and treat system. Small diameter peizometers would also be installed to monitor water levels during the tests.

The aquifer test would be performed in the same manner as Option 1 except that the tests would be performed after the on site groundwater treatment plant is constructed. The anticipated flow rates for the system, which are determined during the design of the project, will be estimated using information from previous investigations conducted in the vicinity of Site 82. Baker recommends that the selected design flow rates for the groundwater treatment system allow for the addition of one additional deep extraction well (i.e., an additional 150 gallons per minute, for a total maximum flow of 450 gallons per minute).

Following the aquifer test, the data would be evaluated and the remainder of the well field would be designed and constructed.

The advantages of Option 2 are:

- Option 2 would eliminate the duplication of aquifer/well performance tests.

- The aquifer test could be scheduled during contractor startup of the groundwater treatment plant, while the contractor is still responsible for plant operation.

- No temporary treatment and discharge of extracted groundwater would be required.

- Option 2 would not require changes to the design project schedule.

The disadvantages to Option 2 are:

- Site-specific aquifer characteristics will not be available for the design of the extraction wells and groundwater treatment system. Therefore, information from previous investigations and pump performance tests would be used and assumptions would have to be made to design the first shallow and deep extraction wells, and the maximum flow rate for the groundwater treatment system. As noted earlier, Baker believes that there is sufficient available aquifer characteristic information on which to make these assumptions.

- Allowances will have to be made in the construction schedule for the design of the balance of the extraction wells, after completion of the aquifer test.

Option 3 - Aquifer Pump Test Conducted Using an Existing Potable Water Well

An aquifer pump test would be performed using an existing in-service potable water supply well located near Site 82 (Well HP-636). The aquifer test would be performed in the same manner as Option 1, except no shallow extraction well would be installed. Small diameter peizometers would also be installed to monitor water levels during the test. The extracted groundwater would be pumped to the existing water treatment plant located on Holcomb Boulevard. This option would require approval and assistance from the Base Utilities Department. The selected supply well would have to taken off-line during the test, to monitor aquifer recovery.

The advantages of Option 3 are:

- The costs to perform the aquifer test would be reduced greatly by using an existing potable water well.

- No temporary treatment of extracted groundwater would be required.

The disadvantages to Option 3 are:

- The aquifer characteristics determined from the test would not necessarily be site-specific, as the potable well would be located about one-half mile from Site 82. In addition, the supply well is deeper and screened differently than the proposed extraction well.

- The selected supply well would have to taken off-line during the test, and the test would require close coordination with the Base Utilities Department.

- The relationship between the surficial and Castle Hayne aquifers, and the effects on the surficial aquifer caused by pumping the Castle-Hayne aquifer will not be as easily determined.

- Conducting the aquifer test would increase the design project schedule and possibly impact design costs.

AQUIFER TEST ASSUMPTIONS AND PRELIMINARY COSTS

Baker made the following assumptions for each option in order to develop these preliminary costs for conducting aquifer tests.

Assumptions for All Options:

- The aquifer test would be conducted for seven days. An additional three days would be required for setup and breakdown of the test.

- Baker will organize, reduce, and evaluate all data generated during the test, and prepare a report summarizing the aquifer test and presenting calculated hydraulic parameters. The report will be incorporated into the Basis of Design Report.

Assumptions for Option 1:

- The test would be monitored continuously by Baker personnel, with two crews of two each working 13 hour shifts (12 hour shifts plus one half hour of overlap at the beginning and end of each shift).

- One additional engineer or geologist would be on site approximately 12 hours each day to coordinate the test and resolve any problems encountered during the test.

- Two permanent extraction wells would be constructed: a deep extraction well, approximately 150 feet deep, and a shallow well, approximately 35 feet deep. Both wells would have stainless steel casing and screen.

- Temporary submersible pumps would be installed in each well, with discharge hosing placed from each well to the temporary treatment system.

- Approximately four temporary piezometers would be constructed for the test.

