

TECHNICAL SPECIFICATIONS

FOR

INTERIM REMEDIATION SERVICES
SITE 2 – FIRE TRAINING AREA

Naval Weapons Industrial Reserve
Plant (NWIRP)

Calverton, New York



Naval Facilities Engineering Command
Mid-Atlantic

CONTRACT NUMBER N62472-03-D-0057
Contract Task Order 004

April 2008

**TECHNICAL SPECIFICATIONS
FOR
INTERIM REMEDIATION SERVICES
SITE 2 – FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
CALVERTON, NEW YORK**

**Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511-3095**

**Submitted by:
Tetra Tech NUS, Inc.
234 Mall Boulevard Suite 260
King of Prussia, Pennsylvania 19406**

In Support Of:

**CONTRACT NUMBER N62472-03-D-0057
Contract Task Order 004**

April 2008

**PREPARED UNDER THE DIRECTION OF:
BY:**



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APPROVED FOR SUBMISSION



**JOHN TREPANOWSKI, P.E.
PROGRAM MANAGER
TETRA TECH NUS, INC.
KING OF PRUSSIA,**

PART 1 - GENERAL

1.1 GENERAL SCOPE OF SERVICES

This technical specification details the remediation services required by the Navy for a soil removal action. All work required by these specifications shall be performed under the oversight of the Navy or its designated representative. The work will be conducted at Site 2 - Fire Training Area at the Naval Weapons Industrial Reserve Plant (NWIRP) in Calverton, New York. NWIRP Calverton is located in Suffolk County, Long Island, New York, approximately 70 miles east of New York City (Figure 1). The facility is located within the Town of Riverhead. Site 2 - Fire Training Area is located on the eastern side of a 9-acre clearing in the south-central area of the NWIRP Calverton facility and is shown on Figure 2. A circular concrete pit with an approximate diameter of 80 feet is located in the southeast corner of the clearing and was used to contain liquids for fire training exercises (Figure 3).

The work to be performed at Site 2 includes road stabilization, structure decontamination, demolition, transportation, and disposal, well abandonment, excavation, transportation and disposal of contaminated soils, and backfill.

Quantities specified in this solicitation are estimated. It is the responsibility of the Subcontractor to determine anticipated construction quantities and bid on those quantities.

No utilities are available at the NWIRP Calverton facility.

All activities will be conducted in an efficient and professional manner, with the minimal practical damage to the site environment. Thus, unnecessary damage to the existing site environment will not be tolerated.

The Subcontractor will be required to comply with the Occupational Safety and Health Administration (OSHA) training requirements as specified in 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response) and the Health and Safety Plan to be provided by the Subcontractor.

1.2 SITE GEOLOGY

NWIRP Calverton is underlain by approximately 1,300 feet of unconsolidated sediments. The unconsolidated sediments consist of four distinct geologic units. These units, in descending order, are the Upper Glacial Formation, the Magothy Formation, the Raritan Clay Member of the Raritan Formation, and the Lloyd Sand Member of the Raritan Formation.

The glacial sediments beneath the NWIRP are approximately 250 feet thick and consist of both glacial till and outwash deposits. Till is deposited directly by the ice, while outwash deposits are laid down by meltwater-supplied glaciofluvial systems. The till in Suffolk County ranges from 0 to 150 feet in thickness and generally consists of poorly sorted to unstratified sediments. The outwash deposits consist chiefly of well-sorted and stratified sand and gravel. One important characteristic of outwash deposits is their high degree of heterogeneity. Lithologies may vary widely over relatively short vertical and horizontal distances.

Soils in the area of investigation are characterized from previous drilling performed at the site. Based on previous subsurface investigations, Site 2 is underlain by three distinct lithofacies. The upper lithofacies range from 1 to 7 feet thick and consist of predominantly dark brown, brown, and orange, silty, fine-grained sand with varying amounts of peat and clay. Fill encountered at the site is always associated with the upper lithofacies. The middle lithofacies range from 54 to 78 feet thick and consist of light brown and tan fine-grained sand with varying amounts of medium-grained sand and pebbles. The middle lithofacies probably represent undisturbed glacial deposits. The lower lithofacies consist of gray, silty clay. The subsurface geology of Site 2 is consistent with that found in other areas of the facility

Groundwater at Site 2 will normally be encountered at a depth of 14 to 20 feet below ground surface (bgs).

1.3 SCOPE OF WORK

1.3.1 Permits and Regulations

The Subcontractor shall, at his expense, procure all necessary permits, bond applications, and/or licenses from the appropriate authorities to conduct the work described herein.

The Subcontractor shall comply with all local, State, and federal regulations. If the bidder believes that the specifications provided herein are at variance with any law or regulation, he shall identify those differences in the proposal, and any necessary adjustments shall be made as a modification to this specification.

1.3.2 Access

The Navy will arrange for administrative access to the work areas. Access to the site is through the Calverton Enterprise Park. In general there are no restrictions to access the Site 2 gate. The gate at Site 2 is normally locked. The Subcontractor will be provided with a key to the gate.

1.3.3 Equipment and Material Delivery, Storage, and Handling

All arrangements for delivery, security, and handling of equipment and material, throughout the conduct of the work, shall be the Subcontractor's responsibility. The Subcontractor shall store equipment and materials so as to ensure the preservation of their quality and fitness for the work. When considered necessary by the Navy, equipment and materials shall be placed on wooden platforms, or other hard, clean surfaces, and shall be placed under cover when directed. Materials shall be stored at the location(s) designated by the Navy representative, and shall be arranged so as to facilitate prompt inspection by the Navy representative.

