NWIRP Bethpage, NY

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CONTROL NO. 004

CONTRACT NO.	TASK ORDER #	
N62472-99-D-00032	**0060**	**NWIRP-Bethpage, NY**

PROJECT TITLE:
Operation and Maintenance of a Soil Vapor Extraction/Air Sparging System

FROM:	DATE
Foster Wheeler Environmental Corp. – CTO Manager: Marlene Lindhardt	11/07/01
TO:	DATE
Jim Colter (1 copy)-electronic	11/07/01

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ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-08, Statements; Final Work Plan	M. Lindhardt			

FINAL WORK PLAN

OPERATION AND MAINTENANCE OF A SOIL VAPOR EXTRACTION/AIR SPARGING SYSTEM NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

BETHPAGE, NY

Issued:

NOVEMBER 7, 2001

Prepared for:

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Contract No. N62472-99-D-0032
Contract Task Order 0060

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1	11/07/01	M. Lindhardt	J. Irey	Cover

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ARARs	Applicable or Relevant and Appropriate Requirements
AS/SVE	Air Sparging/Soil Vapor Extraction
Bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIH	Certified Industrial Hygienist
CMP	Complete Manifest Package
COTR	Contracting Officer's Technical Representative
CPM	Critical Path Method
CTO	Contract Task Order
GAC	Granular Activated Carbon
MS	Matrix spike
MSD	Matrix spike duplicate
NTR	Navy Technical Representative
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyls
PCE	Tetrachloroethene
PID	Photo ionization Detector
PRGs	Preliminary Remediation Goals
PPE	Personal Protective Equipment
PQCM	Program QC Manager
QC	Quality Control
QCPM	Quality Control Program Manager
RAC	Remedial Action Contract
ROICC	Resident Officer in Charge of Construction
SAP	Sampling and Analyses Plan
SHSO	Site Health and Safety Officer
SHSP	Site Health and Safety Plan
SOW	Scope of Work
SPEM	Senior Project Engineer/Manager
SQCM	Site QC Manager
SQCP	Site Quality Control Plan
SVOCs	Semi-Volatile Organic Compounds
T&D	Transportation and Disposal
TAL	Target Analyte List
TBCs	To Be Considered
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	Treatment, Storage and Disposal Facility
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1 WORK DESCRIPTION

Foster Wheeler Environmental Corporation (Foster Wheeler) has prepared this Work Plan for continued remediation of volatile organic compounds (VOC) in soil at the project site, located at the Naval Weapons Industrial Reserve Plant (NWIRP) in Bethpage, NY. The Work Plan has been prepared for Contract Task Order (CTO) No. 0060 under Remedial Action Contract (RAC) No. N62472-99-D-0032. This Work Plan extends site activities begun in 1998 under Delivery Order 04 for RAC No. N62472-94-D-0398. The scope of work (SOW) for this CTO is an extension of ongoing operation and maintenance (O&M) activities, and has not substantially changed from the original DO 04 SOW for O&M.

1.1 Site Introduction

NWIRP-Bethpage is a 108-acre site located in Nassau County on Long Island, New York, approximately 30 miles east of New York City. The site is bordered on the north, west, and south by the Grumman Aerospace complex, which covers approximately 605 acres, and on the east by a residential neighborhood. NWIRP-Bethpage is listed by the New York State Department of Environmental Conservation (NYSDEC) as an "inactive hazardous waste site" (#1-30-003B), as is the Northrop Grumman Corporation (#1-30-300A) and the Hooker/Ruco site (#1-30-004), located less than 1/2 mile west of NWIRP-Bethpage.

The NWIRP-Bethpage plant was established in 1933 and is no longer an active manufacturing facility. The primary mission for the facility was the research, prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft.

Hazardous waste management practices for Grumman facilities on Long Island included the marshaling of drummed wastes on the NWIRP-Bethpage property. Such storage first took place on a surface over the cesspool field, east of Plant No. 3. In 1978, the collection and marshaling point was moved a few yards south of the original site, to an area on a concrete pad. In 1982, drummed waste storage was transferred to the present Drum Marshaling facility located in the Salvage Storage Area.

The remediation being performed under CTO 0060 involves contaminated soil at Site 1, which is the entire former Drum Marshaling Area. Site 1- Former Drum Marshaling Area occupies approximately four acres. It contains a concrete storage pad and an abandoned cesspool leach field. It is surrounded on four sides by a fence. The site is relatively flat, with the eastern portion covered with bare sandy soils, gravel, grass and one concrete pad. The western portion of the site is predominantly covered with concrete. A vegetated wind row (pine) and fence are present along the eastern edge of the site to reduce community visibility.

Haliburton NUS (now Tetra Tech/NUS) conducted a remedial investigation in 1992 and 1993 for the Navy to investigate potential sources of VOC contamination. Based upon this investigation, a source of the groundwater contamination at Site 1 was determined to originate near the former Drum Marshaling pads. All shallow groundwater samples collected south of the Former Cinder Drum Marshaling Pad, and a few shallow groundwater samples collected north of the pad, exhibited VOC contamination. However, this area of groundwater contamination also coincides with the location of cesspools at the site. The cesspools could also be a source of VOC contamination.

Soil testing during the remedial investigation determined that Site 1 soils contained VOC, polychlorinated biphenyls (PCB) and arsenic contamination. Subsequent soil testing by Foster Wheeler in 1995 confirmed the presence of PCB and VOC contamination; however, the arsenic contamination could not be confirmed. In addition, testing of the cesspool contents resulted in higher concentrations of VOCs and PCBs in the cesspools than in the surrounding soil, and revealed the presence of cadmium. Additionally, occurrences of various polycyclic aromatic hydrocarbon (PAH) compounds, phenolic compounds and pesticides were present at Site 1 at relatively low concentrations.

