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NIROP ABL ROCKET CENTER
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FINAL IMPLEMENTATION AND FEE PROPOSAL LONG TERM MAINTENANCE REMEDIAL
ACTION OBJECTIVES FOR VARIOUS SITES WITH TRANSMITTAL ABL ROCKET CENTER

WV
2/28/2000
CH2MHILL



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February 29, 2000

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Commander
LANTNAVFACENGCOM
Attention: Code 02116, Ms. Ollie Glodis
Lafayette Annex, Building A
6506 Hampton Blvd.
Norfolk, VA 23508-6287

Dear Ms. Glodis:

Subject: Navy CLEAN II Program
Contract No. N62470-95-D-6007
Contract Task Order 0116, Mod 02

Enclosed are three copies of the Final Implementation Plan and Fee Proposal for CTO 0116, Mod 02:

Long-Term Operation and Maintenance
(Remedial Action Objectives) for Various Sites
Allegany Ballistics Laboratory, Rocket Center, WVA

Any technical questions regarding the implementation plan or fee proposal should be directed to Brett Doerr at (703) 471-6405, ext. 4320. Contractual questions should be directed to Jennifer Groat at (703) 471-6405, ext. 4609.

Sincerely,

CH2M HILL

Raymond S. Tyler
Program Manager

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- cc: Ms. Dawn Hayes (Code 18234)/LANTNAVFACENGCOM (cover letter)
- Ms. Lee Anne Rapp (Code 18312)/LANTNAVFACENGCOM (cover letter)
- Mr. Doug Dronfield/CH2M HILL -WDC
- Ms. Jennifer Groat/CH2M HILL-WDC
- Mr. Brett Doerr/CH2M HILL -WDC
- Ms. Noelle Cuti/CH2M HILL -WDC

Final

**Implementation Plan and Fee Proposal
Long-Term Operation and Maintenance
(Remedial Action Objectives) for Various Sites
at
Allegany Ballistics Laboratory
Rocket Center, West Virginia**

Contract Task Order-0116

Modification 2

February 28, 2000

Prepared for

**Department of the Navy
Atlantic Division
Naval Facilities Engineering Command**

Under the

**Navy CLEAN II Program
Contract N62470-95-D-6007**

Prepared by

**CH2M HILL
Herndon, Virginia**

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1.0 Introduction

This Implementation Plan (IP) and Fee Proposal (FP) presents the technical approach and cost estimate for Modification 2 to the Long-Term Operation and Maintenance (Remedial Action Objectives) for various sites at Allegheny Ballistics Laboratory (ABL) in Rocket Center, West Virginia.

The specific objectives of this CTO modification are to: (1) extend the period of performance to cover long term operation and maintenance for fiscal year 2001 (October 1, 2000 through September 30, 2001); (2) perform system optimization tasks during fiscal year 2000, including fine-tuning the use of hydrogen peroxide and well flow rates; (3) include additional funds under fiscal year 2000 to cover additional costs of equipment repair and replacement; (4) perform various tasks for the Site 5 landfill, including reseeding and regrading a drainage ditch; (5) perform well maintenance on existing ABL monitoring wells; (6) perform extraction well rehabilitation; (7) install an additional bedrock extraction well; and (8) install all necessary plumbing and electrical to add two extraction wells to the extraction well network.

All groundwater, surface water, sediment, and biota sampling associated with the long-term monitoring plans will be conducted under CTO-108. Data generated from the O & M for each site will be posted to the ABL database/GIS as part of this CTO modification.

This IP is presented in four sections. Section 2.0 presents the technical approach, by task, for meeting the project objectives. Project management and staffing are discussed in Section 3.0. Section 4.0 provides estimated cost information.

2.0 Technical Approach

To facilitate project planning and management, this project will be performed as a series of top tasks with associated subtasks in general accordance with the framework established for LANTDIV CLEAN II Project Setup, as follows:

Task 1 - Project Planning (PP)

Subtask 1.1 - Project Management (PP.PM)

Subtask 1.2 – Meetings (PP.MG)

Subtask 1.3 – Quality Control (PP.QC)

Task 2 – Field Investigation (FI)

Subtask 2.1 – Well Maintenance (FI.FI)

Subtask 2.2 – Well Rehabilitation (FI.ZZ)

Task 3 – Operation and Maintenance (OM)

Subtask 3.1 – Treatment Plant (OM.TP)

Subtask 3.2 – Landfill (OM.LF)

Task 4 – Post Investigation Support (PS)

Subtask 4.1 – System Installation (PS.SI)

2.1 Task 1 – Project Planning (PP)

2.1.1 Subtask 1.1 - Project Management (PP.PM)

The activities involved in project management include preparation of this CTO modification, daily technical support and guidance, budget tracking and schedule review, personnel resources planning and allocation, subcontractor coordination, preparation of monthly progress reports, and communication and coordination of events with LANTDIV and ABL.

This subtask is further divided into modifications to the project management budget for fiscal year 2000, and project management activities for fiscal year 2001.

The existing CTO has 3 hours per month budgeted for project management activities. Progress to date has shown that typical project management activities take 24 hours per month. Based on this, 21 hours per month must be added for project management activities for the current fiscal year. The overall breakdown is as follows:

Preparation of this CTO modification:

- 24 hours for the P3 project manager to prepare this IP/FP modification.
- 2 hours for the P4 senior reviewer to review this modification.
- 4 hours for the P3 activity manager to assist in the preparation, review, and negotiation of this IP/FP modification.
- 2 hours for the A2 project assistant to assist in the production of this IP/FP.

Modifications to the fiscal year 2000 contract:

- 21 hours per month for fiscal year 2000 for the P3 project manager.
- 2 hours per month for the P3 activity manager.

Project management requirements for fiscal year 2001:

- 24 hours per month for the P3 project manager.
- 2 hours per month for the P3 activity manager.
- 1 hour per month for the A2 project assistant.

2.1.2 Subtask 1.2 – Meetings (PP.MG)

For fiscal year 2001, one site visit every two months is planned by the CH2M HILL project manager during which issues related to treatment plant and landfill O&M will be evaluated and discussed. The project manager will utilize a car to attend these meetings.