1.3.4 Quality Assurance/Quality Control

Quality Assurance (QA)/Quality Control (QC) measures shall conform to the requirements of the conditions of the Contract, including the following items:

1. The Subcontractor, at their expense, shall furnish copies of certificates from suppliers/manufacturers showing that all backfill materials (i.e., bentonite slurry, excavation backfill, etc.) conform to the requirements of these specifications.
2. Materials for well abandonment shall comply with the American Society for Testing and Materials (ASTM).

1.3.5 Technical Inspection

All work conducted under these specifications shall be subject to inspection by the Navy; however, such inspection shall not relieve the Subcontractor from any obligation to perform said work in accordance with specifications or any modification thereof, as herein provided. Work not done in strict accordance with the specifications or any modification thereof, as herein provided, shall be corrected by the Subcontractor at his expense whenever ordered by the Navy, without reference to any previous oversight or error in inspection.

All directions given to the Subcontractor by the Navy pertaining to the specification during routine inspection shall be binding on the Subcontractor.

PART 2 - TECHNICAL REQUIREMENTS

2.1 MOBILIZATION/DEMOBILIZATION

The subcontractor shall specify the equipment that will be used to perform the scope of work detailed in this specification. Mobilization and demobilization includes mobilizing to the site the equipment specified, set up and maintenance of decontamination and equipment laydown areas, and all decontamination of equipment. The Subcontractor will be responsible for the security of his/her equipment and materials throughout the duration of the project. Unsecured areas for equipment storage will be provided.

Mobilization and demobilization also includes site clean-up, demobilization from the site, and all other work items as described below, in addition to any other work items not mentioned in the remaining work tasks but necessary for performance of the work activities. This item includes costs for locating equipment and materials on site prior to the start of work and removal of all such equipment and materials.

The Subcontractor will supply all necessary equipment, tools and support equipment, and all miscellaneous materials, unless otherwise stated, required to complete the described program. The Subcontractor will furnish a crew to perform the work detailed in this specification.

All equipment and materials used in the performance of this project shall be decontaminated using high pressure/temperature steam cleaning prior to use and before leaving the site at the completion of work.

Water for decontamination of equipment and materials will **not** be provided by the Navy. The contractor will need to transport and store water and waste decontamination water. The decontamination operations will consist of washing equipment using a high-pressure potable steam wash over a decontamination pad. All decontamination fluids generated during this project will be required to be containerized and staged on site. Containerized decontamination fluids will be sampled and characterized using approved EPA analytical methods. Prior to disposal, analytical results will be reviewed by the Navy or a Navy appointed representative for approval. The Subcontractor shall be responsible for providing the necessary manpower and equipment for performing the decontamination activity. Personnel decontamination will be addressed in the site specific Health and Safety Plan to be provided by the Subcontractor.

The Subcontractor is responsible for having a designated Site Safety Officer on site that will ensure the project is being completed according to the project specific Health and Safety Plan (HASP) provided by

the Subcontractor.

The Subcontractor will keep the work site and adjacent areas as free of material, debris, and rubbish as is practicable and shall remove from any portion of the site such materials, debris, or rubbish which, in the opinion of the Navy representative, may interfere with the work or constitute a nuisance.

Payment for this task will be based on successful mobilization and demobilization of all equipment and final site cleanup.

2.2 ROAD STABILIZATION

Access to Site 2 is via a dry, upland, sand-base road. In order to enter the road, the Subcontractor will have to make a left turn from the NWIRP Calverton entrance road over an abandoned railroad track. It is anticipated that the Subcontractor will be required to clear an area at the road entrance to allow for equipment access. The sand-base road is approximately 12 feet in width and 850 feet long (Figure 3). The Subcontractor shall clear any brush from the road and trim any trees to allow foot traffic and equipment access.

Regrading and stabilization of the road is anticipated to allow for equipment access. The Subcontractor may be required to place a geogrid (snow fence or equivalent) on the ground surface to help stabilize the soil. Approximately 6 inches of compacted angular aggregate will be placed along the road as additional stabilization. A typical construction would consist of 4 inches of AASHTO No. 3 (1 ½ inch gravel) and 2 inches of No. 2, modified with fines to form a cohesive uniform surface.

2.3 STRUCTURE DECONTAMINATION, DEMOLITION, TRANSPORTATION, AND DISPOSAL

A circular 80-foot diameter concrete pit is located in the southeast corner of the site as noted in Section 1.1. Attachment 1 provides dimensions of the concrete pit measured during a May 2005 field event. The dimensions provided are not complete. The Subcontractor is therefore responsible for determining accurate dimensions of the concrete pit. Steel reinforcement bars with an approximate diameter of ¼ inch were noted throughout the concrete pit. A 16 foot steel pipe, most likely used to transport fuel into the concrete pit, is visible in the center of the concrete pit. On the eastern portion of the concrete pit, a steel structure exists that may have been used to hold parts in place. The concrete pit, with an estimated 135 cubic yards (275 tons) of concrete and steel, requires demolition and off-site transportation and disposal. Supporting structures of the concrete pit are not included in this volume estimate.

Visual petroleum stains were also noted on the surface of the concrete pit, particularly in the middle of the

concrete pit. Also, it is anticipated that the concrete may need to be decontaminated prior to off-site transportation and disposal to remove sediments that may adhere to the concrete during removal. It is the Subcontractor's responsibility to verify the requirements of the concrete and steel disposal.

A secondary containment structure for a 1,000 gallon aboveground fuel tank is located to the north of the concrete pit. The containment structure consists of concrete and steel.

