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INTERNATIONAL TECHNOLOGY CORPORATION

Project No. 76079
February 199

Draft Plan

Construction Quality Control Plan Addenda Sites 5 and 17, U.S. Marine Corps Air Station Cherry Point, North Carolina

Contract No. N47408-92-D-3056
Delivery Order 0011

Prepared for:
Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000

Prepared by:
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RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

MATERIAL INSPECTION AND RECEIVING REPORT

Form Approved
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21 CONTRACT QUALITY ASSURANCE

A. ORIGIN

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02.02- 02/01/95-01444

1.0 TITLE AND SIGNATURE PAGE

CONSTRUCTION QUALITY CONTROL PLAN ADDENDA

Removal Action
Sites 5 and 17
Marine Corps Air Station Cherry Point
Cherry Point, North Carolina

Contract No. N47408-92-D-3056
Delivery Order No. 0011

Prepared to Meet NAVFAC Specification Number
05-93-3123; Section 01010; Clause 3.5.6

Reviewed and Approved By:

Raymond A Lion Jr — 2-15-95

QA Manager, Construction and Remediation; IT Corporation — Date

Harry Ohanesian — 2-14-95

Project Manager; IT Corporation — Date

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5.0 TASK DESCRIPTION

The task to be completed under this delivery order is performance of a removal action at sites 5 and 17 at the Marine Corps Air Station (MCAS) Cherry Point, in Cherry Point, North Carolina. MCAS Cherry Point is an 11,485-acre military installation located in southeastern Craven County. The site is bounded on the north by the Neuse River Estuary, on the east by Hancock Creek, and on the south by North Carolina Highway 101. The western Boundary lies approximately 1/2 mile west of Slocum Creek.

5.1 Site Description and Background

The work areas are located within the boundaries of Sites 5 and 17 at the MCAS at Cherry Point, North Carolina. Descriptions of these sites are presented as follows.

5.1.1 Site 5

Site 5 is located along the east side of Slocum Creek in the northwest portion of the MCAS, between a dismantled steam generation plant and Slocum Creek, within the 100-year floodplain. In general, the site is flat and ground surface slopes gently toward Slocum Creek. There are few remaining structures and the remainder of the area is fairly well vegetated.

Also located near Site 5 is a 1,500,000-gallon aboveground tank previously used for storage of No. 6 fuel oil. Site 5 previously included a 100,000-gallon aboveground tank (Tank No. 1771) used to store waste petroleum oil and lubricant (POL) products. A closure plan for Tank No. 1771 and appurtenances was approved by North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR) during September 1988 and implemented during the fall of 1990.

Wastes reported to be stored in Tank No. 1771 included waste oil possibly contaminated with PCBs, chlorinated solvents, phenolic compounds, and acids generated from manufacturing and maintenance operations at MCAS. The secondary containment, sump, oil/water separator, and discharge field were designed and constructed as a pollution abatement system to capture any incidental spills associated with filling operations at Tank No. 1771. Storm water from the secondary containment basin surrounding Tank No. 1771, which may have been contaminated with oil, was directed to the sump pad via a drain pipe. The water was then directed from the sump pad to the oil/water separator via a pipeline. Upon completion of oil-water

separation, the treated water was released through the discharge pipeline to the discharge field. POL was periodically removed and used in fire training exercises or transported off site for use as a fuel supplement. Records were not available regarding the quantity of POL transported to and from the tank.

Two extensive investigations at Site 5 were conducted by NUS Corporation. Detailed information concerning these investigations are presented in the Interim Remedial Investigation Report (NUS Corporation, October 1988), Description of Current Conditions (NUS Corporation, May 1991), and the Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (Halliburton NUS, December 1992). In addition to the investigation studies conducted by NUS Corporation, North Carolina State University conducted a study of biota within Slocum Creek.

5.1.2 Site 17

The Defense Reutilization and Marketing Office (DRMO) is a storage area located in the southwest portion of the MCAS, southeast of Building 155. Site 17 includes an area of approximately 1 acre and an associated drainage ditch adjacent to a railroad line. This ditch also drains Unit 38 which is a RCRA-regulated treatment, storage, and disposal facility (TSDF) under the approved MCAS RCRA Part B permit. In turn, Schoolhouse Branch flows into Slocum Creek. Unit 38 is a RCRA-regulated waste drum storage area at the DRMO.

The DRMO is used as a storage area, including the previous storage of PCB-containing transformers. It was reported that six transformers, each containing 1,000 gallons of oil, were emptied into the drainage ditch. It was also reported that approximately 100 smaller transformers containing 10 to 500 gallons of oil were emptied into the drainage ditch. These spills occurred between 1961 and 1968.

Two extensive investigations were conducted by NUS Corporation. Detailed information concerning these investigations are presented in the Interim Remedial Investigation Report (NUS Corporation, October 1988), Description of Current Conditions (NUS Corporation, May 1991), and the RCRA Facility Investigation Report (Halliburton NUS, December 1992).

5.2 Site-Specific Removal Action

The removal action to be performed at Sites 5 and 17 at MCAS Cherry Point is presented in the Construction Work Plan (IT, 1994). The remedial activities will include the following:

- Preconstruction site walk with MCAS Cherry Point personnel to inspect the waste areas
- Site preparation activities consisting of clearing and grubbing and construction of temporary access roads, lay down areas, field office, and decontamination facilities
- Removal, staging, and disposal of PCB-contaminated soils
- Performing confirmatory sampling and analysis program
- Site restoration consisting of backfilling, regrading, and revegetating the excavated areas at both sites
- Wetland restoration at Site 5
- Security fence removal and installation at Site 17.

The detailed construction procedures and specifications for the removal actions are provided in the Construction Work Plan (IT, 1994). The removal action will be performed in accordance with the NAVFAC Specification No. 05-93-3123, PCB Soil Excavation and Incineration, as presented in Appendix A of the Construction Work Plan (IT, 1994).