An air sparging/soil vapor extraction (AS/SVE) system was constructed in 1998 and operated until December 2000, except for winter shut downs. Details on the activities performed during this time period were provided in the Final Close-Out Report prepared by Foster Wheeler dated April 2001.

1.2 Project Objectives

The objective of this project is to continue reduction of the VOC contamination in the soil at Site 1 for a five-month period. The AS/SVE system was shut down in December 2000. The following are the tasks to be performed under CTO 60.

- Mobilization and Site Preparation
- Pre-Operational Groundwater Sampling
- System Start-up and Prove-out
- Operations and Maintenance (O&M)
- O&M Sampling and Analysis
- Post-Operational Soil and Groundwater Sampling
- Waste Transportation and Disposal
- Annual Operating Report

1.2.1 Task 1 - Mobilization and Site Preparation

Premobilization activities include a site inspection to be conducted by the Field Engineer and Site Geologist and other staff as appropriate. The system will be inspected for operable conditions. Based on the initial inspection, procurement of necessary parts and supplies for repair and replacement of components will commence.

Two offices in the treatment building will be furnished and used for this purpose. A small building adjacent to the treatment building will be designated for laydown and storage of equipment and materials. The construction field office furniture/equipment will be mobilized to support the beginning of field activities. The office will utilize the existing electrical service at this building. The two-line telephone service to the treatment building and the pager system for the treatment system will be reestablished.

No additional plans will be submitted prior to mobilization. The site health and safety plan (SHSP) previously submitted under DO 04 will be utilized for the duration of this project.

1.2.2 Task 2 – Pre-Operational Groundwater Sampling

One round of groundwater samples will be collected to establish the current baseline condition of the aquifer's shallow zone. Samples will be taken from the 13 Foster Wheeler SVE/AS extraction wells and three permanent monitoring wells and analyzed for Target Compound List (TCL) VOCs only using 48-hour quick-turn around analysis.

1.2.3 Task 3 - System Start-up and Prove-out

1.2.3.1 Pre-Start-up Checks

Prior to start-up, Foster Wheeler will inspect the system to identify any necessary equipment repairs. Typical tasks include inspection of all piping to determine if damage has occurred during the winter shutdown, and inspection of equipment including the blowers, valves and gauges. The Field Engineer, who will be accompanied by the Electrical Engineer, and Field Technician, will perform the initial inspection. The following is a preliminary list of measures to be executed prior to system start-up.

1. Visual inspection of the piping system
2. Motor rotation and alignment
3. Electrical circuits check
4. Calibration adjustments
5. Control logic controls check

Upon completion of the inspection, the required parts and supplies will be procured and modifications made. This includes one 2,000-pound granular activated carbon (GAC) carbon canister. An additional unit that was not expended and remains at the site will also be used in the system. All repairs and replacements will be made prior to system start-up.

"Cold" start-up, consisting of turning on all units and operating with ambient air to ensure proper operation of system components will be conducted prior to "hot" start-up.

1.2.3.2 "Hot" Start-up Procedure

Once the pre-start-up tests have been completed, "hot" start-up of the extraction and injection system will be conducted in accordance with O&M procedures. Both pressure and air/gas velocity measurements will be made at each well system port to ensure design flows and to balance the system. Off-gas readings will be made at the carbon units, before, in between and after these units to monitor VOC capture and breakthrough.

System start-up and prove-out will consist of the following:

1. Air flow rates and pressure checks
2. Control logic checks
3. Off-gas monitoring
4. Telemetry system check

The overall system will be monitored during this period and all data logged in accordance with the established O&M procedures.

1.2.4 Task 4 - Operations and Maintenance

The O&M of the AS/SVE system will be performed for a total period of five months by a Field Technician, with assistance and oversight by the Field Engineer. The system will be shut down in December 2001.

1.2.4.1 O&M Requirements

The Field Technician will visit the site weekly. Operating system data such as extraction flow rate, extraction vacuums, individual well vacuums, air sparging well flow rates, and air sparging pressures will be recorded. The Field Engineer will accompany the Field Technician monthly to check the system and collect additional operating data.

System operating data will be entered into the existing site-specific database to track remediation system effectiveness. This step will assist us in optimization of the remediation system's effectiveness. The database track's VOC removals by the system, VOC concentrations in individual wells, and exerted vacuums at individual wells.

The Field Technician will perform all routine periodic maintenance items, such as lubrication of equipment, belt wear, air filter inspections/replacements, vibration checks, instrument checks, photo ionization detector (PID) readings, condensate draining and scheduling and assisting with carbon change-outs. Both weekly and monthly inspection logs will be required to be completed by the Field Technician, as well as, any non-routine incidents such as telemetry system call-ins.

Engineering support is provided to; 1) interpret system data; 2) monitor system performance; 3) recommend system adjustments; 4) recommend pulsing frequency and schedule; 5) provide monthly reporting to the Navy.

Optimization of the system based on air vapor analytical results from the extraction wells will be performed twice during the O&M period. Each round of optimization will consist of the Field Engineer at the site for one week to make adjustments to individual well flow rates as a measure to increase flow from the more contaminated areas.

1.2.4.2 O&M Vapor Sampling and Analysis

Sampling and analysis of the target compounds will be according the tables in Section 2. Routine vapor sampling consists of one sample of extracted vapor, collected twice per month. A complete round of vapor samples from 13 extraction wells will be collected at the beginning of operations and twice during the performance of the project for optimization purposes. The vapor samples will by analyzed by T0-14 analytical methodology and collected using Summa canisters. The laboratory reporting protocol will be NYS "Category B," as applicable.