- Baker would use a temporary treatment system to treat extracted groundwater. The temporary system would be a trailer mounted granular activated carbon system sized to treat approximately 200 gallons per minute.

- Treated groundwater would be discharged through a hose to Wallace Creek.

Assumptions for Option 2:

- The test would be monitored continuously by Baker personnel, with two personnel each working 13 hour shifts (12 hour shifts plus one half hour of overlap at the beginning and end of each shift). The RAC Contractor would be responsible for operation of the groundwater treatment system.
- Approximately four temporary piezometers would be constructed for the test.

Assumptions for Option 3:

- Approximately four temporary piezometers would be constructed for the test.
- Baker personnel would perform the test and collect the necessary data. Base utility personnel would be responsible for operation of the existing potable supply well.
- Extracted groundwater would be pumped to the potable water treatment plant.

PRELIMINARY COST ESTIMATES

Preliminary cost estimates for each of these three options are: Option 1 - $180,000, Option 2 - $42,000, Option 3 - $60,000. These estimates are based on historical information from previous aquifer tests conducted by Baker at Camp Lejeune and at other activities. The estimates have been prepared in the same spreadsheet format that Baker uses when submitting Implementation Plan/Fee Proposals, and these preliminary spreadsheets are included as attachments to this letter.

Please contact me after you have reviewed this information so that we can discuss which option is appropriate for this project. Baker will revise the Draft Project Plans incorporating the selected option and other comments received.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Don P. Joiner

Don P. Joiner, P.E.
Project Manager

DPJ/jc

Attachment

ATTACHMENT A.1
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED DIRECT LABOR COST AND MANPOWER REQUIREMENTS - OPTION 1

Labor Category	PROJECT MANAGER/ SR. ENGINEER	PROJECT ENGINEER	PROJECT GEOLOGIST	GEOLOGIST	ASSISTANT ENGINEER-1	SUPPORT WORD PROCESSOR	REPRO-DUCTION TECHNICIAN		
	P-3	P-2	P-2	P-1	P-1	A-1	A-1	TOTAL	TOTAL
Task/Subtask Descriptions — CLEAN Classifications / DL Rate: 1994	$25.69	$22.11	$22.11	$16.72	$16.72	$9.39	$9.39		COST
TASK 1 - PROJECT MANAGEMENT	12							12	$308.28
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION	4	24	24					52	$1,164.04
								0	$0.00
								0	$0.00
TASK 3 - AQUIFER/PUMP TEST	24	140	280	280				724	$14,584.36
								0	$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	8	40	40		80	16	2	202	$3,694.86
DRAFT FINAL	4	24	24		16	4	2	78	$1,541.38
FINAL	2	8	8		4	2	1	27	$526.93
TASK 5 - MEETING AT MCB LEJEUNE	12	12						24	$573.60
Total Baker Hours	66	248	376	280	100	22	5	1,119	
Total Baker Cost	$1,695.54	$5,483.28	$8,313.36	$4,681.60	$1,672.00	$206.58	$46.95		$22,393.45

ATTACHMENT A.1
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED DIRECT LABOR COST AND MANPOWER REQUIREMENTS - OPTION 2

Labor Category	PROJECT MANAGER/ SR. ENGINEER	PROJECT ENGINEER	PROJECT GEOLOGIST	GEOLOGIST	ASSISTANT ENGINEER-1	SUPPORT WORD PROCESSOR	REPRO-DUCTION TECHNICIAN		
	P-3	P-2	P-2	P-1	P-1	A-1	A-1	TOTAL	TOTAL
Task/Subtask CLEAN Classifications Descriptions DL Rate: 1994	$25.69	$22.11	$22.11	$16.72	$16.72	$9.39	$9.39		COST
TASK 1 - PROJECT MANAGEMENT	12							12	$308.28
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION								0	$0.00
								0	$0.00
								0	$0.00
TASK 3 - AQUIFER/PUMP TEST	16		140	140				296	$5,847.24
								0	$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	8	40	40		80	16	2	202	$3,694.86
DRAFT FINAL								0	$0.00
FINAL	2	8	8		4	2	1	27	$526.93
TASK 5 - MEETING AT MCB LEJEUNE	12	12						24	$573.60
Total Baker Hours	50	60	188	140	84	18	3	561	
Total Baker Cost	$1,284.50	$1,326.60	$4,156.68	$2,340.80	$1,404.48	$169.02	$28.17		$10,950.91