In addition, the remedial activities at MCAS Cherry Point include the following elements:

- Selection of borrow material
- Dust suppression/control
- Equipment decontamination
- Dewatering and water treatment and disposal
- Erosion and sediment control
- Field documentation
- Maintaining construction schedule
- Health and safety coordination.

5.3 Quality Control Activities

The Quality Control (QC) activities have been provided in accordance with the contract and delivery order requirements. The primary emphasis of QC for the removal action at MCAS Cherry Point is to provide monitoring and control of every construction/remediation activity. The QC activities include a systematic construction inspection and verification process and record preparation and management. Detailed QC activities are described in Section 6.0 through Section 11.0 of this plan.

6.0 TASK ORGANIZATION AND RESPONSIBILITY

6.1 IT Personnel Roster

A roster of key IT personnel working under this Delivery Order is provided in Table 6-1. Some of the personnel listed may not appear on the organization chart for the site as they are primarily providing ancillary support functions and are not considered primary personnel for the delivery order. The names of personnel providing field labor will be provided when the individuals have been identified. These personnel will be provided from a pool of trained equipment operators and field technicians from IT's Monroeville, Pennsylvania office and other IT facilities.

6.2 Task Organization Chart

The organization chart for this Delivery Order is presented in Figure 6-1. Only primary IT personnel are presented. The QC Representative's Letter of Appointment is presented in Appendix A.

6.3 Subcontractor Listing

IT's procurement process for all subcontractors is ongoing at this time. Some of the subcontractors have been listed in Table 6-2. When the procurement process is complete, IT will update the organization chart and the subcontractor listing accordingly.

6.4 Personnel Authorization Matrix

The personnel authorization matrix for the Contract Data Requirement List is presented in Table 6-3. This matrix is provided to present the personnel authorized to provide approval for submittals and their respective qualifications. The personnel matrix shows a description of each submittal, registration or certification required, if applicable, and who is the authorized submittal reviewer and their position.