1.2.5 Task 5 - Post-Operational Sampling and Analysis

A separate letter Sampling and Analysis Plan (SAP) will be prepared for the post-operational sampling program. This draft SAP will be submitted to the Navy approximately 60 days prior to system shutdown.

Concurrently with the system shutdown, Foster Wheeler will collect post-operational samples from groundwater and soil. Groundwater samples will be collected from 13 extraction wells and

three monitoring wells, and analyzed for TCL VOCs. These results will be compared to the baseline round of samples collected prior to start-up and presented in the Annual Operating Report.

Post-operational sampling also includes a soil-boring program to be implemented at the conclusion of O&M. The boring program will consist of up to 50 borings at a maximum depth to the top of the water table. Approximately three samples per boring will be collected for a total of 150 soil samples. The exact soil-boring program will be designed based on historical soil data collected to date, combined with data collected in the field during O&M. Soil cuttings will be placed back in the borehole to the maximum extent possible. The soil samples will be analyzed for TCL VOCs, TAL metals and PCBs.

1.2.6 Task 6 - Disposal

Five waste streams were identified which will require off-site transportation and disposal (T&D). These are: 1) Drill cuttings; 2) Spent PPE; 3) Condensate from Moisture Separator; 4) Spent activated carbon; 5) Spent filters. Groundwater from well purging prior to sampling will be allowed to drain onto the ground surface if non-RCRA hazardous and PCB levels are less than 10 ppm. Section 4 provides details of the waste management plan.

1.2.7 Task 7 - Demobilization

Upon completion of O&M, all temporary office and storage facilities will be removed. Phone connections will be disconnected.

No equipment other than sampling tools will require final decontamination. Final PPE, decontamination pad liners, and other potentially contaminated supplies will be labeled and properly disposed. Clean drums used for the collection of decontamination water will be returned to the supplier for recycling. The treatment building office will be emptied of contractor office equipment. Construction equipment will be returned to the respective supplier when it is no longer needed.

1.2.8 Submittals

Monthly operational reports will be continued as instituted under DO 04. The Annual Operating Report will be prepared confirming the activities performed and the results obtained. Material tracking information, including manifests and bills of lading, will be included in the Annual Operating Report.

1.3 Management Approach

This section presents key aspects of Foster Wheeler's project organization and management including key personnel and their responsibilities, project management methods and project control methods. The management approach does not change from DO 04 and is summarized below.

1.3.1 Organization

Ms. Marlene Lindhardt CHMM, is the responsible Senior Project Engineer/Manager (SPEM) for this CTO. Table 1-1 describes the other staff resources assigned to this project, along with responsibilities and primary reporting chain of command.

Table 1-1 Personnel Responsibilities and Authorities

Position	Responsibilities	Reports to
SPEM	• DO negotiation assistance • Commit project resources • Obtain staffing • Approval - Work Plan, budgets, schedules	• Program Manager
Field Engineer/ Site QC Manager (SQCM)	• Implement SQCP • O&M oversight	• SPEM/ Program QC Manager (PQCM)
Field Technician/ Site Health and Safety Officer (SHSO)	• Perform O&M duties • Communicate with ROICC • Schedule personnel, equipment • Supervise field labor and subcontractors • Implement SHSP • Ensure site staff have adequate medical training • Issue "Stop-Work"	• SPEM/Program Health & Safety Manager
Project Control Engineer	• Track budgets, schedule	• SPEM
Site Geologist	• Driller supervision • Log soil cuttings • Sampling and field analysis • Performs O&M duties	• SPEM
Regulatory Specialist	• Waste characterization and waste profile preparation • Prepare manifests and bills of lading • Waste tracking	• SPEM

We have defined services to be subcontracted for portions of the project and identified services to be subcontracted as summarized in Table 1-2. The subcontractors will be finalized after completion of the procurement process. When possible, SB/SDB subcontractors will be used for these services.

Table 1-2 Subcontract Services

Service	
• Vapor analysis • Soil and water analysis • Confirmatory soil borings	• T&D of soil and PPE • Carbon regeneration • T&D of VOC condensate and well purge water

1.3.2 Key Personnel

Project staff assignments include the SPEM, Field Engineer/SQCM, Field Technician/SHSO, Site Geologist, and Regulatory Specialist.

Senior Project Engineer/Manager - Ms. Marlene Lindhardt, CHMM is the SPEM for the CTO. She is responsible for the overall direction and management of the project including technical quality, schedule, cost control, reports/submittals, and EFA-NE contact.

Reporting to Ms. Lindhardt will be the technical staff required to implement the O&M. This includes the engineers, scientists, and regulatory compliance personnel. The field staff will report to the SPEM while assigned to the project. Also reporting to Ms. Lindhardt will be the support services that control cost and schedule and procure material, equipment, and subcontracts.

Field Engineer/SQCM - Mr. K. Subburamu (Subbu), PE is the Field Engineer for the DO. He will monitor activities to ensure conformance with approved work plans, design documents, corporate procedures, and Program policies. He will oversee the operation and maintenance of the system and is responsible for monthly data reports. He will be supported by Mr. Matt Peles, who was the Field Engineer under DO 04.

Field Technician/SHSO - The Field Technician, Mr. Eric Paukstaitis, is responsible for O&M activities and will coordinate field activities with technical staff. He will interact with EFA-NE and NWIRP personnel and will oversee subcontractor activities. He will coordinate site activities and is responsible for implementation of the SHSP. As the cross-trained Site Health and Safety Officer (SHSO), he enforces the SHSP, air monitoring, sampling, training and coordination of medical surveillance for all site personnel. He has "stop work" authority for all safety-related issues. The SHSO will receive project guidance from the SPEM while maintaining an independent reporting relationship to the contract Certified Industrial Hygienist (CIH).