A pilot-scale air sparging/soil vapor extraction (AS/SVE) system operated seasonally at the site from 1995 to 2000 and removed an estimated 30,000 pounds of petroleum hydrocarbons through biodegradation. The AS/SVE system and components remains on site and must be transported and disposed off site as part of this project. An estimated inventory of the AS/SVE system components follows:

- Air injection piping
- Soil vapor air extraction piping
- Plastic sheeting located around each air injection/air extraction well (approximate 16 foot x 16 foot square around each well).
- AS/SVE blowers
- 30-gallon moisture separator
- Wooden stockade fence
- Miscellaneous electrical fuse boxes and control panels
- Buried underground electrical line

Measure and payment will be based upon proper decontamination, successful demolition, transportation, and off-site disposal of all demolition materials.

2.4 WELL ABANDONMENT

Air injection/soil vapor air extraction wells and free product monitoring/recovery wells will be abandoned during this project. The wells are 2- or 4-inch diameter PVC casing and screen. Sixteen air injection wells to an approximate depth of 25 feet and 32 air extraction wells to an approximate depth of 9 feet will be abandoned. Air injection/air extraction well construction details are provided in the Summary Results Report for Pilot Study Air Sparging/Vapor Extraction System (CF Braun, 1996) and can be made available to the Subcontractor upon request. Approximately 18 free product monitoring wells installed to an approximate depth of 20 feet and two free product/groundwater recovery well installed a depth of approximately 20 to 35 feet will be abandoned. These wells were installed in the 1980s and construction details are not available for these wells.

The wells will be abandoned by first filling the screened interval with Number 2 (20/30 mesh) well gravel to a height of 2 feet above the top of the screen. The well will then be filled with a cement/bentonite grout mix (7 gallons of water per 94-pound bag of cement and 6 pounds of bentonite mixture) through a tremie pipe to 2 to 3 feet bgs and the top of the well will be cut at this depth. For wells located with the limit of excavation, the cement/bentonite grout mix will be filled to approximately 6 feet bgs (the excavation depth) and the top of the well will be cut at this depth.

Groundwater monitoring wells located at Site 2 are to remain in place and will not be abandoned. In the event that the wells are damaged during the remedial activities, the wells will be installed by the Subcontractor at no additional cost.

Measurement and payment will be based on the depth of well abandoned from the bottom of the well to the ground surface. The estimated quantity of wells to be abandoned 1,118 feet.

2.5 EXCAVATION

The objective of this portion of the project is to remove shallow petroleum-contaminated soil from Site 2. The area of excavation is presented on Figure 4. Attachment 2 provides an estimate of the total excavation volume. The depth of excavation will be approximately 6 feet bgs. Excavation sidewalls will be 2 feet horizontal to one foot vertical (2H:1V). The excavation volume of shallow petroleum-contaminated soil is estimated at 6,050 cubic yards (9,800 tons). Removal of the final 2 feet of excavation shall be conducted to minimize the vertical spread of contaminated soil.

In addition, an area of surface soil will be removed to a depth of one foot bgs. The surface soil excavation area is presented as the hatched area on Figure 4. An estimated 400 cubic yards (630 tons) of contaminated surface soil will be removed in addition to the shallow petroleum-contaminated soil.

Adding the excavation of the shallow petroleum-contaminated soil and contaminated surface soil, a total estimated volume of 6,450 cubic yards (10,430 tons) of soil shall be excavated.

The Navy will stake the location of the shallow petroleum-contaminated soil and contaminated surface soil excavation areas prior to Subcontractor mobilization.

The contractor shall provide the equipment and manpower necessary to perform the excavation, including any surveys necessary to assure the proper excavation depths of 6 feet bgs and 1 foot bgs for the shallow

petroleum-contaminated soil and the contaminated surface soil, respectively.

Measurement and payment will be based weight tickets obtained from a certified scale for soil excavated and disposed off site.

During the removal action, the Navy may identify additional areas for excavation. These areas will be based on field observations of residual petroleum contamination in the excavation and/or 48-hour turnaround analysis on confirmation samples. Measurement and payment for soil excavation will be based weight tickets obtained from a certified scale for soil excavated and disposed off site.

2.6 TRANSPORTATION AND DISPOSAL OF CONTAMINATED SOIL

The Subcontractor is responsible for the transportation and off-site disposal of an estimated 6,450 cy (10,430 tons) of contaminated soil at a State approved permitted landfill/treatment facility. The Subcontractor must verify a facility that will accept the material prior to the commencement of excavation. Concentrations of contaminants in soil are presented in the Data Summary Report (TtNUS, 2005) and can be made available to the Subcontractor upon request.

Following excavation, a Navy representative will be responsible for confirmation sampling and analysis.

Measurement and payment will be based weight tickets obtained from a certified scale for soil excavated and disposed off site.

2.7 SITE RESTORATION

Site restoration includes backfilling and regrading. Backfilling shall not begin until confirmation sample results have been approved by the Navy. Backfill shall be brought to existing ground surface. The estimated volume of soil to backfill the excavation areas with is 6,900 cy (11,200 tons). Attachment 2 provides assumptions and calculations for the estimated backfill volume. The Subcontractor shall test backfill material in accordance with ASTM C 136 for conformance to ASTM D 2487 gradation limits. The material to backfill shall be ASTM 2487, classification SP (poorly graded sand), which is similar to the native soil being excavated. Soil classified as SW (well-graded sand) will also be accepted. Soils brought in from off site for use as backfill shall be from a State approved borrow pit or be tested and demonstrated to be clean. Material shall not be brought on site until approval by the Navy.

PART 3 - SCHEDULE AND DELIVERABLES

3.1 PROJECT SCHEDULE

The project will be performed in accordance with the following schedule.