- Six 8-hour site visits for the P3 project manager.

2.1.3 Subtask 1.3 – Quality Control (PP.QC)

This task includes several subtasks, including plant performance analysis, institution of a preventive maintenance program, and PLC reprogramming. Each are described below:

The first subtask, plant performance analysis, includes analyzing the performance of the peroxide contact tank, the goal being to optimize (potentially reduce) the hydrogen peroxide dosing rate while maintaining the required level of iron and manganese oxidation. This work will include site visits by an electrical engineer to set up the fieldwork, as well as sample collection and lab work for the analysis of changes in process performance. It is anticipated that four sampling events will occur; each event occurring after the pump speed setpoint is changed. During each sampling event, samples will be collected and analyzed for TSS, dissolved iron, dissolved manganese, and VOCs.

The following level of effort is anticipated:

- 40 hours for a P3 engineer to write a workplan, prepare and set up the analysis, review the resulting data, and to document the results in a technical memorandum.
- Two 8-hour per day site visits for a P3 electrical engineer to modify the SCADA system to allow the operator to adjust pump speed set points, and then to return and program the final pump speed setpoint at the conclusion of the task.
- 16 hours for the treatment plant operator to conduct the testing (modify pump set points, record plant and metering pump flow rates), and collect samples.
- 4 samples per event (one upstream and one downstream of the peroxide contact tank, one upstream and one downstream of the UV oxidation system).

The second subtask is implementation of a computerized preventive maintenance program. A preventive maintenance computer program will be purchased that prompts the operator when standard and routine maintenance is required on plant equipment. This program also tracks parts and tools inventory. Under this subtask, information contained in the plant's Environmental Facility User's Manual will be input into the computer program, and the plant operator trained on use of the program.

The following level of effort is anticipated:

- 40 hours for a P3 engineer to develop the preventive maintenance database and input it to the computer program.
- One 8-hour trip to the plant for the P3 engineer to train the operator in the use of the software.

The third subtask involves reprogramming the plant PLC and Man-Machine Interface (MMI) as follows: 1) Revise the PLC programming to totalize the pumping rates of all extraction wells, so that the total amount of groundwater pumped can be tracked; 2) Revise the PLC programming to totalize the volume of water discharged to the North Branch Potomac River. There is currently no totalizing flow capability at the SCADA system, so if data are lost during the archiving process the correct total cannot be calculated; 3) Revise the MMI programming so that the 15-minute records of archival data are collected in a convenient format. Presently, the data for each well are collected in a separate file for each day. This means that more than 1,000 separate data files have to be dealt with each month to keep a record of what the system is doing. Also, about 15 to 20 percent of the data appear to get lost, either because the disk fills up or because of corrupted data records being written. This problem should be alleviated during MMI programming revision.

The estimated level of effort required to complete this work is as follows:

- 40 hours for a P3 electrical engineer.
- 20 hours for a P4 senior hydrogeologist.
- One 10-hour site visit for the P3 and P4, utilizing one car.

2.2 Task 2 – Field Investigation (FI)

This task involves efforts related to monitoring well maintenance and extraction well rehabilitation as described in the subtasks below. The majority of the field oversight for well maintenance and well rehabilitation will be performed by our team subcontractor; Hydrogeologic, a small disadvantaged business.

2.2.1 Subtask 2.1 – Well Maintenance (FI.FI)

This subtask includes efforts related to performing maintenance activities on the existing monitoring wells in the IR Program at ABL. The assumptions made for this subtask include:

- 330 hours for a P2 project hydrogeologist to prepare subcontractor specifications, perform a site visit to evaluate the existing well conditions, oversee the well maintenance procedures, and assist the surveyors for the wells that require re-surveying; 48 hours (four 12-hour days) for a P2 hydrogeologist to oversee installation of an additional bedrock extraction well at Site 1.
- 8 hours for the P3 project manager to assist the project hydrogeologist during the effort.
- 2 A2 project assistant hours for equipment rental and shipping coordination.
- 25 days to conduct well maintenance activities and 5 days to perform well resurveying activities.

2.2.2 Subtask 2.2 – Well Rehabilitation (FI.ZZ)

This subtask includes efforts related to rehabilitating the alluvial extraction wells at Site 1 and Site 10 at ABL. The assumptions made for this subtask include:

- 32 P2 hours to contact potential subcontractors, prepare subcontract documents and perform a site visit; 24 P2 hours to investigate proper samples to collect from extraction wells, coordinate sampling effort with laboratory, collect the samples, and evaluate the results; 15 hours to perform downhole video survey and review video; and 510 P2 hours (forty five 12-hour days) to oversee and perform well rehabilitation activities.
- 20 P3 project manager and 20 P4 senior technologist hours to assist during the rehabilitation activities.
- 2 A2 project assistant hours for equipment rental and shipping coordination.
- Well rehabilitation will include pulling the existing pumps, cleaning the pumps, cleaning (physically and chemically) the screens, redeveloping the wells, and transporting the IDW to the Site 1 groundwater treatment plant.

2.3 Task 3 – Operations and Maintenance (OM)

This task involves efforts related to O&M of the treatment plant and landfill monitoring as described in the subtasks below.