Site Geologist - Mr. Eric Paukstaitis, Mr. Morgan Evans and Mr. Andrew Prophete are Site Geologists assigned to the project. They will alternate the oversight of groundwater and soil sampling activities.

Note that Mr. Paukstaitis, Mr. Evans and Mr. Prophete are all qualified to perform the duties of Field Technician/SHSO and Site Geologist and will alternate roles on occasion.

1.3.3 Communications

Weekly Meetings - Weekly telephone conferences or site meetings, as requested between the Project Manager and the Navy Technical Representative (NTR) and Resident Officer in Charge of Construction (ROICC) will address short-term issues such as site personnel, activities schedule, and other issues relevant to the status and forecast of site activities. When necessary, key team members will participate in action plans. Assignments will be identified and documented in these meetings.

Verbal Updates - The occurrence of new developments in the project, particularly those that may result in changes to the contract, will be verbally communicated to the NTR and ROICC as information is available. This will allow quicker and better field decision-making consistent with project objectives.

Emergency Notifications - In the event of a site emergency, the NTR/ROICC and Contracting Officer's Technical Representative (COTR) will be notified immediately following notification of any emergency response teams or organizations.

1.3.4 Cost and Schedule Control

The contract procedures will be followed to prepare, monitor and control cost and schedule. Contract changes are those increases or decreases in the project that require an increase or decrease in resources. If changes are identified, a Change Request Form will be prepared and submitted for Navy approvals.

1.3.5 Project Close Out

Following completion of the project, Foster Wheeler will submit the Annual Operating Report. The SPEM will routinely collect, consolidate, and audit the project files and make certain that all documentation is retained and properly filed in accordance with the standard operating procedure for document control. The Annual Operating Report will include material tracking and manifests, test results, record drawings, and photographs.

2 SAMPLING AND ANALYSIS PLAN

The sampling and analysis plan (SAP) will be implemented to verify the effectiveness of the remedial activities conducted at the NWIRP site in Bethpage, New York. Tables 2-1 and 2-2 summarize the field sampling schedule and the waste characterization sampling program, respectively. A confirmatory soil-boring program will be implemented at the conclusion of O&M. A separate letter SAP will be submitted for Navy approval prior to implementation of the soil-boring program.

Table 2-1 represents the sampling schedule for the O&M.

Table 2-1 Environmental Sampling Schedule Summary

Matrix	Pre-Operational	M1	M2	M3	M4	M 5	Post-Operational	TOTAL
Groundwater [1]	16						16	32
Trip Blank	1						1	2
Field Blank	3						3	6
TOTAL WATER								40
Vapor (Gas)	13	2	15	2	15	2	2	51
TOTAL VAPOR								51

[1] 48-hour Quick Turnaround. All other analysis based on 14-day turn around time.

Table 2-2 Summary of Waste Characterization Sampling Program

Matrix	Sample Location	TCL VOCs	TCLP VOCs	TCL SVOCs	TCLP SVOCs	TCLP Pets/Herb	TAL Metals	TCLP Metals	PCB	Ignitability	Reactivity	Corrosivity
Purge/Decontamination Water	55-gallon drums	2		2			2		2			
Condensate	55-gallon drum	1		1				1	1	1	1	1
Spent activated carbon	Carbon Vessel		1		1	1		1	1	1	1	1
Spent filters	55-gallon drum		1		1	1		1	1	1	1	1

NOTES:

TCL indicates Target Compound List

TCLP indicates Toxicity Characteristic Leaching Procedure

VOCs indicates Volatile Organic Compounds

SVOCs indicates Semi-Volatile Organic Compounds

Pest/Herb indicates Pesticides/Herbicides

TAL indicates Target Analyte List

PCBs indicates Polychlorinated Biphenyls

2.1 Air Monitoring and Testing

The following sections describe the air monitoring and testing activities that will be conducted during this remedial action.

2.1.1 Ambient Air Monitoring

The field team will monitor the ambient air quality as part of the health and safety surveillance program during the remedial activities. The following instruments will be used:

- Photo ionization Detector 11.7 (HNu with 11.7eV lamp or equivalent)
- Combustible Gas Indicator

During air monitoring, the field team will generate data on the presence or absence of VOCs. If "hot spots" are found at the site, the health and safety protection levels/requirements and the technical approach to the affected tasks will be modified and implemented, depending on the action level. Details on health and safety monitoring to be performed for the various field tasks are defined in the DO 04 SHSP.

2.1.2 Extracted Vapor Sampling

Volatile organic concentrations in the extracted vapor will be collected to estimate the efficiency of the extraction process. Samples will be collected twice a month, plus there will be three rounds of samples collected from 13 extraction wellheads. The vapor samples will be collected and submitted for laboratory analysis of VOCs. Vapor samples will be analyzed using T0-14 sampling and analytical methodology using Summa canisters.

2.1.3 Soil Vapor Pressure Monitors

Six clusters of soil vapor pressure monitors have been installed on the eastern and western edges of the site. These monitors are used to confirm that all injected air is being captured by the soil vapor extraction system. Each cluster consists of two wells; one near the water table and one near the middle of the unsaturated zone. Actual samples are not collected from these monitors. Soil vapor pressure readings and smoke test results will be noted to monitor the effectiveness of the remediation system.

2.1.4 Carbon Unit Sampling

Volatile organic concentrations will be monitored at the sample ports before, in between, and after the two carbon units. PID readings will be collected from sampling ports weekly.