Bidders receive Request for Proposals	<u>TBD</u>
Site Pre-Bid Visit (Afternoon)	<u>TBD</u>
Proposals submitted to TtNUS	<u>TBD</u>
Contract is awarded	<u>TBD</u>
Mobilization	<u>TBD</u>
Field Work	<u>TBD</u>
Contract End Date	<u>TBD</u>

The proposed project schedule assumes all work activities will be completed in Level D Personal Protective Equipment (PPE).

The project schedule assumes that the field work will be performed during weekdays, assuming a 8-hour workday.

3.2 DELIVERABLES

The following deliverables shall be provided by the Subcontractor:

- Work Plan
- Health and Safety Plan
- Construction Completion Report

3.2.1 Work Plan

The Subcontractor shall be responsible for submitting a Work Plan to the Navy for approval prior to mobilization. The Work Plan shall detail the Subcontractors plan to complete the remediation services presented in this specification. The Work Plan shall include, but is not limited to, a description of the project objectives, scheduling, decontamination procedures; removal, excavation and regarding procedures; wastewater treatment plan (water resulting from decontamination); storage, transportation, and treatment requirements for off-site soil and landfill material disposal; and a detailed sequence of events for the construction. The Subcontractor shall not begin work at Site 2 until the Navy has approved

the Subcontractor's Work Plan.

3.2.2 Health and Safety Plan

The Subcontractor shall be responsible for submitting a HASP to the Navy for review and comment prior to mobilization. The HASP shall include, but is not limited to, names of the health and safety officer and names of alternates responsible for health and safety; 29 CFR 1910; 29 CFR 1926; contract clause "FAR 52.236-13, Accident Prevention."; and NFPA 241. The Subcontractor shall not begin work at Site 2 until the Navy has approved the Subcontractor's HASP.

3.2.3 Construction Completion Report

Upon completion of the project at Site 2, the Subcontractor shall prepare a Construction Completion Report that shall include, but is not limited to, introduction; summary of action; final Health and Safety Report; summary of record documents and field changes; final documents; complete set of field test and laboratory analytical results (to be provided by Navy representative); documentation of off-site transportation and disposal; quality control summary report; surveyed as-builts; and color photographs documenting each major task of the project.

PART 4 - MEASUREMENT

4.1 ITEMS PROVIDED BY THE NAVY

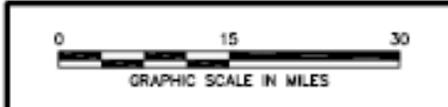
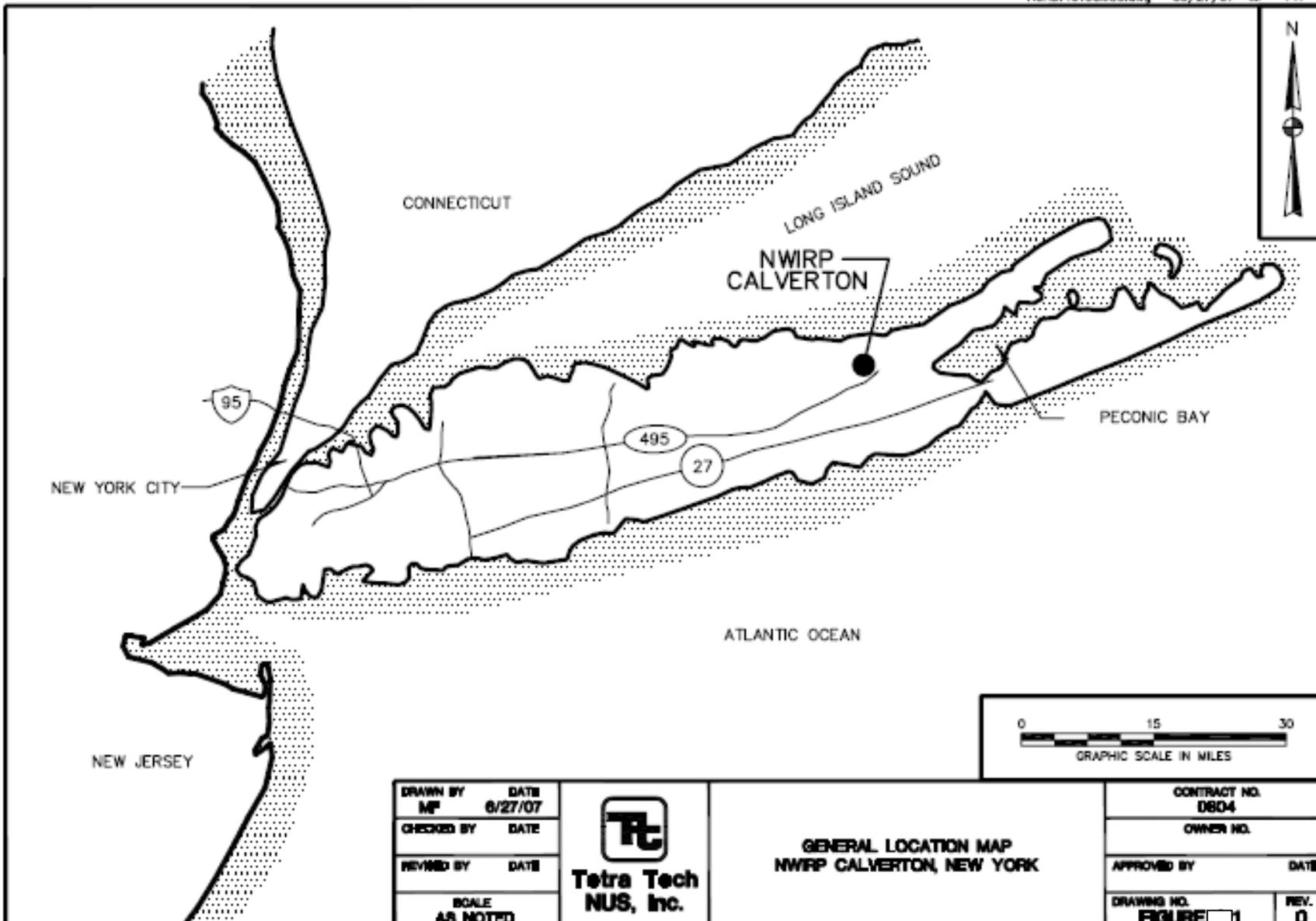
A listing of the work/items that will be provided by the Navy follows (the term "Navy" will also mean to include any representative delegated by the Navy to act on its behalf):