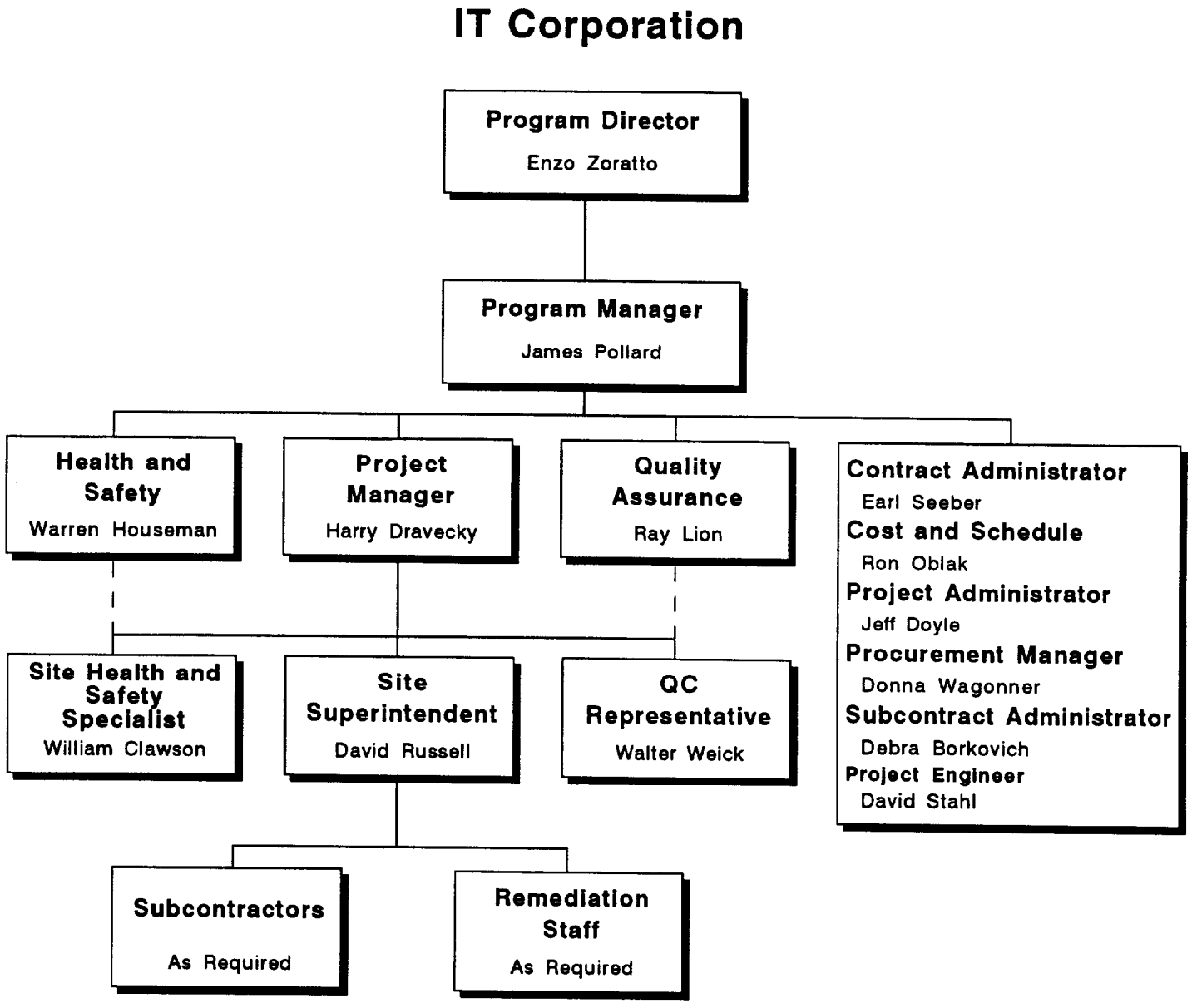

Figure 6-1
Organization Chart for Delivery Order No. 0011

TABLE 6-1
IT CORPORATION PERSONNEL ROSTER

POSITION	NAME
Program Manager	James Pollard
Chief Contract Administrator	Earl Seeber
Subcontract Administrator	Debra Borkovich
Project Manager	Harry Dravecky
Quality Control Manager	Raymond Lion
Certified Industrial Hygienist	Warren Houseman, CIH
Chief Cost/Schedule Engineer	Ron Oblak
Project Engineer	David Stahl
Site Supervisor	David Russell
Health and Safety Specialist	William Clawson
Quality Control Representative	Walter Weick
Wetland Restoration Specialist	Ronald Prann

TABLE 6-2
PRELIMINARY SUBCONTRACTOR LISTING

ACTIVITY	SUBCONTRACTOR
Laboratory Services	• Quanterra, Inc. (A) Export Laboratory 5103 Old William Penn Hwy. Export, PA 15632 (412) 731-8806 • PDP Analytical Services (A) 24900 Pitkin Dr. Spring, TX 77386 • Environmental Science and Engineering (A) 7330 S. Alton Way Englewood, CO 80112 (303) 741-0639 • Techrad Environmental Services (A) 4619 N. Santa Fe Oklahoma City, OK 73118 (800) 438-9186 • Precision Analytical (A) 205 West Galena St. Milwaukee, WI 53212
Waste Transportation and Disposal	• Chemical Waste Management, Inc. (A) 100 Nassau Park Blvd. Princeton, NJ 08540 (609) 243-7800 • Laidlaw Environmental Services, Inc. (A) 411 Burton Road Lexington, SC 29072 • Rollins Environmental Services (A) P.O. Box 337 Bridgeport, NJ 08014 (609) 467-3105 • Westinghouse Environmental Services Business Unit (A) 750 Holiday Drive Pittsburgh, PA 15220 (412) 937-2313
Water Treatment System	• Groundwater Recovery Systems, Inc. (A) 2993 National Road Exton, PA 19341 (215) 524-2790 • Encotech (A) P.O. Box 838 Donora, PA 15033 (412) 379-4555 • Carbtrol (A) 39 Riverside Ave. Westport, CT 06880 (203) 226-5642
Revegetation	To Be Determined
Fencing Installation	To Be Determined

(A) Firms currently preparing proposal.

TABLE 6-3
CONTRACT DATA REQUIREMENT LIST (CDRL)

CDRL No.	Description	Date Required	Frequency	Registration/ Certification Required	Position of Employee	Employee Authorized
A001	Contractors Closeout Report	20 days after demobilization	One time	None required	Project Manager	H. Dravecky
A002	NAS Diagram	20 days after DO award	One time	None required	Project Manager	H. Dravecky
A003	Environmental Conditions Report	10 days before mobilization	One time	None required	Project Manager	H. Dravecky
A004	CQC Plan Addenda	20 days after DO award	One time	NTR approval	QA manager	R. Lion
A005	Testing Laboratory Qualifications	20 days after DO award	One time	None required	Project Manager	H. Dravecky
A006	CQC Meeting Minutes	3 days after meeting	Weekly	None required	QC Representative	W. Weick
A007	Noncompliance Checklist	20 days after mobilization	Monthly	None required	QC Representative	W. Weick
A008	Test Results Summary Report	20 days after mobilization	Monthly	None required	Project Manager	H. Dravecky
A009	Daily Report to Inspector	Upon mobilization	Daily	None required	QC Representative	W. Weick
A010	Permits	15 days after DO award	One time	None required	Project Manager	H. Dravecky

7.0 CHEMICAL TESTING AND QUALITY CONTROL

Quality requirements for chemical testing were determined using the process defined in the current Naval Energy and Environmental Support Activity (NEESA) guidance document for Data Quality Objectives (DQO) development, NEESA 20.2-47B "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (NEESA, 1988).

7.1 Data Quality Objectives

As part of the DQO process, several chemical DQOs were developed for specific activities. Table 7-1 presents each of the activities identified as well as the data use and required quality level. Information detailing the sampling and analysis program for these activities has also been included in Table 7-1. The technical sampling approach (i.e., frequency), sample matrix, sample type, analytical/testing parameters, and analytical/testing methods are included for each activity.

7.1.1 Analytical/Testing Methods

As stated in the previous section, the analytical/testing program for the samples of soil, water, and other material collected during the various removal action activities is outlined in Table 7-1. The specified analytical/testing parameters and associated methods have been included for each activity. The quantitation limits for the analytical parameters are presented in Table 7-2. The actual limits will depend on the sample matrix and will be reported as defined for the specific samples. The control limits for the applicable analytical parameter are listed in Table 7-3.

7.1.2 Quality Assurance Objectives

The quality assurance objectives of this project are to develop and implement procedures to provide data of known and appropriate quality. Data quality is assessed by accuracy, precision, and completeness. Definitions of these parameters, the applicable procedures, and level of effort are described below.

Samples will be collected and analyzed in accordance with NEESA Quality Level 3. The field and laboratory QC requirements are specified in "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (NEESA 20.2-047B, 1988). This CQC Plan Addenda defines the precision, accuracy, and completeness requirements and specifies the field QC program. Level 3 was selected because EPA methods can be used to characterize the waste constituents. The laboratory will prepare a Level 3 data package which involves less detail than the Contract Laboratory Program (CLP) package since no raw data are required.