2.2 Sampling Groundwater/Wastewater

The following describes the sampling activities that will be conducted for groundwater sampling and disposal of the condensate, decontamination, well development, and purge water.

Sampling and analysis of the target compounds will be according to Table 2-1 through 2-3. The methodology employed to measure TCL VOCs will be EPA 8260B for the water matrices. The vapor samples will employ T0-14 sampling and analytical methodology using Summa canisters. The laboratory reporting protocol will be NYS "Category B," as applicable.

2.2.1 Groundwater Sampling

Sixteen groundwater samples will be collected prior to the start of the remediation to establish current baseline conditions. Groundwater from each of the 13 Foster Wheeler extraction wells and the three existing groundwater monitoring wells will be sampled and analyzed for VOCs.

These data will be used to establish the pre-start-up baseline areal extent of groundwater contamination. These wells will be re-sampled at the end of O&M.

Prior to performing the groundwater sampling, an initial headspace reading and measurement for dissolved oxygen will be collected at each well. Static fluid level measurements, and the total depth of each well, will then be obtained using an oil/water interface probe or an electronic water level indicator. The depth to groundwater and the thickness of floating product, if present, will be determined in the well at the time of measurement. The fluid levels will be measured to the nearest 0.01 foot. The water levels and well depth measurements will be used to calculate the volume of water in each well and the minimum volume of water that must be purged prior to sampling.

Up to five well volumes will be purged from the wells prior to sampling. If the well is pumped dry, purging will be considered complete and an appropriate note will be recorded in the field logbook. While each well is being purged, field measurements of pH, temperature, and specific conductance will be recorded. If all three parameters stabilize, the volume of water purged will be recorded and purging will be considered complete. If the field parameters do not stabilize, purging will continue until three to five volumes have been purged. Field measurements for each well sampled will be recorded on a groundwater sample log and in the field logbook. After the purging has been completed, groundwater samples will be collected using the low-flow purge pump or disposable Teflon bailer. Samples will be transferred directly to the laboratory cleaned sample containers.

2.2.2 Water Level Measurements

Prior to each round of groundwater sampling, water level measurements will be collected in each well using an electronic water level indicator. This unit has a tape divided into incremental measurements of 0.01 feet and two conductors forming a probe. When groundwater is encountered, the circuit is complete and a light meter, or audible buzzer is activated. The depth to groundwater is then measured from this point to the reference mark of the inner casing of the well. Each reading will be made three to four times, and the readings will be recorded in the field logbook. The water level indicator will be decontaminated between wells to avoid cross contamination and incorrect readings.

2.2.3 Condensate Sampling

The condensate generated by the SVE system will be placed in a 55-gallon DOT-approved steel drum for on-site storage. A representative sample will be analyzed to classify the waste for disposal. Per disposal facility requirements, the water sample will be analyzed for TCL VOCs, TCL semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, and PCBs.

2.2.4 Purge/Decontamination Water Sampling

The well purge/decontamination water will containerized in 55-gallon drums for on-site storage in a satellite accumulation area. One sample will be collected and submitted for analysis. Each composite sample will be analyzed for TCL VOCs, TCL SVOCs, TAL metals, and PCBs. If determined to be non-RCRA hazardous and PCBs are less than 10 ppm, the water will be discharged to ground surface.

2.2.5 *Activated Carbon Sampling*

Prior to off-site disposal, it will be necessary to sample and analyze the spent activated carbon to characterize the carbon. A composite grab sample will be collected from the carbon vessel and will be analyzed for TCLP VOCs, TCLP SVOCs, TCLP pesticides/herbicides, TCLP Metals, PCBs, ignitability, reactivity, and corrosivity. Only one sample will be required to characterize the carbon and fulfill the carbon regeneration facility's pre-acceptance requirements.

2.3 Laboratory Analysis

Analytical testing will be performed by a NYSDEC-certified laboratory, following either NYSDEC ASP-CLP and/or SW-846 protocols. All of the groundwater samples will be analyzed for TCL VOCs. Tables 2-1 and 2-2 summarize the analytical sampling program. Sample collection and analytical protocol information, including sample type, number of samples and duplicates, matrix, sampling device, analytical parameter, sample container requirements, sample preservation, laboratory analysis, method detection limits, and holding times are presented in Table 2-3.

Table 2-3 Summary of Analytical Parameters, Test Methods, Containers, Preservation, and Holding Times for Samples

Matrix	Parameter	Proposed Test Method	Container	Preservation	Holding Time
Air/Vapor	VOCs	TO-14	(1) Summa canister	N/A	N/A
Water (Decontamination water, Purge water and Condensate)	TCL VOCs	8260B	(2) 40 ml glass vials w/ Teflon-lined septum; No headspace	Ice to 4°C	7 Days
	TCL SVOCs	8270C	(2) 1-liter amber glass w/ Teflon-lined cap	Ice to 4°C	7 Days to Extract; 40 Days to Analyze
	TAL Metals	200 Series	(1) 1-liter polyethylene	Nitric Acid to pH <2; Ice to 4°C	6 Months; (Hg – 28 days)
	PCBs	8082	(1) 1-L amber glass w/ Teflon-lined cap	Ice to 4°C	7 Days to Extract; 40 Days to Analyze
Solids (Spent Carbon, Filters, Soil)	TCLP VOCs	1311/8260B	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	14 Days to TCLP Extract; 14 Days to Analyze
	TCLP SVOCs/ PEST/HERB	1311/8270C 8O81/8151A	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	14 Days to TCLP Extract; 7 Days to Preparatory Extract; 40 Days to Analyze
	TCLP Metals	1311/6010A/7471A	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	6 Months to TCLP Extract; 6 Months to Analyze (Hg - 28 Days)
	PCBs	8082	(1) 8 oz glass w/ Teflon-lined cap	Ice to 4°C	14 Days to Extract; 40 Days to Analyze
	Ignitability	Method 1030	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	N/A
	Reactivity	SW-846; Chap. 7.3	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	N/A
	Corrosivity	Method 1110	(1) 8 oz glass w/Teflon-lined cap	Ice to 4°C	N/A