ATTACHMENT A.1
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED DIRECT LABOR COST AND MANPOWER REQUIREMENTS - OPTION 3

Labor Category	PROJECT MANAGER/ SR. ENGINEER	PROJECT ENGINEER	PROJECT GEOLOGIST	GEOLOGIST	ASSISTANT ENGINEER-1	SUPPORT WORD PROCESSOR	REPRO-DUCTION TECHNICIAN		
	P-3	P-2	P-2	P-1	P-1	A-1	A-1	TOTAL	TOTAL
Task/Subtask CLEAN Classifications Descriptions DL Rate: 1994	$25.69	$22.11	$22.11	$16.72	$16.72	$9.39	$9.39		COST
TASK 1 - PROJECT MANAGEMENT	12							12	$308.28
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION		16						16	$353.76
								0	$0.00
								0	$0.00
TASK 3 - AQUIFER/PUMP TEST	24	140	140	140				444	$9,148.16
								0	$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	8	40	40		80	16	2	202	$3,694.86
DRAFT FINAL	4	24	24		16	4	2	78	$1,541.38
FINAL	2	8	8		4	2	1	27	$526.93
TASK 5 - MEETING AT MCB LEJEUNE	12	12						24	$573.60
Total Baker Hours	62	240	212	140	100	22	5	803	
Total Baker Cost	$1,592.78	$5,306.40	$4,687.32	$2,340.80	$1,672.00	$206.58	$46.95		$16,146.97

COMPREHEN[illegible]E LONG-TERM ENVIRONMENTAL ACTION NAV 21-F[illegible]

ATTACHMENT A.2
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED TRAVEL COSTS - OPTION 1

Task/Subtask Description	LODGING JACKSONVILLE $42.00 Per Day	MEALS $26.00 Per Day	VEHICLE RENTAL $65.00 Per Day	VEHICLE RENTAL $380.00 Per Week	AIR FARE Pgh/CLEJ $556.00 Per Trip	ESTIMATED TOTAL TRAVEL COSTS
TASK 1 - PROJECT MANAGEMENT						$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION						$0.00
						$0.00
						$0.00
TASK 3 - AQUIFER/PUMP TEST	50	50		4	5	$7,700.00
						$0.00
TASK 4 - AQUIFER TEST REPORT						
DRAFT						$0.00
DRAFT FINAL						$0.00
FINAL						$0.00
TASK 5 - MEETING AT MCB LEJEUNE	2	2	2		2	$1,378.00
Total Baker Units	52	52	2	4	7	
Total Baker Cost	$2,184.00	$1,352.00	$130.00	$1,520.00	$3,892.00	$9,078.00

ATTACHMENT A.2
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED TRAVEL COSTS - OPTION 2

Task/Subtask Description	LODGING JACKSONVILLE $42.00 Per Day	MEALS $26.00 Per Day	VEHICLE RENTAL $65.00 Per Day	VEHICLE RENTAL $380.00 Per Week	AIR FARE Pgh/CLEJ $556.00 Per Trip	ESTIMATED TOTAL TRAVEL COSTS
TASK 1 - PROJECT MANAGEMENT						$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION						$0.00
						$0.00
						$0.00
TASK 3 - AQUIFER/PUMP TEST	20	20		4	2	$3,992.00
						$0.00
TASK 4 - AQUIFER TEST REPORT						$0.00
DRAFT						$0.00
DRAFT FINAL						$0.00
FINAL						$0.00
TASK 5 - MEETING AT MCB LEJEUNE	2	2	2		2	$1,378.00
Total Baker Units	22	22	2	4	4	
Total Baker Cost	$924.00	$572.00	$130.00	$1,520.00	$2,224.00	$5,370.00