The applicable QC procedures, quantitative target limits, and levels of effort for assessing data quality are dictated by the intended usage of the data and the nature of analytical methods. For this project, parameter analyses focus on waste characterization to identify the concentrations of waste constituents. Specific data quality objectives for accuracy, precision, and completeness are detailed in Table 7-3. A summary of laboratory internal QC is presented in Table 7-4.

Accuracy of chemical test results will be assessed by spiking samples with known standards and establishing the average recovery. Two types of recoveries will be measured: matrix spike recoveries and surrogate spike recoveries. For a matrix spike, known amounts of standard compounds identical to the compounds present in the sample of interest are added to a separate aliquot of the sample. For a surrogate spike, the standards are chemically similar but not identical to the compounds in the fraction being analyzed. The purpose of the surrogate spike is to provide QC on every sample by constantly monitoring for unusual matrix effects and gross sample processing errors. Other laboratory QC samples used to assess accuracy include laboratory control samples (i.e., blank spikes), internal standards, check standards, and laboratory blanks. Field QC samples used to assess accuracy will include trip blanks, field blanks, and equipment rinsate blanks. Accuracy measurements will be carried out at a minimum frequency of 1 in 20. Target quantitative accuracy objectives are listed as applicable in Table 7-3. A quantitative definition of completeness is given in Section 8.0.

Precision of the data is a measure of the spread of the data when more than one measurement is taken on the same sample. For duplicate measurements, precision can be expressed as the relative percent difference. Laboratory duplicates and field duplicates will be used to assess precision. A quantitative definition of the relative percent difference is given in Section 8.0.

The level of effort for precision measurements will be at a minimum of 1 in 10. Target quantitative precision objectives are listed as applicable in Table 7-3.

Completeness is a measure of the amount of valid data obtained from the analytical measurement system. The target completeness objective will be 90 percent. The completeness of the data will be assessed during QC reviews. A quantitative definition of completeness is given in Section 8.0.

7.2 Sampling Procedures and Frequency

Sampling requirements for performance of the removal action are summarized in Table 7-1, which outlines the sample frequency, sample matrix, sample type and analytical program for each activity. The following sections describe the sampling program including sample collection procedures, number of samples, analytical parameters, method of evaluation, etc., for each type of sample.

7.2.1 Borrow Material

It is anticipated that imported materials will be required to accomplish site restoration; therefore, a borrow source will be located prior to or during removal action mobilization activities. The selected source will provide the specified quantity and quality of materials needed to perform site restoration. IT will investigate potential borrow sources within the area, locate qualified off base borrow sources and make arrangements to obtain representative samples and/or certifications of the proposed topsoil and backfill material. The NTR will be notified at least 24 hours in advance of the sampling event. The samples will be collected in accordance with ASTM D 75, and will be sent to a qualified commercial testing laboratory for the following geotechnical tests:

- Soil classification in accordance to the Unified Soil Classification System (ASTM D 2487)
- Atterberg limits (ASTM D 4378) for backfill material only
- Percent by weight passing No. 200 sieve (ASTM D 1140) for backfill material only.

A second representative sample of the proposed topsoil and backfill material will also be collected and analyzed to verify that imported materials do not contain hazardous levels of

constituents listed under either the Resource Conservation and Recovery Act (RCRA) or Toxic Substance Control Act (TSCA) regulations. These samples will be sent to a laboratory where the following analyses will be performed:

- Ignitability (EPA Method 1010)
- Corrosivity (EPA Method 1110)
- Reactivity (Method 8.3 of EPA SW-846)
- Toxicity Characteristic Leaching Procedure (TCLP) (40 CFR 268 Appendix I)
  - Soils must have TCLP values less than 10 percent of the hazardous waste characteristic levels
- Polychlorinated Biphenyls (PCB) (EPA Method 8080)
- TPH (418).

Once an acceptable borrow source has been located, certifications will be submitted to the NTR stating that the materials conform to the physical property specified and are free of contamination. The certifications will be accompanied by copies of test/analytical results from the qualified commercial testing and analytical laboratories, and will be submitted at least 5 working days before the materials are required for use at the site. Tentative acceptance of the borrow source will be based on an inspection of the borrow source and/or the certified test/analytical results by the NTR. No imported material will be delivered to the site until the proposed source and material test/analytical results have been tentatively accepted in writing by the NTR or the contractor under the direction of the NTR. Final acceptance of the imported materials will be made by the NTR.

7.2.2 Dexsil Field Screening

When the planned vertical excavation boundaries have been reached, final screening tests will be performed. Samples will be collected in accordance with the sampling scheme for each site as described in Section 2.0 of the Sampling and Analysis Plan (SAP). The Dexsil field screening test method as described in Appendix D of the SAP will be utilized to perform the final screening tests. The grid locations of samples are presented in Figure 1 of the SAP.

These tests will satisfy U.S. EPA's requirements for verification of PCB spill site remediation.

Soil samples will be collected from the bottom and side walls of the excavation as directed by the sampling grids developed from the sampling schemes for the two sites as described in Section 2.0 of the SAP. PCB samples for surface soil sampling will be collected by marking the predetermined locations with a 10-cm-by-10-cm template until the desirable quantity of soil is obtained. If additional soil is required, the area being scraped should be expanded, not the depth. The template should be decontaminated according to the decontamination procedures as described in the Construction Work Plan prior to use at each sampling point.

One sample will be collected from each of the predetermined sampling locations and field analysis be performed immediately to determine the PCB concentrations in accordance with the procedures of Dexsil L2000 PCB field test method. Approximately 10 grams of soils will be needed for field analysis. Depending on analytical requirements, a sufficient quantity of soils (e.g., 100 grams) will be collected in pre-cleaned containers (e.g., sample jars, aluminum foil pans, etc.) and be prepared to run the field analysis. Extra amount of soils should be collected and be saved until the field analysis is successfully completed. In addition, extra amount of soils should be collected to prepare for confirmatory analysis by laboratory method (U.S. EPA SW-846 Method 8080) as described below.