NOTES:
VOCs indicates Volatile Organic Compounds
TCL indicates Target Compound List
SVOCs indicate Semi-Volatile-Organic Compounds
TCLP indicates Toxicity Characteristic Leaching Procedure
PCBs indicates polychlorinated biphenyls
TAL indicates Target Analyte List
Pest/Herb indicates pesticides/herbicides

3 ENVIRONMENTAL PROTECTION

The Environmental Protection Plan previously established under DO 04 will be followed to ensure compliance with all applicable federal, state and local regulations. A summary of the regulatory requirements presented in the previously approved plan is provided below.

As a NYSDEC inactive hazardous waste site, actions at the site are conducted consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Remedial actions are required to comply with, and upon completion attain, Applicable or Relevant and Appropriate Requirements (ARARs). A requirement that is relevant and appropriate must be complied with to the same degree as if it were applicable. In addition to ARARs, regulatory agency advisories, criteria, or guidance may be identified as requirements "to be considered" (TBCs).

Remedial actions conducted entirely on site need only comply with the substantive aspects of the ARARs/TBCs and not the administrative aspects such as permitting (specifically exempted under CERCLA Section 121(e)) or administrative reviews. Activities off site must comply with all necessary federal, state, and local laws; regulations; and ordinances (e.g., off-site transportation of remedial action wastes must comply with local, state, and federal transportation standards, both substantive and administrative). A list of project-specific ARARs/TBCs is presented in Table 3-1.

Table 3-1 List of Applicable or Relevant and Appropriate Requirements (ARARs) and Requirements to be Considered (TBCs)

Requirement	Citation	Description
Federal		
USDOT Hazardous Materials Transportation Regulations	49 CFR 172	Defines DOT hazard classes, proper shipping names and labeling, marking and shipping paper requirements for transportation of DOT hazardous materials.
USDOT Hazardous Materials Transportation Regulations	49 CFR 172.700-704	Requirements for DOT training for hazardous materials employees.
USDOT Hazardous Materials Transportation Regulations	49 CFR 173	Packaging requirements for DOT regulated hazardous materials.
Hazardous Waste Classification	40 CFR 261	Requirements for the identification of hazardous waste.
Hazardous Waste Generation	40 CFR 262, 40 CFR 265 Subparts C, D	Requirements for generators of hazardous waste including storage limits, inspections, marking, record keeping and Contingency Plan.
Transportation of Hazardous Waste	40 CFR 263	Requirements applicable to the off-site transportation of hazardous waste.
Storage of Hazardous Waste	40 CFR 265, Subpart I, CC	Requirements for the use and management of containers at generator location.
TSCA PCB Management	40 CFR 761	Specifies requirements for the identification and classification of PCB wastes, generator management requirements and requirements for off-site transport.
RCRA Land Disposal Restrictions	40 CFR 268.7	Specifies Universal Treatment Standards for RCRA wastes, and generator notification requirements.
New York		
Air Pollution Control Regulations	Air Guide 1 6NYCRR 200-257	Specifies requirements and standards for new source controls for VOCs from point sources.
Hazardous Waste Management	6NYCRR 371, 371& 373	Specifies standards for identification and classification of hazardous wastes; generator management requirements and requirements for hazardous waste transportation.
NY State Solid Waste Management	6NYCRR 360	Specifies requirements for the storage and transportation of non-hazardous solids waste.

4 WASTE MANAGEMENT PLAN

4.1 Introduction

The objective of this section is to ensure the safe handling, management, transportation and disposal of all waste streams generated during the remedial action. In addition, each of these activities will be conducted in compliance with project ARARs/TBCs for onsite waste management activities and all applicable federal, New York State, and local requirements for off-site waste transportation and disposal.

Based on previous activities under DO 4, five waste streams were identified that will require off-site transportation and disposal. These are: 1) Drill cuttings; 2) Spent PPE; 3) Condensate from moisture separator; 4) Spent activated carbon; 5) Spent filters. Groundwater from well purging prior to sampling will be samples and allowed to drain onto the ground surface if determined to be non-RCRA hazardous and PCBs are less than 10 ppm.

4.2 Waste Classification

The following is an overview of the classification requirements for wastes generated during the remedial action. Refer to Table 4-1 for a summary listing of classification, expected volume, and disposition requirements by individual waste stream.

Table 4-1 Summary of Waste Material

Waste Stream	Volume	Assumed Classification	Assumed Disposition
Drilling soil cuttings	100 drums	TSCA Regulated /RCRA Hazardous/Non Hazardous	Off-site disposal TSCA/ RCRA/On-site disposal
PPE	5 drums	Non-hazardous	Off-site disposal – landfill
Purge/Decontamination water	5 Drums	TSCA Regulated/RCRA Hazardous/Non Hazardous	Off-site disposal TSCA/ RCRA/On-site disposal
SVE condensate water	1 drum	RCRA Hazardous	Off-site disposal - RCRA TSDF
Spent activated carbon	4,000 lbs	RCRA Hazardous	Off-site recycling/regeneration
Spent filters	1 drum	RCRA Hazardous/TSCA Regulated	Off-site disposal – RCRA/TSCA TSDF

4.3 Hazardous Wastes

The Regulatory Specialist will confirm the waste classifications by reviewing the analytical data developed for each waste stream prior to off-site transportation and disposal. A waste certification and waste profile sheets will be provided to the Navy for review, approval, and generator signature prior to off site disposal of each waste stream.