2.3.1 Subtask 3.1 – Treatment Plant (OM.TP)

This subtask includes efforts related to the fiscal year 2000 O&M work, as well as fiscal year 2001 O&M. Additional scope items related to the current fiscal year of O&M include:

- UV lamp replacement. The existing CTO includes only one lamp replacement (\$5,000) over the course of the fiscal year. This first lamp pair replacement occurred in October 1999. The lamps must be replaced every 3,000 hours (4 months), so there will be two additional changeouts required during fiscal year 2000. Total additional lamp replacement cost is \$5,600 per changeout, or \$11,200 total. Quartz tubes must also be replaced during lamp changeout. The cost of two additional quartz tubes is \$1,600.
- Pump repair parts. The existing CTO includes only \$2,000 for pump repair and replacement. Based on well pump performance to date, it is estimated that an additional \$10,000 will be required to keep the wellfield operational over the remainder of the fiscal year (assumes the purchase of five additional pumps).
- Miscellaneous repair parts. The existing CTO includes only \$3,000 for miscellaneous repair parts. Based on the cost of miscellaneous items to date, it is estimated that an additional \$7,000 will be required for repair of items such as flowmeters, level control valves, and ultrasonic level elements.
- Replacement of well vault piping. The current well vault piping, installed by the contractor, is carbon steel. There have been many instances of piping leaks in a variety of the extraction well vaults. An investigation of the leaks has shown that the carbon steel piping has been degraded either by the water chemistry or by iron consuming bacteria. Under this subtask, the well vault piping in the Site 1 and 10 extraction well vaults will be replaced by schedule 80 PVC. The total materials cost of this is estimated to be \$21,300.

-
- Purchase of miscellaneous items including a shop vac, a square head shovel, and a two-way radio system. The total cost of these items is estimated to be \$600.
 - Monthly sampling of plant influent for total suspended solids analysis. This sampling work will begin in December, so 10 events will occur during the current fiscal year.
 - Monthly sampling of plant effluent for ammonium perchlorate analysis. This sampling work will begin in December, so 10 events will occur during the current fiscal year.
 - Four rounds of ammonium perchlorate samples at Site 1: one round of samples from all Site 1 extraction wells (i.e., 34 samples plus QA/QC samples) plus three additional rounds of samples from ten extraction wells per round (plus QA/QC samples). Labor for conducting the sampling will be done under CTO-108.
 - Quarterly sampling of plant effluent for chronic toxicity. This sampling effort will start in December, so 4 events will occur during the current fiscal year.
 - Quarterly sampling of plant effluent for hardness. This sampling effort will start in March, so 3 events will occur during the current fiscal year.
 - 2 hours per month for the P2 database/GIS specialist to update the ABL database/GIS.

For fiscal year 2001, the following assumptions are made for this subtask:

- 1560 hours (30 hours per week) for the subcontract operator for normal system performance monitoring and O&M, project management duties, and compliance sampling.
- 90 repair specialist hours (assumes an average of about 9 hours/month for treatment system repairs).
- 120 mechanic hours (assumes an average of about 12 hours/months for specialized maintenance).
- Telephone charge (ODC) includes \$12/month for a pager for the system operator, \$30/month for telephone service at the treatment plant, and an estimated \$260/month in long distance phone charges.
- Monthly chemicals charge (ODC) of \$5,720 assumes flow rate of 105 gpm, approximately 1,475 gallons of hydrogen peroxide, perlite and other miscellaneous chemicals. Additionally, it is assumed that one carbon filter change will be necessary during the fiscal year at an estimated cost of \$15,000.
- Monthly sampling, general maintenance, and safety supplies charge (ODC) of \$560.
- Average monthly maintenance charge (ODC) of approximately \$3,117/month assumes the following over the 12-month period: three UV lamp pair replacements (\$15,000), three quartz tube replacement (\$2,400), pump repair parts (\$10,000), and miscellaneous repair parts (\$10,000).
- Quarterly sampling of plant influent for TCL VOCs, TAL total inorganics, and hexavalent chromium.
- Monthly sampling of plant influent for total suspended solids.
- Monthly sampling of air stripper influent for TCL VOCs.

- Monthly sampling of plant effluent for TCL VOCs, TAL total inorganics, hexavalent chromium, and ammonium perchlorate.
- Quarterly sampling of plant effluent for acute toxicity and hardness.
- Quarterly sampling of plant effluent for chronic toxicity.
- Three drums/every other month of filter cake will be generated and disposed off offsite every other month. Three empty drums will be supplied each month. The filter cake will be re-analyzed for once during FY00 for full TCLP and CRI to verify the waste stream has not changed significantly and TCL VOCs and SVOCs, ammonium perchlorate, and TAL inorganics to determine if the sludge can be disposed of at ABL.
- 2 hours per month for the P2 database/GIS specialist to update the ABL database/GIS.

2.2.3 Subtask 2.2 – Landfill (OM.LF)

Under this subtask, CH2M HILL will perform activities related to conducting the monthly inspections and the detailed quarterly inspections of the Site 5 landfill cap over a 12-month period in FY01.

The following assumptions were used in developing estimated landfill inspection costs:

- 72 hours for subcontract plant operator, assuming one 8-hour day/quarter for detailed landfill cap inspection, one 12-hour day/half year for lawn maintenance (mowing) activities, and eight 2-hour/month visual inspections.

Additional tasks related to the repair and maintenance of the landfill will be performed, including:

- Overseeding the landfill with grass seed in the fiscal year 2000 late winter/early spring timeframe. This work will be performed by the treatment plant operator at an estimated cost of \$1,000.
- Re-establishing a riprap drainage channel above the landfill. The channel is improperly graded, not allowing water to enter it. This is causing soil erosion adjacent to the landfill, with the eroded material filling in ditches downstream. The channel must be regraded at an estimated cost of \$4,000.
- Installing road gravel and shaping the entrance road to the landfill. The entrance road has become rutted and muddy in areas. The work has an estimated cost of \$5,000.

2.3 Task 3 - Post Investigation Support (PS)

This task involves the work necessary to plumb the two new extraction wells to the extraction system.

2.3.2 Subtask 3.1 – System Installation (PS.SI)

For two new extraction wells (one at Site 1 and one at Site 10), this task consists of plumbing to the treatment system, hookup to the existing electrical vault, and SCADA system modification. This task will include the following activities:

- Preparation and submittal of a technical memorandum to the Navy documenting the materials of construction, pipe alignment and proposed tie-in location to the existing well field piping,

required electrical modifications, and well head/well vault piping configuration. Navy comments on this technical memorandum will be incorporated during the preparation of a subcontractor bid package.