7.2.3 Confirmatory Samples

Upon completion of the final field screening tests, confirmatory analysis of the excavated areas will be performed to verify the accuracy of the field screening tests. According to the EPA document No. EPA-560/585.026 entitled "Verification of PCB Spill Cleanup by Sampling and Analysis" dated August 1985, replicate samples are required at a rate of 1 sample from each batch of 20 or fewer. IT will take discrete confirmatory (replicate) samples at a rate of 1 for each 10 field screening samples.

The discrete confirmatory samples will be taken from the extra soils collected during the final field screening tests described in Section 7.2.2.

The identification and location of the confirmatory sample will be recorded on the collection bottle and the Sample Collection Log. The samples will be forwarded to the designated off-

site laboratory for PCB analysis by U.S. EPA SW-846 Method 8080. The anticipated PCB concentrations as calculated from the field screening results will be recorded on the field documents and on the Chain-Of-Custody form. Every effort will be made to screen and ship the samples on the same day to minimize potential holding time violations. Chain-Of-Custody forms will be completed for samples going to the designated off-site laboratories.

Each sample will be labeled, packaged, and shipped to the designated laboratory in accordance with the guidelines established later in this section. All analysis will be performed on a 3-day turn around time basis. Each cooler, which contains samples suspected to contain PCBs, must have a TSCA PCB label affixed to the cooler.

7.2.4 Airborne Particulate Sampling

Real time air monitoring will be performed for fugitive dust emissions using a MINIRAM aerosol monitor. Results will be used to determine the effectiveness of dust control methods. Based upon available analytical data, IT has determined the maximum concentration of PCBs to be 0.0072 percent of total dust. A uniform concentration of 3,472 mg/m^3 would be required to reach the action level of one-half the personal exposure limit (PEL) for PCBs. It is unlikely that these airborne dust concentrations will be reached, however, a MINIRAM will be available to assess dust concentrations. The H&S plan discusses procedures if action levels are reached.

In addition to real-time air monitoring, personnel sampling, to quantify employees' PCB exposure will be conducted in accordance with NIOSH Method 5503. Samples will be collected on a 13-millimeter (mm) glass fiber and florisil tube sampling head, at a flow rate of 50 to 200 milliliter per minute (mL/m).

All air monitoring equipment will be maintained and calibrated according to NIOSH analytical methods and manufacturer's recommendations. Calibration will be done before and after each day.

7.2.5 Decontaminated Heavy Equipment Samples

Wipe sampling may be necessary to verify decontamination of the heavy equipment prior to demobilization. Heavy equipment used for soil excavation and loading will be decontaminated using high pressure steam prior to their removal from site. To verify that the

decontamination procedure was effective, wipe samples will be collected and analyzed for PCBs as described in Section 3.5 of the SAP.

7.2.6 Groundwater, Storm Water and Decontamination Water Samples

During excavation activities, groundwater and storm water will be collected from the excavation. Contaminated water may also result from the decontamination of equipment and personnel. These waters will be sampled and analyzed in accordance with the requirements of the MCAS Cherry Point federally-owned treatment works (FOTW) NPDES discharge permit (Appendix E of the Work Plan). The treated waters will be analyzed for total toxic organics (TTO) and must not exceed 280 µg/L. Water containing parameter concentrations less than the discharge limit may be discharged to the MCAS Cherry Point FOTW. The frequency of sampling will be determined by the total amount of surface water, groundwater, and rinsate collected. A single sample will be collected and analyzed prior to each discharge. Samples will be collected as described in Section 3.6 of the SAP.

7.2.7 Decontamination Procedures

Sampling equipment will be decontaminated as described in Section 10.0 of the SAP.

7.3 Analytical Field Equipment and Calibration Procedures

Equipment calibration will be performed in accordance with the CQC Plan. All field equipment used during this project will be calibrated and operated in accordance with the manufacturer's instructions and/or available standard operating procedures. Calibration and operation instruction sheets will be maintained on file. An instrument log will be maintained for each field instrument. This logbook will contain chronological entries which describe routine maintenance, calibration checks, operational deficiencies, and repairs.

All instruments will be calibrated once daily in accordance with manufacturer's guidelines, or more often if warranted. Scheduled periodic calibration of testing equipment does not relieve field personnel of the responsibility of employing properly functioning equipment. If an individual suspects an equipment malfunction, the device shall be removed from service, tagged so that it is not inadvertently used, and the appropriate personnel notified so that a recalibration can be performed or a substitute piece of equipment can be obtained.

7.4 Off-Site Laboratories and Methods

Measuring and test equipment used in the selected laboratory will be controlled and subject to a formal calibration program in accordance with NEESA requirements. The calibration program will provide equipment of the proper type, range, accuracy, and precision to supply data compatible with project requirements and desired results. Calibration of measuring and test equipment may be performed internally, using laboratory reference equipment and standards, or externally by agencies or manufacturers.

7.5 Chain-of-Custody

Sample integrity from the time of collection to data reporting is required as part of the sampling and analytical program. This includes the ability to trace the possession and handling of samples from the time of collection through analysis and final disposition. This documentation is referred to as "chain-of-custody." The components of this chain and the procedures for their use are described in Section 11.0 of the SAP.

7.6 Shipping of Samples

Samples which will be shipped to the laboratory for analysis will be prepared for shipment using the procedures outlined in Section 11.0 of the SAP.

7.7 Field Documentation

Field documentation will be performed in accordance with the CQC Plan. Documentation will include field logbooks, sample collection logs, variance reports, nonconformance logs, and photographs. In addition, procedures for correcting documentation will also be adhered to.