- (1) Administrative access to all locations will be arranged by the Navy prior to commencement of work. No Subcontractor personnel are to enter any location without first obtaining clearance from the Navy. Equipment access to any location is permitted only with Navy clearance.
- (2) The Navy will stake the location of the excavation areas prior to the Subcontractor commencing work.
- (3) The Navy will provide a Daily Activities Form to be signed by both the Subcontractor and the Navy at the end of each workday.
- (4) The Navy will inspect all the work in progress and at completion. Any discrepancies will be noted on the Daily Activities Form.
- (5) The Navy will provide a representative to oversee and document remediation activities.
- (6) The Navy will designate an area to serve as a staging area for equipment, materials, supplies, and wastes.
- (7) The Navy will review all pertinent records provided by the Subcontractor to authorize persons to enter and/or work at the site. This review of records is in no way intended to relieve the Subcontractor from his responsibility to comply with applicable regulations. Additionally, the review is not intended to evaluate the effectiveness of employee training or the Subcontractors medical surveillance program.
- (8) The Navy will provide confirmation sampling and analysis of the excavated areas.

REFERENCES

CF Braun Engineering Corporation (CF Braun), 1996. Summary Results Report for Pilot Study Air Sparging/Vapor Extraction System, Naval Weapons Industrial Reserve Plant, Calverton, New York. Prepared for Northern Division, Naval Facilities Engineering Command, Lester, Pennsylvania, June.

Tetra Tech NUS, Inc. (TtNUS), 2005. Data Summary Report for Site 2 - Fire Training Area, Naval Weapons Industrial Reserve Plant, Calverton, New York. Prepared for Engineering Field Activity Northeast, Naval Facilities Engineering Command, Lester, Pennsylvania, August.