- Preparation of subcontractor bid package.
- Soliciting of bids, bid evaluation, and securing of subcontractor, including a pre-bid meeting and pre-construction meeting.
- Installation of the complete well system including electrical hookups:
 - Well vault installation.
 - Piping to treatment plant as follows: 900 lf for Site 1 well; 50 lf for Site 10 well assuming hookup at existing Well 28 hardware.
 - Electrical utility trench as follows: 1000 lf for Site 1 well assuming hookup at closest available existing electrical tie-in; 120 lf for Site 10 well assuming hookup at closest available existing electrical tie-in.
- Modification of the SCADA system and startup/proveout of the new extraction well.
- Office support and field oversight/management of construction activities.
- Revision of the Site 1 extraction and treatment system record drawings. A complete set of full size mylars, and new compact disc will be submitted to the Navy.

3.0 Project Management and Staffing

This project will be managed and staffed by CH2M HILL, with treatment plant daily operations conducted by a qualified subcontractor. The CH2M HILL Activity Manager, Mr. Brett Doerr, will assume primary responsibility for ensuring that the work is performed in a manner that is acceptable to LANTDIV, Alliant Techsystems, and government regulatory agencies. Ms. Francis Fadullon will serve as project manager, and will be responsible for daily operations, budget and schedule review and tracking; and personnel resources planning and allocation. All other functions will be performed by qualified CH2M HILL staff members and its subcontractors.

4.0 Estimated Project Cost

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The total cost to complete modification 2 to CTO-0116 is estimated to be \$902,649, including award fee. Attachment A, the Fee Proposal, provides estimated direct labor costs and personnel requirements, travel costs, other direct costs (ODCs), and a project cost summary.

5.0 Project Schedule

The project will be performed in accordance with the schedule and milestones presented in Table 5-1. The estimated notice to proceed date is February 14, 2000. Delays in notice-to-proceed may result in extensions of milestone dates.

Table 5-1 Project Milestones and Dates CTO-116 Mod 2	
Milestone	Estimated Date
Well Installation/Rehabilitation Work Plan	
Draft	4/3/00
Final	5/3/00
Well Rehabilitation Memorandum	
Draft	6/19/00
Final	7/31/00
Well Maintenance Memorandum	
Draft	8/7/00
Final	9/25/00
System Optimization Work Plan	
Draft	4/3/00
Final	5/3/00
System Optimization Memorandum	
Draft	5/1/00
Final	6/12/00
Site 1 Discharge Monitoring Reports	
Final	Monthly to ABL Website
Site 5 Landfill Inspection Reports	
Final	Monthly to ABL Website
Site 5 Landfill Detailed Inspection Reports	
Final	Quarterly
Record Drawing Revisions	
Draft	8/14/00
Final	9/25/00

Attachment A

Fee Proposal

CH2M HILL CTO-116 Mod 2-Labor & Cost Summary			
	CH2M HILL	Hydrogeologic	Total
1) Direct Labor	\$ 50,046	\$ 20,084	\$ 70,131
2) Indirect Costs	\$ 67,062	\$ 28,922	\$ 95,984
3) TOTAL of Direct Labor and Indirect Costs (1+2)	\$ 117,109	\$ 49,006	\$ 166,115
4) ODCs - Including equipment, excluding subcontractors	\$ 195,604	\$ 4,847	\$ 200,451
5) Award Fee on Labor and ODC's (10%)	\$ 31,271	\$ 5,385	\$ 36,656
6) Support Subcontractor Costs	\$ 458,131	\$ -	\$ 458,131
7) Award Fee on Support Subcontractors (5%)	\$ 25,599	\$ -	\$ 25,599
8) Travel Costs	\$ 3,483	\$ 12,215	\$ 15,697
9) TOTAL Cost less Award Fees (3+4+6+8)	\$ 774,327	\$ 66,068	\$ 840,395
10) TOTAL Award Fees (5+7)	\$ 56,870	\$ 5,385	\$ 62,255
11) TOTAL CTO COST (9+10)	\$ 831,197	\$ 71,453	\$ 902,650