7.8 Laboratory Custody Procedures

A designated laboratory sample custodian will accept custody of the shipped samples and will verify that the samples received match those listed on the analysis request and chain-of-custody records. Pertinent information as to shipment, pickup, and courier will be entered in the "Condition on Receipt" section. The custodian then enters the sample numbers into a logbook.

The laboratory custodian will use the sample identification label number and will assign a unique laboratory number to each sample. The samples will then be distributed to the proper

analyst or stored in the appropriate secure area. Laboratory personnel will be responsible for the care and custody of samples from the time they are received until the sample is exhausted or returned to the custodian. The sample analysis data will be recorded on the laboratory report form.

When the sample analyses and necessary QA checks have been completed in the laboratory, the unused portion of the sample will be disposed of properly. All identifying stickers, data sheets, and laboratory records will be retained as part of the permanent documentation.

7.9 Field Quality Control Samples

Four types of field QA/QC samples will be collected including equipment rinsate samples, field blanks, field duplicate, and trip blanks. The field QA/QC requirements are summarized in Table 7-6.

7.9.1 Equipment Rinsates

As a check of decontamination procedures and to evaluate the potential for cross-contamination between sample locations, an equipment rinsate sample will be collected from the final decontamination rinse and analyzed for the same parameters as the corresponding samples. The frequency of equipment rinsate sample collection is specified in Table 7-6. Equipment rinsate samples will not be collected if dedicated sampling equipment is used.

7.9.2 Field Blanks

Field blanks consist of the source water used in decontamination and steam-cleaning. Field blanks will be prepared with laboratory grade distilled water and placed into the same containers required for the equipment rinsate. The frequency of field blank sample collection is specified in Table 7-6.

7.9.3 Field Duplicates

The collection of field duplicate samples is required to assess the reproducibility of field sampling methods and repeatability of laboratory analysis. One duplicate sample will be collected per 10 field samples or per event. The duplicate soil sample will be obtained from adjacent sample interval and will be analyzed for the same parameters as the corresponding sample. Table 7-6 presents the frequency of field duplicates.

7.9.4 Trip Blanks

Trip blanks will accompany sample containers for volatile organic analyses (VOA) from point of origin (i.e., laboratory) to the field and then back to the laboratory. The trip blank will assist in evaluating adsorption of organics through the VOA container during the course of sample shipment. This sample will provide additional confidence to the volatile organic results reported for actual samples, assuming no contamination is detected in the trip blank.

7.9.5 Laboratory QA/QC

The laboratory program will be in accordance with procedures outlined in NEESA, Section 7.1 (1988) for DQO Level 3, and will include the analysis of one matrix spike and matrix spike duplicate.

TABLE 7-1
SAMPLING AND ANALYSIS PROGRAM

Activity	Data Use	Sample Frequency	Matrix	Sample Type	Parameter and Analytical Method	Quality Level
Borrow material evaluation	Determination of backfill suitability	Analytical: 1 per material source Geotechnical: 1 per 25 cy	Soil	Composite	(1) (3) (4)	3
Dexsil Field Screening	Verification of excavation limits	According to grid (Figure 1 of SAP)	Soil	Discrete	(2)	2
Confirmatory sampling	Verification of field screening tests	1 per 10 field screening tests	Soil	Discrete	(3)	3
Disposal requirements for contaminated soils	Determination of disposal requirements	1 per roll-off container	Soil	Composite	(3)	3
Airborne Particulate sampling	Determination of airborne PCB concentrations	8 hour composite	Air	Composite	(5) (6)	2 3
Equipment sampling	Verification of heavy equipment decontamination	1 per equipment prior to demobilization	Wipe	Composite	(7)	3
Ground/decontamination water sampling	Verification of treatment plant acceptance	1 prior to disposal	Water	Composite	(8)	3

(1) Material Finer than 200 sieve (ASTM D 1140) Soil Classification (ASTM D 2487) Liquid Limit, Plastic Limit, and Plasticity Index (ASTM D 4318)
(2) PCB (Dexsil L2000 analyzer)
(3) PCBs (method 8080)
(4) Ignitability, Corrosivity, and Reactivity (EPA SW 846) Full TCLP (Organics by methods 8240 and 8270, Herbicides by method 8150, Pesticides by method 8080, Metals by methods 6010 and 7000)
(5) MINIRAM real time sampler
(6) PCBs (NIOSH 5503)
(7) PCBs (method 8080 mod)
(8) Total Toxic Organics (methods 624, 625, and 608)

TABLE 7-2
QUANTITATION LIMITS
ANALYTICAL PARAMETERS

TCLP Parameters	U.S. EPA Analytical Method	EPA Hazardous Waste Number	Regulatory Level (mg/L)	Detection Limit (mg/L)
	1311			
METALS	6010/7000			
Arsenic		D004	5.0	0.005
Barium		D005	100.0	0.01
Cadmium		D006	1.0	0.01
Chromium		D007	5.0	0.02
Lead		D008	5.0	0.05
Mercury		D009	0.2	0.005
Selenium		D010	1.0	0.005
Silver		D011	5.0	0.01
PESTICIDES	8080			
Chlordane		D020	0.03	0.0005
Endrin		D012	0.02	0.0001
Heptachlor		D031	0.008	0.00005
Lindane		D013	0.4	0.00005
Methoxychlor		D014	10.0	0.0005
Toxaphene		D015	0.5	0.001
HERBICIDES	8150			
2,4-D		D016	10.0	0.0005
2,4,5-TP silvex		D017	1.0	0.0001
VOLATILE ORGANICS	8240			
Benzene		D018	0.5	0.005
Carbon tetrachloride		D019	0.5	0.005
Chlorobenzene		D021	100.0	0.005
Chloroform		D022	6.0	0.005
1,2-Dichloroethane		D028	0.5	0.005
1,1-Dichloroethylene		D029	0.7	0.005
Methyl ethyl ketone		D035	200.0	0.050