4.4 PCB Wastes

Soil cuttings from borings suspected to be located within the area of PCB contamination will be segregated. These soil cuttings may contain equal to or greater than 50 ppm of PCBs, and will be disposed as TSCA wastes at a TSCA permitted disposal facility, as appropriate. Decontamination water derived from soils containing PCBs will be disposed as TSCA wastes in accordance with the anti-dilution provisions of TSCA. Purge water will be disposed as TSCA wastes only if it is determined to contain greater than or equal to 50 ppm of PCBs in accordance with USEPA Guidance Memorandum "PCB Contamination at Superfund Site - Relationship of TSCA Anti-Dilution Provision to Superfund Response Action" dated 7/31/1990. PCB wastes will be managed in accordance with requirements under TSCA 40 CFR 761 and New York State Hazardous Waste Regulations under 6 NYCRR 370-375 because PCBs are regulated as a New York State Hazardous Waste.

4.5 Waste Minimization

Foster Wheeler will utilize best management practices to minimize waste generation. These include, but are not limited to, segregating waste streams, reusing/recycling materials, and decontaminating and reusing equipment.

4.6 Screening/Segregation

Wastes will be screened and segregated to minimize the mixing of contaminated and uncontaminated materials. The goal is to separate waste as accurately as possible into categories that will facilitate cost-effective management of the wastes.

4.7 Containerization

DOT specification 1A1 (closed top) and 1A2 (open top) steel drums will be used for containerizing the non-bulk waste streams generated for this remedial action.

4.8 Accumulation/Storage

All on-site storage will comply with generator requirements listed in 40 CFR 262 and 6NYCRR372. All on-site storage of PCB wastes will be conducted in accordance with PCB container storage requirements under 40 CFR 761.65. Waste container storage areas inside the treatment plant are equipped with secondary containment.

4.9 Container Inspections

Hazardous waste and PCB waste container inspections will be performed and logged weekly to ensure proper labeling and marking, and to monitor the condition of the containers and the condition of the storage area. The weekly inspection reports will be maintained in the project file and copies will be provided to the Navy.

4.10 Container Labeling and Marking

At the time of generation, all waste containers will be marked in indelible ink, paint or grease pencil with the following information:

- Source and location
- Contents of material in the container and expected hazards
- Accumulation start date for hazardous wastes
- Out of Service Date for PCB wastes

- Date container was sampled
- HAZARDOUS WASTE label on all known or suspected hazardous wastes
- PCB label on all known or suspected PCB wastes

Upon receipt of analytical results, waste will be classified as specified in Section 4.2. Based upon final classification, the Regulatory Specialist will select a proper DOT Shipping name and description for any DOT regulated hazardous materials. The Regulatory Specialist will direct the completion of any required DOT markings and labels and will specify the placarding requirements for the transportation vehicle.

4.11 Selection and Identification of TSDFs

TSDFs to be used for this project have not yet been selected and will be selected via competitive bid in accordance with the FAR requirements. A formal RFP will be prepared after project mobilization. Facilities will be selected in accordance with the requirements of the CERCLA Off-site Rule for wastes from CERCLA sites and Foster Wheeler Corporate Procedures. Each of these facilities is subject to final approval by the Navy. CERCLA Off-site approval status of each facility will be verified within 60 days of the anticipated disposal date.

4.12 USEPA Hazardous Waste Generator Identification Numbers

The Navy's USEPA Hazardous Waste Generator Identification Numbers will be obtained and used for all off-site hazardous and PCB waste disposal. Transporter and disposal facility identification numbers would also be obtained and verified prior to off-site shipment of site wastes.

4.13 Complete Manifest Packages

Hazardous waste manifests will be used for all off site hazardous and PCB waste shipments. The state hazardous waste manifest to be used will be specified by the state in which the TSDF is located. If the TSDF state does not require its own manifest, then a NYS Hazardous Waste Manifest will be used. Bills of Lading or non-hazardous waste manifests will be used for shipment of all non-hazardous wastes. A Complete Manifest Package (CMP) will be submitted to the Navy for each waste stream destined for off site disposal. The principal components of the CMP will consist of:

- Hazardous Waste Manifests or Bills of Lading
- Waste Profile Sheets
- Land Disposal Restriction Waste Notification Forms

Supporting documentation will include all sampling analytical results, waste certifications performed by Foster Wheeler, information reviewed in identifying the proper USEPA waste codes and DOT proper shipping names, and packaging, labeling, and marking requirements.

Foster Wheeler will submit a CMP to the Navy for each waste stream for review and signature prior to shipment. After the CMP has been approved and signed, two copies of the approved and signed CMP will be prepared. One copy will be placed in the project file and one copy will be returned to the Navy with the transporter-signed copies of the manifests and Bills of Lading.