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CH2M HILL CTO-116 Mod 2-Cost Summary by Task	Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation (PS)	Grand Total
	Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (FI)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)	
LABOR	\$	\$	\$	\$	\$	\$	\$	\$	\$
Total CH2M HILL Labor	\$ 43,138	\$ 3,307	\$ 13,158	\$ 3,313	\$ 7,126	\$ 2,462	\$ -	\$ 44,606	\$ 117,109
Team Sub Labor	\$ -	\$ -	\$ -	\$ 19,252	\$ 29,754	\$ -	\$ -	\$ -	\$ 49,006
TOTAL Labor	\$ 43,138	\$ 3,307	\$ 13,158	\$ 22,565	\$ 36,880	\$ 2,462	\$ -	\$ 44,606	\$ 166,115
SUPPORT SUBCONTRACTORS									
Laboratory (see Attachment A.1)	\$ -	\$ -	\$ 2,576	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,576
Laboratory (see Attachment A.2)	\$ -	\$ -	\$ -	\$ -	\$ 2,420	\$ -	\$ -	\$ -	\$ 2,420
Laboratory (see Attachment A.3)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 38,800	\$ -	\$ -	\$ 38,800
Drilling (see Attachment A.4)	\$ -	\$ -	\$ -	\$ 65,436	\$ -	\$ -	\$ -	\$ -	\$ 65,436
Drilling (see Attachment A.5)	\$ -	\$ -	\$ -	\$ -	\$ 95,615	\$ -	\$ -	\$ -	\$ 95,615
IDW (see Attachment A.6)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,700	\$ -	\$ -	\$ 8,700
O&M Sub (see Attachment A.7)	\$ -	\$ -	\$ 577	\$ -	\$ -	\$ 67,788	\$ 2,596	\$ -	\$ 70,960
Geo. Sub (see Attachment A.8)	\$ -	\$ -	\$ -	\$ -	\$ 1,670	\$ -	\$ -	\$ -	\$ 1,670
Surveying (see Attachment A.9)	\$ -	\$ -	\$ -	\$ 5,150	\$ -	\$ -	\$ -	\$ -	\$ 5,150
Subcontractor (see Attachment A.10)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,000	\$ -	\$ 4,000
Subcontractor (see Attachment A.10)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,000	\$ -	\$ 5,000
Construction Costs (see Attachment A.11)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 157,804	\$ 157,804
TOTAL Support Subcontractors	\$ -	\$ -	\$ 3,153	\$ 70,586	\$ 99,705	\$ 115,288	\$ 11,596	\$ 157,804	\$ 458,131
OTHER DIRECT COSTS									
Total CH2M HILL ODCs	\$ 4,108	\$ 45	\$ 1,383	\$ 466	\$ 450	\$ 185,094	\$ 1,000	\$ 3,059	\$ 195,604
Team Sub ODCs	\$ -	\$ -	\$ -	\$ 1,809	\$ 3,038	\$ -	\$ -	\$ -	\$ 4,847
TOTAL Other Direct Costs	\$ 4,108	\$ 45	\$ 1,383	\$ 2,275	\$ 3,488	\$ 185,094	\$ 1,000	\$ 3,059	\$ 200,451
TRAVEL									
Total CH2M HILL Travel	\$ -	\$ 570	\$ 410	\$ 313	\$ 313	\$ -	\$ -	\$ 1,876	\$ 3,483
Team Sub Travel	\$ -	\$ -	\$ -	\$ 5,168	\$ 7,047	\$ -	\$ -	\$ -	\$ 12,215
TOTAL Travel	\$ -	\$ 570	\$ 410	\$ 5,481	\$ 7,360	\$ -	\$ -	\$ 1,876	\$ 15,697
TOTAL Cost less Award Fees	\$ 47,245	\$ 3,922	\$ 18,104	\$ 100,907	\$ 147,433	\$ 302,844	\$ 12,596	\$ 207,345	\$ 840,395
AWARD FEES									
CH2M HILL's Award Fee on Labor & ODCs (10%)	\$ 4,725	\$ 335	\$ 1,454	\$ 378	\$ 758	\$ 18,756	\$ 100	\$ 4,766	\$ 31,271
CH2M HILL's Award Fee on Team Subs (5%)	\$ -	\$ -	\$ -	\$ 1,053	\$ 1,640	\$ -	\$ -	\$ -	\$ 2,693
CH2M HILL's Award Fee on Subs (5%)	\$ -	\$ -	\$ 158	\$ 3,529	\$ 4,985	\$ 5,764	\$ 580	\$ 7,890	\$ 22,907
CH2M HILL's Total Award Fee	\$ 4,725	\$ 335	\$ 1,612	\$ 4,960	\$ 7,382	\$ 24,520	\$ 680	\$ 12,657	\$ 56,870
Team Sub Award Fee on Labor & ODCs (10%)	\$ -	\$ -	\$ -	\$ 2,106	\$ 3,279	\$ -	\$ -	\$ -	\$ 5,385
Team Sub Total Award Fee	\$ -	\$ -	\$ -	\$ 2,106	\$ 3,279	\$ -	\$ -	\$ -	\$ 5,385
TOTAL Award Fees	\$ 4,725	\$ 335	\$ 1,612	\$ 7,066	\$ 10,662	\$ 24,520	\$ 680	\$ 12,657	\$ 62,256
GRAND TOTAL	\$ 51,970	\$ 4,257	\$ 18,715	\$ 107,973	\$ 158,094	\$ 327,364	\$ 13,275	\$ 220,001	\$ 902,651

902,649

CH2M HILL CTO-116 Mod 2 Cost Summary by Task	Grade	Code	Rates	Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation	GRAND TOTAL	
				Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (F)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)	hrs.	\$
				hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	
P4 Senior Consultant	P4	C	\$36.31	2		30		20			38	90	\$ 3,268
P3 Activity Manager	P3	C	\$29.44	52							48	100	\$ 2,944
P3 Project Manager	P3	C	\$29.44	564	48	154	8	20			418	1212	\$ 35,681
P2 Hydrogeologist	P2	C	\$23.91				48	71				119	\$ 2,845
P2 Database/GIS S	P2	C	\$23.91						44			44	\$ 1,052
T3 Technician	T3	C	\$20.35								182	182	\$ 3,704
A2 Project Assistant	A2	C	\$16.24	14			2	2			16	34	\$ 552
TOTAL Task Hours				632	48	184	58	113	44	0	702	1781	
TOTAL Direct Labor Cost				\$ 18,435	\$ 1,413	\$ 5,823	\$ 1,416	\$ 3,045	\$ 1,052	\$ -	\$ 19,062		\$ 50,046
TOTAL Indirect Labor Cost			134.0%	\$ 24,703	\$ 1,894	\$ 7,535	\$ 1,897	\$ 4,080	\$ 1,410	\$ -	\$ 25,544		\$ 67,062
TOTAL Labor Cost less Award Fee				\$ 43,138	\$ 3,307	\$ 13,158	\$ 3,313	\$ 7,126	\$ 2,462	\$ -	\$ 44,606		\$ 117,109