TABLE 7-2
(continued)

TCLP Parameters	U.S. EPA Analytical Method	EPA Hazardous Waste Number	Regulatory Level (mg/L)	Detection Limit (mg/L)
Tetrachloroethylene		D039	0.7	0.005
Trichloroethylene		D040	0.5	0.005
Vinyl chloride		D043	0.2	0.010
SEMIVOLATILE ORGANICS	8270			
o-Cresol		D023	200.0	0.01
m-Cresol		D024	200.0	0.01
p-Cresol		D025	200.0	0.01
Cresol		D026	200.0	0.01
1,4-Dichlorobenzene		D027	7.5	0.01
2,4-Dinitrotoluene		D030	0.13	0.01
Hexachlorobenzene		D032	0.13	0.01
Hexachlorobutadiene		D033	0.5	0.01
Hexachloroethane		D034	3.0	0.01
Nitrobenzene		D036	2.0	0.01
Pentachlorophenol		D037	100.0	0.05
Pyridine		D038	5.0	0.01
2,4,5-Trichlorophenol		D041	400.0	0.01
2,4,6-Trichlorophenol		D052	2.0	0.01
Polychlorinated biphenyls (PCBs)	8080	—	—	0.049

Total Toxic Organics (TTO) [A]	Regulatory Level	Detection Limit
Acenaphthene	FOTW Aggregate Limit is 280 µg/L	.001 mg/L
Acrolein		.001 mg/L
Acrylonitrile		.001 mg/L
Benzene		.001 mg/L
Benzidine		.001 mg/L
Carbon tetrachloride (tetrachloro-methane)		.001 mg/L
Chlorobenzene		.001 mg/L

TABLE 7-2
(continued)

Total Toxic Organics (TTO) [A]	Regulatory Level	Detection Limit
1,2,4-Trichlorobenzene	FOTW Aggregate Limit is 280 µg/L	.001 mg/L
Hexachlorobenzene		.001 mg/L
1,2-Dichloroethane		.001 mg/L
1,1,1-Trichloroethane		.001 mg/L
Hexachloroethane		.001 mg/L
1,1-Dichloroethane		.001 mg/L
1,1,2-Trichloroethane		.001 mg/L
1,1,2,2-Tetrachloroethane		.001 mg/L
Chloroethane		.001 mg/L
Bis(2-Chloroethyl) ether		.001 mg/L
2-Chloroethyl vinyl ether (mixed)		.001 mg/L
2-Chloronaphthalene		.001 mg/L
2,4,6-Trichlorophenol		.001 mg/L
Parachlorometa cresol		.001 mg/L
Chloroform (trichloromethane)		.001 mg/L
2-Chlorophenol		.001 mg/L
1,2-Dichlorobenzene		.001 mg/L
1,3-Dichlorobenzene		.001 mg/L
1,4-Dichlorobenzene		.001 mg/L
3,3-Dichlorobenzidine		.001 mg/L
1,1-Dichloroethylene		.001 mg/L
1,2-Trans-dichloroethylene		.001 mg/L
2,4-Dichlorophenol		.001 mg/L
1,2-Dichloropropane		.001 mg/L
1,3-Dichloropropylene (1,3-dichloropropene)		.001 mg/L
2,4-Dimethylphenol		.001 mg/L
2,4-Dinitrotoluene		.001 mg/L
2,5-Dinitrotoluene		.001 mg/L
1,2-Diphenylhydrazine		.001 mg/L
Ethylbenzene		.001 mg/L

TABLE 7-2
(continued)

Total Toxic Organics (TTO) [A]	Regulatory Level	Detection Limit
Fluoranthene	FOTW Aggregate Limit is 280 µg/L	.001 mg/L
4-Chlorophenyl phenyl ether		.001 mg/L
4-Bromophenyl phenyl ether		.001 mg/L
Bis(2-chloroisopropyl) ether		.001 mg/L
Bis(2-chloroethoxy) methane		.001 mg/L
Methylene chloride (dichloromethane)		.001 mg/L
Methyl chloride (chloromethane)		.001 mg/L
Methyl bromide (bromomethane)		.001 mg/L
Bromoform (tribromomethane)		.001 mg/L
Dichlorobromomethane		.001 mg/L
Chlorodibromomethane		.001 mg/L
Hexachlorobutadiene		.001 mg/L
Hexachlorocyclopentadiene		.001 mg/L
Isophorone		.001 mg/L
Naphthalene		.001 mg/L
Nitrobenzene		.001 mg/L
2-Nitrophenol		.001 mg/L
4-Nitrophenol		.001 mg/L
2,4-Dinitrophenol		.001 mg/L
4,6-Dinitro-o-cresol		.001 mg/L
N-nitrosodimethylamine		.001 mg/L
N-nitrosodiphenylamine		.001 mg/L
N-nitrosodi-n-propylamine		.001 mg/L
Pentachlorophenol		.001 mg/L
Phenol		.001 mg/L
Bis(2-ethylhexyl) phthalate		.001 mg/L
Butyl benzyl phthalate		.001 mg/L
Di-n-butyl phthalate		.001 mg/L
Di-n-octyl phthalate		.001 mg/L
Diethyl phthalate		.001 mg/L

TABLE 7-2
(continued)