ATTACHMENT A.2
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED TRAVEL COSTS - OPTION 3

Task/Subtask Description	LODGING JACKSONVILLE $42.00 Per Day	MEALS $26.00 Per Day	VEHICLE RENTAL $65.00 Per Day	VEHICLE RENTAL $380.00 Per Week	AIR FARE Pgh/CLEJ $556.00 Per Trip	ESTIMATED TOTAL TRAVEL COSTS
TASK 1 - PROJECT MANAGEMENT						$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION						$0.00
						$0.00
						$0.00
TASK 3 - AQUIFER/PUMP TEST	30	30		4	3	$5,228.00
						$0.00
TASK 4 - AQUIFER TEST REPORT						$0.00
DRAFT						$0.00
DRAFT FINAL						$0.00
FINAL						
TASK 5 - MEETING AT MCB LEJEUNE	2	2	2		2	$1,378.00
Total Baker Units	32	32	2	4	5	
Total Baker Cost	$1,344.00	$832.00	$130.00	$1,520.00	$2,780.00	$6,606.00

ATTACHMENT A.3
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED OTHER DIRECT COSTS - OPTION 1

Task/Subtask Description 1992	COPYING $0.07 Per Page	COMPUTER TIME $10.00 Per Hour	CADD TIME $25.00 Per Hour	EQUIPMENT COST (Ref. 1) Total Cost	TREATMENT SYSTEM SUBCONTRACTOR (Ref. 3) Total Cost	ANALYTICAL SUBCONTRACTOR (Ref. 2) Total Cost	DRILLING SUBCONTRACTOR	TOTAL SUBCONTRACT COSTS	TOTAL OTHER DIRECT
TASK 1 - PROJECT MANAGEMENT									$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION					$57,500.00		$27,000	$84,500.00	$84,500.00
									$0.00
									$0.00
TASK 3 - AQUIFER/PUMP TEST				$5,352.00		$16,372.00		$16,372.00	$21,724.00
									$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	2000	36	16						$900.00
DRAFT FINAL	500	12	4						$255.00
FINAL	100	6	2						$117.00
TASK 5 - MEETING AT MCB LEJEUNE									
Total Baker Units	2,600	54	22						
Total Baker Cost	$182.00	$540.00	$550.00	$5,352.00	$57,500.00	$16,372.00	$27,000.00	$100,872.00	$107,496.00

ATTACHMENT A.3
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED OTHER DIRECT COSTS - OPTION 2

Task/Subtask Description 1992	COPYING $0.07 Per Page	COMPUTER TIME $10.00 Per Hour	CADD TIME $25.00 Per Hour	EQUIPMENT COST (Ref. 1) Total Cost	TREATMENT SYSTEM SUBCONTRACTOR (Ref. 3) Total Cost	ANALYTICAL SUBCONTRACTOR (Ref. 2) Total Cost	DRILLING SUBCONTRACTOR	TOTAL SUBCONTRACT COSTS	TOTAL OTHER DIRECT
TASK 1 - PROJECT MANAGEMENT								$0.00	$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION					$0.00			$0.00	$0.00
									$0.00
									$0.00
TASK 3 - AQUIFER/PUMP TEST				$5,352.00		$0.00	$1,000	$1,000.00	$6,352.00
									$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	2000	36	16					$0.00	$900.00
DRAFT FINAL	500	12	4					$0.00	$255.00
FINAL	100	6	2					$0.00	$117.00
TASK 5 - MEETING AT MCB LEJEUNE									
Total Baker Units	2,600	54	22						
Total Baker Cost	$182.00	$540.00	$550.00	$5,352.00	$0.00	$0.00	$1,000.00	$1,000.00	$7,624.00

ATTACHMENT A.3
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED OTHER DIRECT COSTS - OPTION 3