CH2M HILL CTO-116 Mod 2-Cost Summary by Task	Unit	Rates	Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation (PS)	GRAND TOTAL	
			Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (FI)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)		
OTHER DIRECT COSTS	Unit	Rates	Units	Units	Units	Units	Units	Units	Units	Units	Units	\$
Binders (2")	each	\$ 2.40								8	8	19
Computer	hour	\$ 7.50	500	6	120					142	768	5760
CADD/GIS	hour	\$ 13.00						44		128	172	2236
Copying (B&W)	copy	\$ 0.05	1300		100					1000	2400	120
Postage Reports	each	\$ 22.50	13							8	21	473
pH Meter	day	\$ 6.35				2					2	13
Conductivity Meter	day	\$ 3.66				2					2	8
Dissolved Oxygen Meter	day	\$ 13.23				2					2	26
Water Level Indicator	day	\$ 2.52				2	2				4	10
Turbidity Meter	day	\$ 9.67					2				2	19
OVM	day	\$ 25.00				2	2				4	100
O2/EL Meter	day	\$ 12.00				2					2	24
UV Lamp Replacement	each	\$ 5,600.00						2			2	11200
Quartz Tube Replacement	each	\$ 800.00						2			2	1600
Pump Repair Parts	total	\$ 10,000.00						1			1	10000
Misc. Repair Parts	total	\$ 7,000.00						1			1	7000
Replace Well/vault Piping	total	\$ 21,300.00						1			1	21300
Monthly Chemicals Charge	each	\$ 5,720.00						12			12	68640
Monthly Maintenance Charge	each	\$ 3,117.00						12			12	37404
Monthly Supplies	each	\$ 560.00						12			12	6720
Carbon Changeout	each	\$ 15,000.00						1			1	15000
Grass Seed/Spreader	total	\$ 1,000.00							1		1	1000
Shopvac, shovel, 2way radio	total	\$ 600.00						1			1	600
Pager	each	\$ 12.00						12			12	144
Phone Service	each	\$ 290.00						12			12	3480
Sampling Expendables	per team/day	\$ 14.50			4		1	12			17	247
Health and Safety Expendables	person/day	\$ 30.00				2	2				4	120
Brass Locks for Monitoring Wells	each	\$ 7.00				12					12	84
Sample Shipping	90 lbs	\$ 105.00			4		1	12			17	1785
Equipment Shipping	40 lbs	\$ 49.00				4	4				8	392
Mylars	each sheet	\$ 3.50								23	23	81
Grand Total			\$ 4,108	\$ 45	\$ 1,383	\$ 466	\$ 450	\$ 185,094	\$ 1,000	\$ 3,059		\$ 195,604

CH2M HILL CTO-116 Mod 2-Cost Summary by Task			Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation (PS)	GRAND TOTAL	
			Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (F)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)		
TRAVEL	Unit	Rates	Units	Units	Units	Units	Units	Units	Units	Units	Units	\$
Lodging	days	\$ 65.00				2	2			7	11	605
Lodging Tax	days	\$ 6.60	0	0	0	2	2	0	0	7	11	73
Meets	days	\$ 30.00		6	5	2	2			7	22	660
Car Rental	days	\$ 65.00		6	4	2	2			19	33	2145
TOTAL Travel			\$ -	\$ 570	\$ 410	\$ 313	\$ 313	\$ -	\$ -	\$ 1,876		\$ 3,483

Hydrogeologic CTO-116 Mod 2-Labor Cost Summary			Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation (PS)	GRAND TOTAL	
			Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (FI)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)		
Engineering	Grade	Rates	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	\$
P2 Hydrogeologist	P2	\$23.91				330	510				840	20084.4
TOTAL Task Hours			0	0	0	330	510	0	0	0	840	
TOTAL Direct Labor Cost			\$ -	\$ -	\$ -	\$ 7,890	\$ 12,194	\$ -	\$ -	\$ -		\$ 20,084
TOTAL Indirect Labor Cost		144.0%	\$ -	\$ -	\$ -	\$ 11,362	\$ 17,560	\$ -	\$ -	\$ -		\$ 28,922
TOTAL Labor Cost less Award Fee			\$ -	\$ -	\$ -	\$ 19,252	\$ 29,754	\$ -	\$ -	\$ -		\$ 49,006

Hydrogeologic CTO-116 Mod 2-Travel Cost Summary			Project Planning (PP)			Field Investigation (FI)		Operations and Maintenance (OM)		Post Investigation (PS)	GRAND TOTAL	
			Project Management (PM)	Meetings (MG)	Quality Control (QC)	Well Maintenance (FI)	Well Rehabilitation (ZZ)	Treatment Plant (TP)	Landfill (LF)	System Installation (SI)		
TRAVEL	Unit	Rates	Units	Units	Units	Units	Units	Units	Units	Units	Units	\$
Lodging	days	\$ 55.00				33	45				78	4290
Lodging Tax	days	\$ 6.60	0	0	0	33	45	0	0	0	78	515
Meals	days	\$ 30.00				33	45				78	2340
Car Rental	days	\$ 65.00				33	45				78	5070
TOTAL Travel			\$ -	\$ -	\$ -	\$ 5,168	\$ 7,047	\$ -	\$ -	\$ -		\$ 12,215

ATTACHMENT A.1
 CONTRACT TASK ORDER - 116 Mod 2

SUMMARY OF ESTIMATED LABORATORY COSTS

Description	Aqueous Samples				Solid Samples				Total Cost
	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	
TCL Volatiles	16		\$ 112.00	\$ 1,792				\$ -	\$ 1,792
Dissolved Iron	16		\$ 18.00	\$ 288				\$ -	\$ 288
Dissolved Mn	16		\$ 18.00	\$ 288				\$ -	\$ 288
Total Suspended Solids	16		\$ 13.00	\$ 208				\$ -	\$ 208
TOTAL ANALYTICAL COSTS				\$ 2,576				\$ -	\$ 2,576



ATTACHMENT A.2
 CONTRACT TASK ORDER - 116 Mod 2

SUMMARY OF ESTIMATED LABORATORY COSTS

Description	Aqueous Samples				Solid Samples				Total Cost
	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	
Complete Aquifer Profile	2		\$ 385.00	\$ 770				\$ -	\$ 770
Bacterial Assessment	6		\$ 195.00	\$ 1,170				\$ -	\$ 1,170
Scale/Deposit Analysis	3		\$ 160.00	\$ 480				\$ -	\$ 480
TOTAL ANALYTICAL COSTS				\$ 2,420				\$ -	\$ 2,420