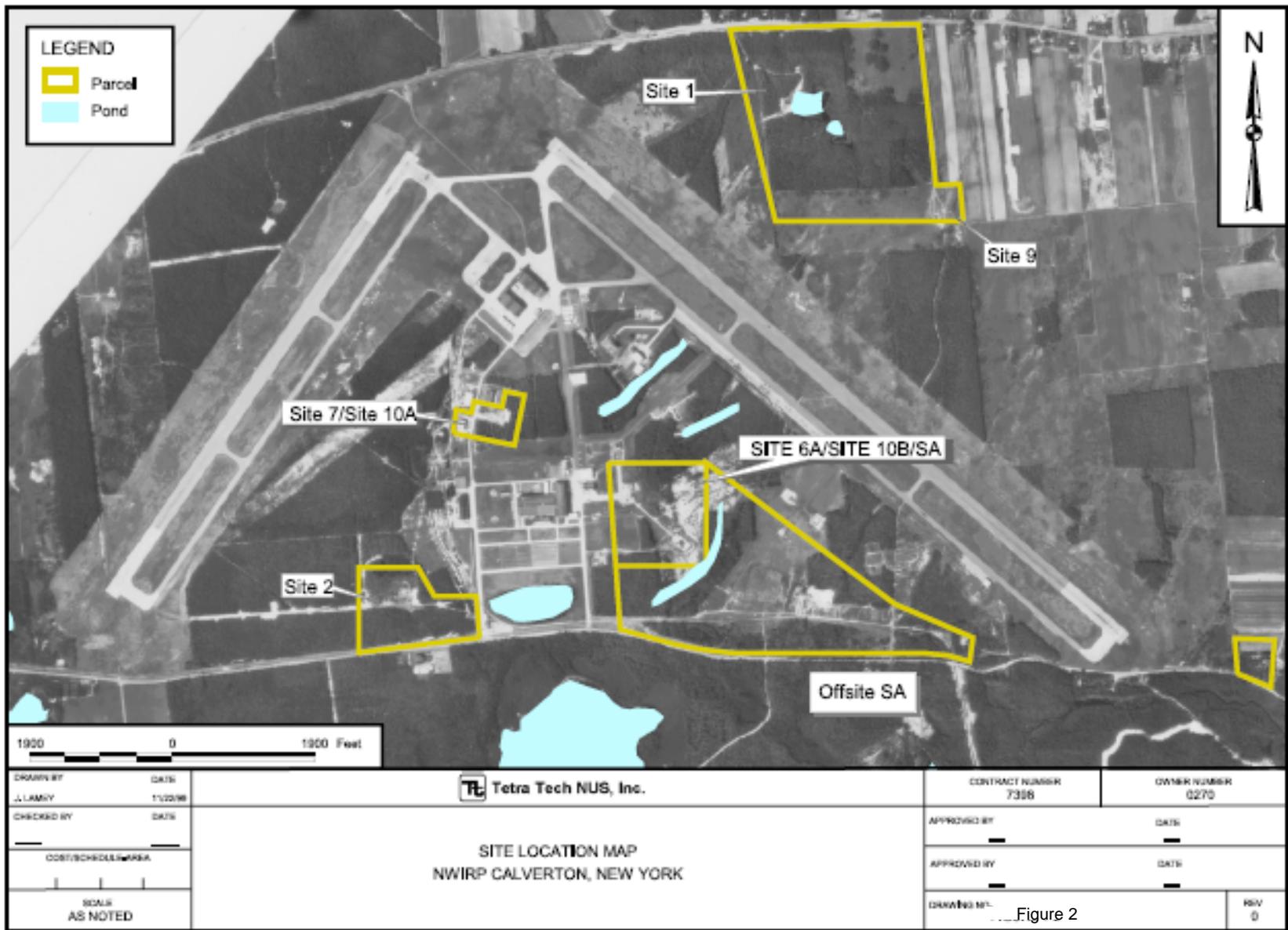


DRAWN BY MP	DATE 6/27/07
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

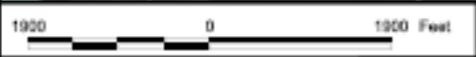


GENERAL LOCATION MAP
NWIRP CALVERTON, NEW YORK

CONTRACT NO. D804	
OWNER NO.	
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



LEGEND	
	Parcel
	Pond

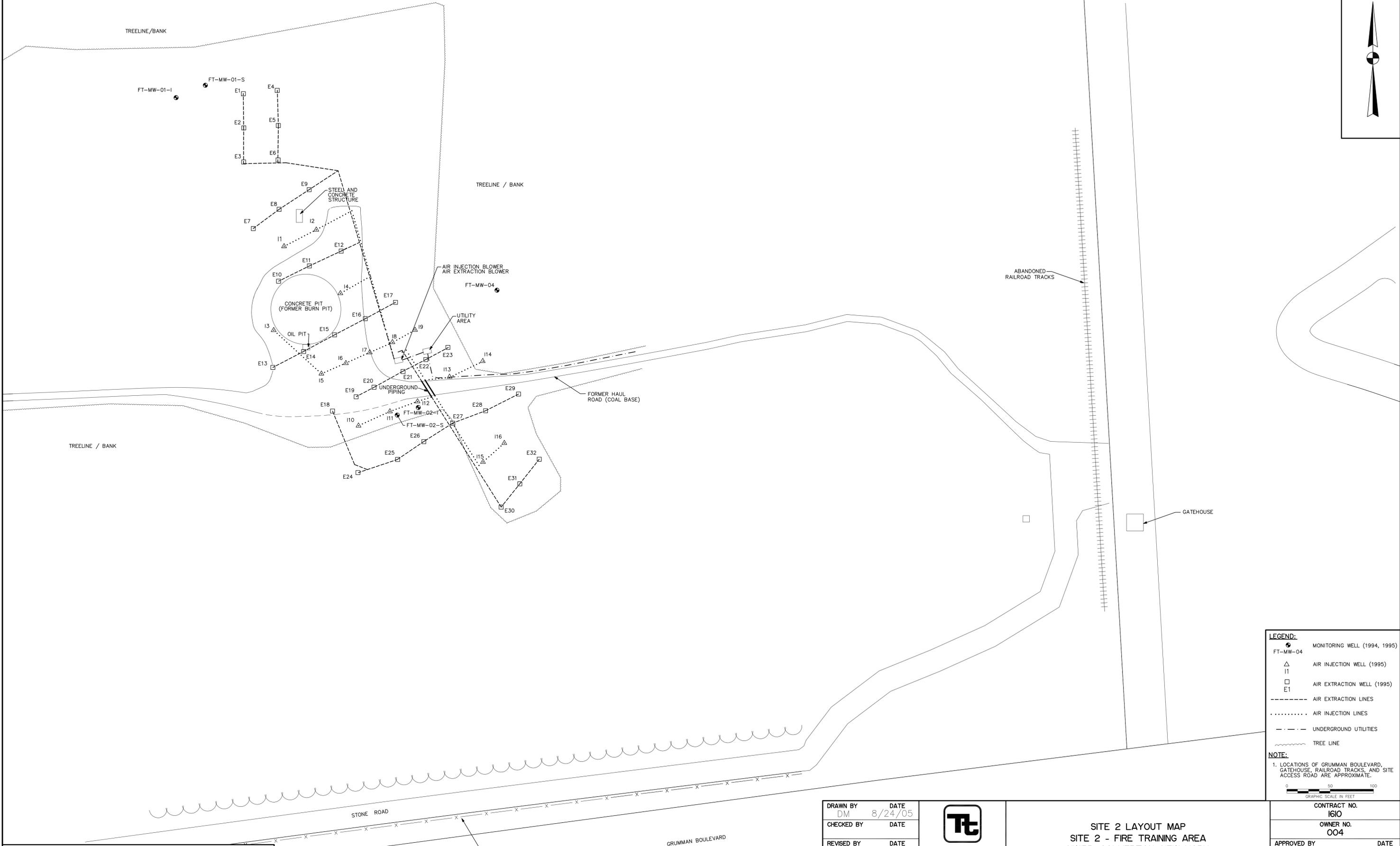
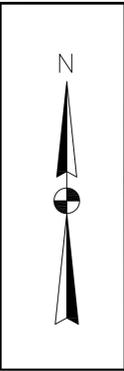


DRAWN BY J. LAMBY	DATE 1/22/98
CHECKED BY	DATE
COST/SCHEDULE/MARKA	
SCALE AS NOTED	

 Tetra Tech NUS, Inc.