4.14 Recordkeeping and Reporting Requirements

Foster Wheeler will supply the following documents to the Navy to enable the Navy to comply with the records retention and reporting requirements under RCRA:

- Generator signed manifests
- TSDF signed manifests
- Land Disposal Restriction Waste Notification Forms
- Manifest Discrepancy and Exception Reports
- Waste Profile Sheets
- TSDF Certificates of Disposal/Destruction

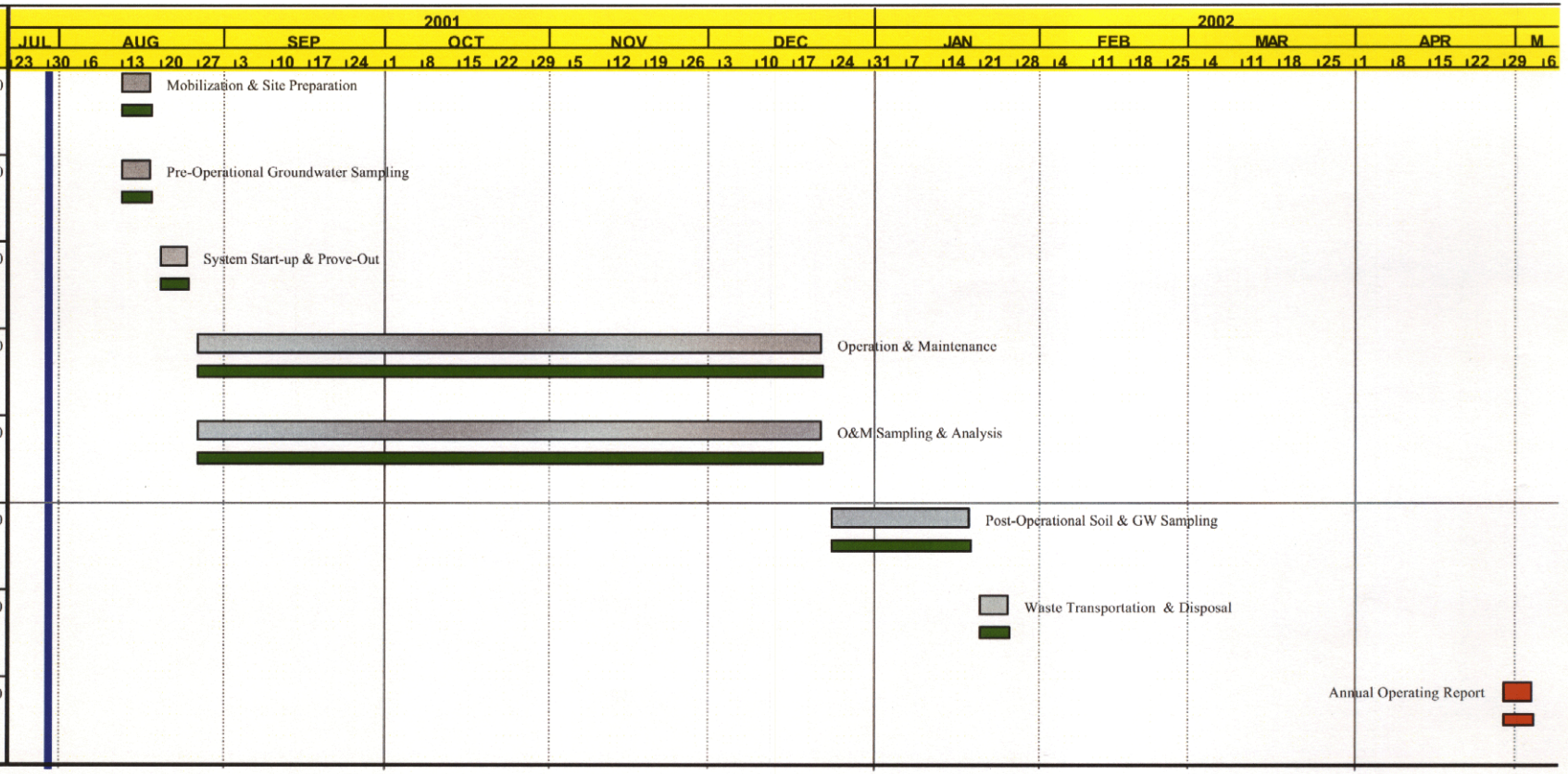
All test results, waste analyses and waste determinations will be documented. These records will be supplied in the CMP with a duplicate submitted in the Annual Operating Report. Discrepancy Reports will be prepared for the Navy's signature for any manifest discrepancy related to waste type or volume. These reports will be prepared and submitted within 15 days after waste receipt by the TSDF.

Manifest Exception Reports are required if a generator does not receive a TSDF signed manifest within 45 days of the shipment date. If we do not receive a manifest by the 35th day, we will contact the TSDF and verify the shipment status and prepare an Exception Report, which will be submitted to the Navy Representative for signature by the 40th day. We will document all calls to locate the shipment and include the documentation in the Exception Report.

5 CPM PROJECT SCHEDULE

We have prepared a Critical Path Method (CPM) type schedule for the project in a Gantt chart format. The schedule is shown in Figure 5-1. A normal 8-hour, 5-day work week is assumed. Baseline sampling is scheduled for August 2001. Start-up will begin after sampling is complete.

Early Start	Early Finish	% Comp	Activity
13AUG01*	17AUG01	0	Mobilization & Site Preparation
13AUG01	17AUG01	0	Pre-Operational Groundwater Sampling
20AUG01	24AUG01	0	System Start-up & Prove-Out
27AUG01	21DEC01	0	Operation & Maintenance
27AUG01	21DEC01	0	O&M Sampling & Analysis
24DEC01	18JAN02	0	Post-Operational Soil & GW Sampling
21JAN02	25JAN02	0	Waste Transportation & Disposal
29APR02*	03MAY02	0	Annual Operating Report



Start Date	30JUL01
Finish Date	03MAY02
Data Date	30JUL01
Run Date	02AUG01 13:55

Early Bar
Target Bar
Progress Bar
Critical Activity

C60P

Sheet 1 of 1

CONTRACT TASK ORDER 60

ADDITIONAL OPERATION OF AS/SVE SYSTEM @ IR SITE 1

NWIRP BETHPAGE, NY