ATTACHMENT A.3

CONTRACT TASK ORDER - 116 Mod 2

SUMMARY OF ESTIMATED LABORATORY COSTS

Description	Aqueous Samples				Solid Samples				Total Cost
	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	Number of Tests	Number of QA/QC Samples	Unit Price	Subtotal Cost	
TCL Volatiles	28	28	\$ 126.00	\$ 7,056	1		\$113	\$ 113.00	\$ 7,169
TCL Semivolatiles					1		\$228	\$ 228.00	\$ 228
TSS	22		\$ 13.00	\$ 286				\$ -	\$ 286
Ammonium Perchlorate	86	7	\$ 100.00	\$ 9,300	1		\$100	\$ 100.00	\$ 9,400
TAL Metals (Dissolved)	16		\$ 135.00	\$ 2,160	1		\$137	\$ 137.00	\$ 2,297
Hexavalent Chromium	16		\$ 26.00	\$ 416				\$ -	\$ 416
Chronic Toxicity (AP)	8		\$ 1,500.00	\$ 12,000				\$ -	\$ 12,000
Acute Toxicity	4		\$ 1,500.00	\$ 6,000				\$ -	\$ 6,000
Hardness	7		\$ 20.00	\$ 140				\$ -	\$ 140
Full TCLP					1		690	\$ 690.00	\$ 690
RCI					1		\$ 174.00	\$ 174.00	\$ 174
TOTAL ANALYTICAL COSTS				\$ 37,358				\$ 1,442.00	\$ 38,800



ATTACHMENT A.4

CONTRACT TASK ORDER - 116 Mod 2

Estimated Costs				
Well Installation and Maintenance				
Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Install Additional Bedrock Well				
Mobilization	0	Each	\$5,000.00	\$0
Centralizers	2	Each	\$35.00	\$70
Drilling rig decontamination	1	Each	\$350.00	\$350
Drilling -12 inch ODEX	35	Per foot	\$105.00	\$3,675
Drilling - 6 inch air rotary	55	Per foot	\$11.00	\$605
Install 8-inch ID steel surface casing	35	Per foot	\$32.00	\$1,120
8-inch steel drive shoes	2	Each	\$210.00	\$420
Well development	2	Per hour	\$200.00	\$400
IDW management	2	Per hour	\$75.00	\$150
Standby	1	Per hour	\$200.00	\$200
Drums	4	Each	\$60.00	\$240
Per Diem (2 man crew)	4	Per Day	\$200.00	\$800
Subtotal				\$8,030
Well Maintenance				
Mobilization (truck-mounted rig)	1	lump sum	\$2,000	\$2,000
Service Truck	25	per day	\$65	\$1,625
Remove rust and paint well casings/posts	110	per hour	\$116	\$12,760
Paint (Rustoleum Safety Yellow)	30	per gallon	\$45	\$1,350
Replacement covers/casings/pads/posts (labor)	30	per hour	\$116	\$3,480
Replacement pads/posts (materials)	24	each	\$600	\$14,400
Replacement 6" casings (materials)	12	each	\$200	\$2,400
Replacement 8" casings (materials)	12	each	\$250	\$3,000
Replacement 6" covers (materials)	3	each	\$45	\$135
Replacement 8" covers (materials)	7	each	\$75	\$525
Replacement 2-inch well plugs (materials)	12	each	\$16	\$192
Replacement 4--inch well plugs (materials)	8	each	\$18	\$144
Jackhammer rental	10	per day	\$65	\$650
Generator rental	15	per day	\$55	\$825
Concrete	170	per bag	\$6	\$1,020
Cement grout	550	per bag	\$8	\$4,400
Bentonite (granular or chips)	10	per bag	\$11	\$110
Grouting (labor)	40	per hour	\$116	\$4,640
Per Diem (2 man crew)	25	Per Day	\$150	\$3,750
Subtotal				\$57,406
Total Driller Subcontractor Cost				\$65,436

ATTACHMENT A.5

CONTRACT TASK ORDER - 116 Mod 2

Estimated Costs				
Well Refurbishment				
Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Mobilization	1	Each	\$7,000.00	\$7,000
Steam cleaner	47	Per Day	\$50.00	\$2,350
Temporary decontamination pad	1	Each	\$300.00	\$300
Well retrofit	1	Per foot	\$275.00	\$275
Well development	210	Per hour	\$160.00	\$33,600
Yield Test	60	Per hour	\$160.00	\$9,600
Pump work	120	Each	\$110.00	\$13,200
Acidizing material	5	Each	\$3,300.00	\$16,500
Material handling	12	Per hour	\$95.00	\$1,140
Standby	20	Per hour	\$200.00	\$4,000
Drums	10	Each	\$60.00	\$600
Per Diem (2 man crew)	47	Per Day	\$150.00	\$7,050
Subtotal				\$95,615
Total Driller Subcontractor Cost				\$95,615

ATTACHMENT A.6

CONTRACT TASK ORDER - 116 Mod 2

Estimated Costs				
Sludge Handling and Disposal				
Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Drums	18	Each	\$100.00	\$1,800
Drum Disposal (non-haz. Sludge)	18	Each	\$75.00	\$1,350
Drum Loadout/Transportation	6	Each	\$925.00	\$5,550
Total IDW Subcontractor Cost				\$8,700

ATTACHMENT A.7

#REF!

ESTIMATED SUBCONTRACTOR COST - PP.QC

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Performance Analysis Assistance	16	hr	\$ 36.05	\$ 577
TOTAL SUBCONTRACTOR COST - PP.QC				\$ 577

ESTIMATED SUBCONTRACTOR COST - OM.TP

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Treatment Plant Operator	1560	hours	\$ 36.05	\$ 56,238
Repair Specialist	90	hours	\$ 55.00	\$ 4,950
Mechanic	120	hours	\$ 55.00	\$ 6,600
TOTAL SUBCONTRACTOR COST - OM.TP				\$ 67,788

ESTIMATED SUBCONTRACTOR COST - OM.LF

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Treatment Plant Operator	72		\$ 36.05	\$ 2,596
TOTAL SUBCONTRACTOR COST - OM.LF				\$ 2,596

ATTACHMENT A.8
 CONTRACT TASK ORDER - 116 Mod 2

ESTIMATED SUBCONTRACTOR COST

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Mobilization	1	lump sum	\$ 700.00	\$ 700
Downhole video	6	per hour	\$ 140.00	\$ 840
Per diem	1	per day	\$ 130.00	\$ 130
TOTAL SUBCONTRACTOR COST				\$ 1,670