Task/Subtask Description 1992	COPYING $0.07 Per Page	COMPUTER TIME $10.00 Per Hour	CADD TIME $25.00 Per Hour	EQUIPMENT COST (Ref. 1) Total Cost	TREATMENT SYSTEM SUBCONTRACTOR (Ref. 3) Total Cost	ANALYTICAL SUBCONTRACTOR (Ref. 2) Total Cost	DRILLING SUBCONTRACTOR	TOTAL SUBCONTRACT COSTS	TOTAL OTHER DIRECT
TASK 1 - PROJECT MANAGEMENT								$0.00	$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION							$1,000	$1,000.00	$1,000.00
								$0.00	$0.00
								$0.00	$0.00
TASK 3 - AQUIFER/PUMP TEST				$5,352.00		$3,113.00		$3,113.00	$8,465.00
								$0.00	$0.00
TASK 4 - AQUIFER TEST REPORT									
DRAFT	2000	36	16					$0.00	$900.00
DRAFT FINAL	500	12	4					$0.00	$255.00
FINAL	100	6	2					$0.00	$117.00
TASK 5 - MEETING AT MCB LEJEUNE									
Total Baker Units	2,600	54	22						
Total Baker Cost	$182.00	$540.00	$550.00	$5,352.00	$0.00	$3,113.00	$1,000.00	$4,113.00	$10,737.00

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) 21-Feb-94

ATTACHMENT A.3, REFERENCE 1
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED EQUIPMENT COSTS

Task/Subtask Description	pH/COND METER $80.00 Per Week	DATA LOGGER (4 CHANNEL) $682.00 Per Week	WATER LEVEL METER $37.00 Per Week	H/S EXPENDABLES $25.00 Per Person/Day	SAMPLING EXPENDABLES $250.00 Per Event	DECON EXPENDABLES $275.00 Per Event	LAP-TOP COMPUTER $10.00 Per Hour	HNu & Cal. Kit $260.00 Per Week	TOTAL EQUIPMENT COST
TASK 1 - PROJECT MANAGEMENT									$0.00
TASK 2 - CONTRACTOR PROCUREMENT AND COORDINATION									$0.00
									$0.00
									$0.00
TASK 3 - AQUIFER/PUMP TEST	2	4	2	40	2	2	8	1	$5,352.00
									$0.00
TASK 4 - AQUIFER TEST REPORT									$0.00
DRAFT									
DRAFT FINAL									$0.00
FINAL									$0.00
TASK 5 - MEETING AT MCB LEJEUNE									$0.00
Total Base Equipment Cost	$160.00	$2,728.00	$74.00	$1,000.00	$500.00	$550.00	$80.00	$260.00	$5,352.00

ATTACHMENT A.3, REFERENCE 2
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

SUMMARY OF ESTIMATED LABORATORY COSTS FOR AQUIFER TEST - OPTION 1

DESCRIPTION	AQUEOUS SAMPLES				SOLID SAMPLES				TOTAL COST
	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	
VOLATILES (601/602)	14	2	$409.00	$6,544.00			$325.00	$0.00	$6,544.00
METALS (TOTAL)	14	2	$508.00	$8,128.00			$265.00	$0.00	$8,128.00
OIL & GREASE	4	1	$30.00	$150.00				$0.00	$150.00
ENGINEERING PARAMETERS	2	0	$250.00	$500.00			$335.00	$0.00	$500.00
ACUTE TOXICITY TESTING	2	0	$525.00	$1,050.00			$220.00	$0.00	$1,050.00
TOTALS	36	5		$16,372.00	0	0		$0.00	$16,372.00

SUMMARY OF ESTIMATED LABORATORY COSTS FOR AQUIFER TEST - OPTION 2

DESCRIPTION	AQUEOUS SAMPLES				SOLID SAMPLES				TOTAL COST
	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	
VOLATILES (601/602)	0	0	$409.00	$0.00				$0.00	$0.00
METALS (TOTAL)	0	0	$508.00	$0.00				$0.00	$0.00
OIL & GREASE	0	0	$30.00	$0.00				$0.00	$0.00
ENGINEERING PARAMETERS	0	0	$250.00	$0.00				$0.00	$0.00
ACUTE TOXICITY TESTING	0	0	$525.00	$0.00				$0.00	$0.00
				$0.00				$0.00	$0.00
TOTALS	0	0		$0.00	0	0		$0.00	$0.00