CONTRACT NUMBER 7336	OWNER NUMBER 0270
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. ...Figure 2	REV 0

SITE LOCATION MAP
NWIRP CALVERTON, NEW YORK



LEGEND:

●	MONITORING WELL (1994, 1995)
FT-MW-04	
△	AIR INJECTION WELL (1995)
I1	
□	AIR EXTRACTION WELL (1995)
E1	
---	AIR EXTRACTION LINES
.....	AIR INJECTION LINES
- - - -	UNDERGROUND UTILITIES
~~~~~	TREE LINE

**NOTE:**

1. LOCATIONS OF GRUMMAN BOULEVARD, GATEHOUSE, RAILROAD TRACKS, AND SITE ACCESS ROAD ARE APPROXIMATE.

0 50 100  
GRAPHIC SCALE IN FEET

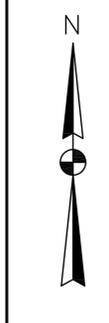
SOURCE: THIS DRAWING, INCLUDING THE INFORMATION IT CONTAINS, IS THE PROPERTY OF C.F. BRAUN. IT IS SUBMITTED ONLY IN CONNECTION WITH THE TRANSACTION TO WHICH IT PERTAINS AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE INTERESTS OF C.F. BRAUN. THE DRAWING IS NOT TO BE COPIED AND MUST BE RETURNED UPON REQUEST.

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SCALE AS NOTED	



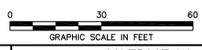
**SITE 2 LAYOUT MAP**  
**SITE 2 - FIRE TRAINING AREA**  
**NWIRP, CALVERTON, NEW YORK**

CONTRACT NO. IGIO	
OWNER NO. 004	
APPROVED BY	DATE
DRAWING NO. <b>FIGURE 3</b>	REV. <b>0</b>



**LEGEND:**

- SOIL BORING (2005)
- FT-SB-217
- FT-MW-01-S
- MONITORING WELL (1994,1995)
- SOIL BORING (1994, 1995)
- SB-102
- ⊙ TEST PIT (1994, 2001)
- ⊙ FT-TP-01
- ⊕ SURFACE SOIL SAMPLE (1994)
- ⊕ FT-SS-06
- △ AIR INJECTION WELL (1995)
- △ I1
- AIR EXTRACTION WELL (1995)
- E1
- - - UNDERGROUND UTILITIES
- ~~~~~ TREE LINE
- ..... AIR INJECTION LINES
- AIR EXTRACTION LINES
- ▨ SURFICIAL COAL EXCAVATION AREA
- ↑↑ CROSS SECTION LOCATION

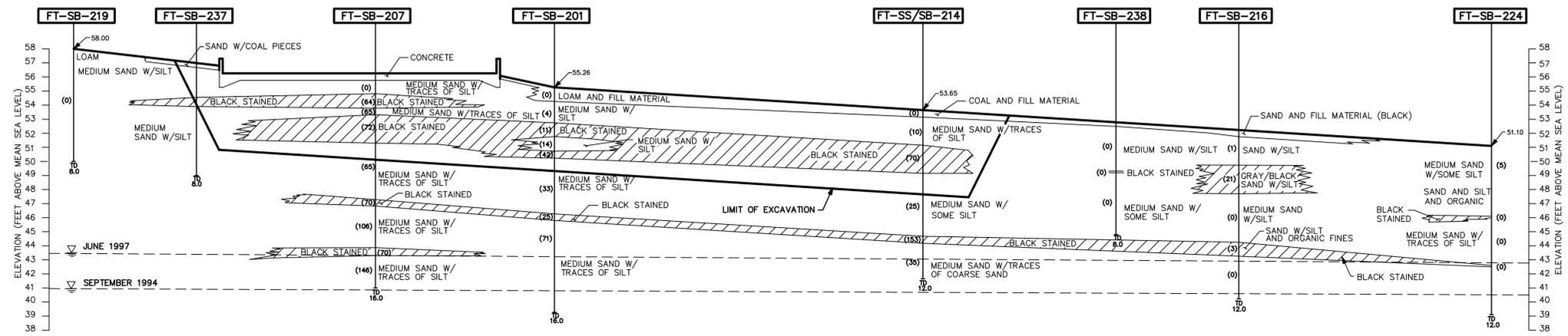


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REVISED BY	DATE
SCALE AS NOTED	



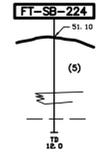
EXCAVATION PLAN AND CROSS SECTION LOCATION  
SITE 2 - FIRE TRAINING AREA  
NWIRP CALVERTON, NEW YORK

CONTRACT NO. 1610	
OWNER NO. 004	
APPROVED BY	DATE
DRAWING NO. <b>FIGURE 4</b>	REV. <b>0</b>



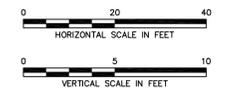
**LEGEND:**

BORING NUMBER  
 GROUND SURFACE ELEVATION  
 GROUND SURFACE  
 PID  
 LITHOLOGIC CONTACT  
 WATER TABLE  
 TOTAL DEPTH OF BORING (FT BOS)



**NOTES:**

- PHOTO IONIZATION DETECTOR (PID) READINGS (IN PARENTHESES) ARE THE MAXIMUM DETECTED WITHIN A GIVEN MATERIAL ENCOUNTERED.
- WATER TABLE INFORMATION TAKEN FROM MEASUREMENTS AT FT-MW-02-S AND PROVIDED IN THE 1995 RCRA FACILITY INVESTIGATION (HALIBURTON) AND THE 2001 PHASE 2 REMEDIAL INVESTIGATION (TNUS).



DRAWN BY DM	DATE 5/26/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	



CROSS SECTION A-A'  
 SITE 2 - FIRE TRAINING CENTER  
 NWIRP CALVERTON, NEW YORK

CONTRACT NO. IGIO	
OWNER NO. 004	
APPROVED BY	DATE
DRAWING NO. FIGURE 5	REV. 0

**ATTACHMENT 1**

CLIENT:		NWIRP CALVERTON		JOB NUMBER:		112GN1610 0000.1130	
SUBJECT:							
SITE 2 - FIRE TRAINING AREA							
CONCRETE PIT VOLUME CALCULATION							
BASED ON:				DRAWING NUMBER:			
BY:	JLM	CHECKED BY:		APPROVED BY:		DATE:	
Date:	6-6-05	Date:					

Measurements of the concrete pit were taken during the May 2005 supplemental sampling event. The measurements are used to determine the total volume of concrete in the concrete pit.