ATTACHMENT A.9

CONTRACT TASK ORDER - 116 Mod 2

Estimated Surveyor Costs				
Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Mobilization / Demobilization	1	lump sum	\$200	\$200
2-person subcontractor crew	50	Per hour	\$75	\$3,750
Report Preparation and data evaluation	16	Per hour	\$75	\$1,200
Total Surveyor Subcontractor Cost				\$5,150

ATTACHMENT A.10
 CONTRACT TASK ORDER -

ESTIMATED SUBCONTRACTOR COST

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Re-establish riprap drainage channel	1	Each	\$ 4,000.00	\$ 4,000.00 \$ - \$ - \$ -
TOTAL SUBCONTRACTOR COST				\$ 4,000.00

ESTIMATED SUBCONTRACTOR COST

Description	Estimated Minimum Quantity	Units	Unit Price	Total Cost
Refurbish gravel maintenance road	1	Each	\$ 5,000.00	\$ 5,000.00 \$ - \$ - \$ - \$ -
TOTAL SUBCONTRACTOR COST				\$ 5,000.00

Attachment A.11
 Contract Task Order - 116 Mod 2

ESTIMATE SUMMARY

PROJECT : HOOKUP OF NEW GW EXTRACTION WELLS
 FACILITY :
 FILE NAME: J:\CONSTRUC\CMS\
 MARK-UPS:

OVERHEAD =
 PROFIT =
 MOB/BOND/INS. =
 CONTINGENCY =

MATL	LABOR	EQUIP.	IN STL or S/C
#####	10.00%	10.00%	10.00%
5.00%	5.00%	5.00%	5.00%
#####	10.00%	10.00%	10.00%
#####	20.00%	20.00%	20.00%

ESTIMATOR: I WEST
 PROJ. MANAGER:
 PROJ. NO.:
 ESTIMATE NO. :
 REV. NO. : 0
 DATE:

NO.	DESCRIPTION	QTY	UNIT	MATERIALS		LABOR			CONST. EQUI		IN STL or S/C		TOTAL (\$)
				UNIT \$	AMOUNT	MH	RATE	AMOUNT	UNIT \$	AMOUNT	UNIT \$	AMOUNT	
	WELL VAULT COMPONENTS (2 Wells)												
	PVC Pipe	2	ls	25	50	4.0	25	100					150
	PE Pump Discharge	115	lf	10	1,150	2.0	25	50					1,200
	Pitless Adapter	4	ea	11	44	4.0	25	100					144
	Recirc. Line	2	ea	15	30	16.0	25	400					430
	Check Valve (V600)	2	ea	40	80	3.0	25	75					155
	Ball Valve (V300)	2	ea	20	40	3.0	25	75					115
	Air Release Valve (V744)	2	ea	55	110	1.0	25	25					135
	Globe Valve (V200)	2	ea	38	76	2.0	25	50					126
	Flexible Hose & Fittings	2	ea	52	104	3.0	25	75					179
	Elbows (8) and Tees (2)	2	ls	48	96	10.0	25	250					346
	Grundfos Redi-Flo Pump	2	ea	2,000	4,000	80.0	25	2,000					6,000
	Magmeter Flow Meter	2	ea	4,500	9,000	120.0	25	3,000					12,000
	Electric Actuated Flow Control Valve	1	ea	4,500	4,500	80.0	25	2,000					6,500
	Pressure Gage	2	ea	1,500	3,000	4.0	25	200					3,200
	Pressure Transducer	2	ea	1,500	3,000	40.0	25	2,000					5,000
	Sample Port	2	ea	50	100	2.0	25	100					200
	1" PVC SCH 80 Sampling Tube 20' ea well	40	ft	2	80	1.0	25	25					105
	1" PVC SCH 80 Stilling Tube and cap - 20' ea well, bottom 10' perforated	40	ft	3	120	1.0	25	25					145
	WELL VAULT (2 Well Vaults)												
	Precast Concrete Walls	4	cy							450	1,800		1,800
	Excavation	2	ls							2,000	4,000		4,000
	C.I. Well Cap	2	ea	200	400	4.0	25	100					500

	Well Vault Lid (4x4 Al hatch)	2 ls	2,000	4,000	4.0	25	100			4,100
	Cut Down Well Casing	2 ls			16.0	25	400			400
	PIPING TO TMT. PLANT									
	Excavation and Backfill	376 cy						16	6,016	6,016
	Pipe Bedding	110 cy	30	3,300	0.1	25	275			3,575
	Road/Site Restoration (2 road xing)	2 ea						1,800	3,600	3,600
	Piping to Tie-In (1.5x4" double-walled HDPE) & Leak Detection Sumps	950 lf	6	5,700	0.4	25	9,500			15,200
	Frame & Cover (C.I.)	3 ea	210	630	9.0	25	225			855
	ELECTRICAL									
	Wiring (1000'), Flow Indicator and Switches	2 ls	1,500	3,000	48.0	25	1,200			4,200
	Motor Starter SS	2 ls	1,000	2,000	16.0	25	400			2,400
	Breaker Panel Switch on Existing Panel	2 ls	100	200	16.0	25	400			600
	I/O Module (Termination)	2 ls	500	1,000	16.0	25	400			1,400
	New Utility Trenches	1120 lf						3	3,360	3,360
	Excavation and Backfill	195 cy						16	3,120	3,120
	Concrete-Encased RGS	110 cy						100	11,000	11,000
E5	Tie-in to Existing Electrical Vault	2 ls						400	800	800
	Road/Site Restoration (3 road xing)	3 ea						1,800	5,400	5,400
A	SUBTOTAL			45,810			23,550	-	39,096	108,456
B	OVERHEAD & PROFIT		(A*ohd)+((A+ohd)*p)	7,101			3,650	-	6,060	16,811
C	MOB / BOND / INSUR.		(% of A)	4,581			2,355	-	3,910	10,846
D	CONTINGENCY			9,162			4,710	-	7,819	21,691
E	TOTAL ESTIMATED CONSTRUCTION COST			66,654			34,265	-	56,885	157,804