SUMMARY OF ESTIMATED LABORATORY COSTS FOR AQUIFER TEST - OPTION 3

DESCRIPTION	AQUEOUS SAMPLES				SOLID SAMPLES				TOTAL COST
	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	NUMBER OF TESTS	QA/QC SAMPLES	UNIT PRICE	SUBTOTAL COST	
VOLATILES (601/602)	7	0	$409.00	$2,863.00				$0.00	$2,863.00
METALS (TOTAL)	0	0	$508.00	$0.00				$0.00	$0.00
OIL & GREASE	0	0	$30.00	$0.00				$0.00	$0.00
ENGINEERING PARAMETERS	1	0	$250.00	$250.00				$0.00	$250.00
ACUTE TOXICITY TESTING	0	0	$525.00	$0.00				$0.00	$0.00
				$0.00				$0.00	$0.00
TOTALS	8	0		$3,113.00	0	0		$0.00	$3,113.00

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) 21-Feb-94

ATTACHMENT A.3, REFERENCE 3
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

ESTIMATED SUBCONTRACTOR COST FOR AQUIFER SYSTEM

DESCRIPTION	ESTIMATED MINIMUM QUANTITY	UNITS	UNIT PRICE	COSTS
MOBILIZATION/DEMOB	1	LUMP SUM	$2,500.00	$2,500.00
EQUIPMENT RENTAL	1	LUMP SUM	$55,000.00	$55,000.00
TOTAL SUBCONTRACTOR COST				$57,500.00

ATTACHMENT A.4
CONTRACT TASK ORDER 0222
MCB CAMP LEJEUNE
AQUIFER TEST FOR REMEDIAL DESIGN, SITE 82

PRELIMINARY

SUMMARY OF COST ESTIMATE	OPTION 1	OPTION 2	OPTION 3
1. TOTAL DIRECT LABOR COST (REFER TO ATTACHMENT A.1)	$22,393.45	$10,950.91	$16,146.97
2. INDIRECT COST (DIRECT LABOR COST X 1.2331)	$27,613.36	$13,503.57	$19,910.83
3. TOTAL DIRECT LABOR AND INDIRECT COSTS (LINES 1+2)	$50,006.81	$24,454.48	$36,057.80
4. TOTAL ODCs-INCLUDING EQUIPMENT,EXCLUDING SUBCONTRACTORS (REFER TO ATTACHMENT A.3)	$6,624.00	$6,624.00	$6,624.00
5. SENIOR REVIEW & MANAGEMENT ACTIVITIES (5% ON P-LEVEL TOTALS)	$2,472.03	$1,200.71	$1,774.58
6. AWARD FEE (10% ON TOTALS, LINES 3+4+5)	$5,910.28	$3,227.92	$4,445.64
7. TOTAL SUBCONTRACTOR COSTS (REFER TO ATTACHMENT A.3)	$100,872.00	$1,000.00	$4,113.00
8. AWARD FEE ON SUBCONTRACTORS COSTS (5% ON LINE 7)	$5,043.60	$50.00	$205.65
9. TRAVEL COSTS (REFER TO ATTACHMENT A.2)	$9,078.00	$5,370.00	$6,606.00
10. TOTAL COST INCLUDING SUBCONTRACTORS, EXCLUDING FEES (LINES 3+4+5+7+9)	$169,052.85	$38,649.18	$55,175.38
11. TOTAL AWARD FEE POOL (LINES 6+8)	$10,953.88	$3,277.92	$4,651.29
12. TOTAL CTO COST INCLUDING FEE (LINES 10+11)	$180,006.73	$41,927.10	$59,826.67