Description	Length (ft)	Width (ft)	Height (ft)	Volume (cf)	Volume (cy)
Outside Footer	251.33	1	2.00	502.65	18.62
Base (6")	4,778.36		0.50	2,389.18	88.49
Stepped Structure to West 1	5	0.5	0.21	1.04	0.04
Stepped Structure to West 2	5	0.5	0.75	5.25	0.19
Stepped Structure to West 3	5	0.5	1.29	11.63	0.43
Inside Square 1	87.83	0.5	0.5	21.96	0.81
Inside Square 2	99.83	0.5	0.5	23.71	0.88
Cross	61	0.5	0.5	15.25	0.56
Circular Portion to East 1	50.27	0.5	0.5	12.57	0.47
Circular Portion to East 2	165.13		0.50	82.56	3.06

Volume of Concrete = 113.55 cy

To account for uncertain base conditions of the concrete pit, an additional 20% of volume will be added to the estimate.

Volume of Concrete Pit = 136 cy  
Density of Concrete = 150 lb/cf  
Total Weight of Concrete = 275 tons

**ATTACHMENT 2**

CLIENT: <b>NWIRP CALVERTON</b>		JOB NUMBER: <b>112GN1610 0000.1130</b>	
SUBJECT: <b>SITE 2 - FIRE TRAINING AREA EXCAVATION AND BACKFILL VOLUMES</b>			
BASED ON:		DRAWING NUMBER:	
BY: JLM	CHECKED BY:	APPROVED BY:	DATE:
Date: 8-25-05	Date:		

**Total Excavation Volume**

From Figure 4, the excavation volume is calculated as follows:

Extent of 6-Foot Excavation =	23,241	sf
Limit of Excavation =	31,128	sf
Excavation Depth =	6	ft
Excavation Volume =	163,106	cf
=	6,041	cy
Density of Soil =	120	pcf
Weight of Soil =	9,786	tons

From Figure 4, the volume of surface soil (coal) to excavate is as follows:

Northern Area of Surface Soil (Coal) =	5,554	sf
Southern Area of Surface Soil (Coal) =	4,795	sf
Total Area of Surface Soil (Coal) =	10,348	sf
Depth of Surface Soil (Coal) to Excavate =	1	ft
Volume of Surface Soil (Coal) to Excavate =	10,348	cf
=	383	cy
Density of Surface Soil =	120	pcf
Weight of Soil =	621	tons

The excavation volume plus the volume of surface soil (coal) to excavated is as follows:

Total Excavation Volume =	6,424	cy
=	10,407	tons

**Note:**

From soil boring information, soil at Site 2 is typically classified as a medium sand with silt. According to 29 CFR Part 1926.650-.652, this soil would be considered a Type C soil. Table B-1 of 29 CFR Part 1926.652, the maximum allowable slope of Type

Excavation Sideslope = 2H:1V

**Total Backfill Volume**

The volume of backfill is assumed to be equal to the total volume of excavation plus the volume of the concrete pit plus an additional 5% to allow for site grading and proper site drainage.

Total Volume of Excavation =	6,424	cy
Volume of Concrete Pit =	136	cy
Additional 5% =	328	cy
Volume of Backfill =	6,888	cy
Density of Backfill Soil =	120	pcf
Weight of Backfill Soil =	11,159	tons

**ATTACHMENT 3**

**TABLE 1**  
**INTERIM REMEDIATION SERVICES**  
**SITE 2 – FIRE TRAINING AREA**  
**COST QUOTE PRICING**  
**NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP)**  
**CALVERTON, NEW YORK**

Item No.	Description	Quantity	Unit	Unit Price
1	Mobilization/Demobilization <ul style="list-style-type: none"> <li>• Meetings</li> <li>• Staging area setup</li> <li>• Decontamination pad setup</li> <li>• Erosion control</li> <li>• Site access/security</li> <li>• Temporary facilities</li> <li>• Final clean up</li> </ul>	1	Lump Sum	\$
2	Road Stabilization <ul style="list-style-type: none"> <li>• Installation/maintenance</li> </ul>	1	Lump Sum	\$
3	Structure decontamination, demolition, transportation, and disposal <ul style="list-style-type: none"> <li>• Concrete pit</li> <li>• Aboveground storage tanks containment structure</li> <li>• AS/SVE system</li> </ul>	1	Lump Sum	\$
4	Well Abandonment <ul style="list-style-type: none"> <li>• Air injection/soil vapor extraction wells</li> <li>• Free product monitoring/recovery wells</li> </ul>	1,118	Linear Foot	\$
5	Excavation <ul style="list-style-type: none"> <li>• Shallow petroleum-contaminated soil</li> </ul>	10,430	Tons	\$
6	Excavated soil – transportation and disposal <ul style="list-style-type: none"> <li>• Off-site disposal at a permitted facility</li> </ul>	10,430	Tons	\$
7	Site Restoration <ul style="list-style-type: none"> <li>• Backfill (clean fill)</li> <li>• Grading</li> <li>• Vegetation</li> </ul>	11,200	Tons	\$
8	Deliverables <ul style="list-style-type: none"> <li>• Work Plan</li> <li>• Health and Safety Plan</li> <li>• Construction Completion Report</li> </ul>	1	Lump Sum	\$