Total Toxic Organics (TTO) [A]	Regulatory Level	Detection Limit
Dimethyl phthalate	FOTW Aggregate Limit is 280 µg/L	.001 mg/L
1,2-benzanthracene		.001 mg/L
(Benzo(a)anthracene)		.001 mg/L
Benzo(a)pyrene (3,4-benzopyrene)		.001 mg/L
3,4-Benzofluoranthene		.001 mg/L
(benzo(b)fluoranthene)		.001 mg/L
11,12-Benzofluoranthene		.001 mg/L
(benzo(k)fluoranthene)		.001 mg/L
Chrysene		.001 mg/L
Acenaphthylene		.001 mg/L
Anthracene		.001 mg/L
1,12-benzoperylene		.001 mg/L
(benzo(ghi)perylene)		.001 mg/L
Fluorene		.001 mg/L
Phenanthrene		.001 mg/L
1,2,5,6-Dibenzanthracene		.001 mg/L
(dibenzo(a,h)anthracene)		.001 mg/L
Indeno (1,2,3-cd) pyrene)		.001 mg/L
(2,3-o-phenylene pyrene		.001 mg/L
Pyrene		.001 mg/L
Tetrachloroethylene		.001 mg/L
Toluene		.001 mg/L
Trichloroethylene		.001 mg/L
Vinyl chloride (chloroethylene)		.001 mg/L
Aldrin		.001 mg/L
Dieldrin		.001 mg/L
Chlordane (technical mixture and metabolites)		.001 mg/L
4,4-DDT		.001 mg/L
4,4-DDE (p,p-DDX)		.001 mg/L
4,4-DDD (p,p-TDE)		.001 mg/L

TABLE 7-2
(continued)

Total Toxic Organics (TTO) [A]	Regulatory Level	Detection Limit
Alpha-endosulfan	FOTW Aggregate Limit is 280 µg/L	.001 mg/L
Beta-endosulfan		.001 mg/L
Endosulfan sulfate		.001 mg/L
Endrin		.001 mg/L
Endrin aldehyde		.001 mg/L
Heptachlor		.001 mg/L
Heptachlor epoxide		.001 mg/L
(BHC-hexachlorocyclohexane)		.001 mg/L
Alpha-BHC		.001 mg/L
Beta-BHC		.001 mg/L
Gamma-BHC		.001 mg/L
Delta-BHC		.001 mg/L
(PCB-polychlorinated biphenyls)		.001 mg/L
PCB-1242 (Arochlor 1242)		.001 mg/L
PCB-1254 (Arochlor 1254)		.001 mg/L
PCB-1221 (Arochlor 1221)		.001 mg/L
PCB-1232 (Arochlor 1232)		.001 mg/L
PCB-1248 (Arochlor 1248)		.001 mg/L
PCB-1260 (Arochlor 1260)		.001 mg/L
PCB-1016 (Arochlor 1016)		.001 mg/L
Toxaphene		.001 mg/L
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)		.001 mg/L

[A] U.S. EPA Analytical Methods 624, 625 and 608.

TABLE 7-3
CONTROL LIMITS
ANALYTICAL PARAMETERS

Analytical Parameters	EPA Method Number	Matrix Spike/Matrix Spike Duplicate or Surrogate Accuracy Criteria (% Recovery)		Blank Spike Accuracy Criteria (% Recovery)		Precision Criteria (Maximum Percent Difference)		Completeness (%)
		Soil	Water	Soil	Water	Soil	Water	
Volatile Organics	8240							90
Benzene		66-142	76-127	70-115	70-120	21	11	
Chlorobenzene		60-133	75-130	70-125	70-130	21	13	
1,1-Dichloroethene		59-172	61-145	70-125	70-130	22	14	
Toluene		59-139	76-125	80-115	70-115	21	13	
Trichloroethene		62-137	71-120	75-125	70-115	24	14	
Surrogates								
Bromofluorobenzene		75-110	86-109	75-110	86-109	NA	NA	
1,2-Dichloroethane		85-108	86-103	85-108	86-103	NA	NA	
Toluene-d8		89-116	93-106	89-116	93-106	NA	NA	
Semivolatile Organics	8270							90
Acenaphthene		37-137	46-118	55-110	50-110	19	31	
4-Chloro-3 methylphenol		26-103	23-97	55-100	40-95	33	42	
2-Chlorophenol		25-102	27-123	45-105	50-105	50	40	
1,4-Dichlorobenzene		28-104	36-97	50-110	50-120	27	28	
2,4-Dinitrotulene		28-89	24-96	55-120	40-100	47	38	
4-Nitrophenol		11-114	10-80	50-115	50-110	50	50	
N-Nitroso-Di-N-Propylamine		41-126	41-116	50-110	50-110	38	38	
Pentachlorophenol		17-109	9-103	50-120	30-95	47	50	
Phenol		26-90	12-110	40-115	55-120	35	42	
Pyrene		35-142	26-127	50-120	50-110	36	31	
1,2,4-Trichlorbenzene		38-107	39-98	50-110	50-110	23	28	
Surrogates								
Nitrobenzene-d5		23-120	35-114	65-120	65-120	NA	NA	
2-Fluorobiphenyl		30-115	43-116	70-120	55-110	NA	NA	
p-Terphenyl-d14		18-137	33-141	65-120	70-120	NA	NA	
Phenol-d6		24-113	10-94	65-120	65-115	NA	NA	
2-Fluorophenol		25-121	21-100	65-120	65-125	NA	NA	

TABLE 7-3
(continued)

Analytical Parameters	EPA Method Number	Matrix Spike/Matrix Spike Duplicate or Surrogate Accuracy Criteria (% Recovery)		Blank Spike Accuracy Criteria (% Recovery)		Precision Criteria (Maximum Percent Difference)		Completeness (%)
		Soil	Water	Soil	Water	Soil	Water	
Surrogates (Continued)								
2,4,6-Br_3-phenol		19-122	10-123	70-125	70-125	NA	NA	
Metals								90
Antimony	6010	75-125	75-125	45-183	--	35	35	
Arsenic	7060	75-125	75-125	66-125	--	35	35	
Barium	6010	75-125	75-125	84-111	--	35	35	
Beryllium	6010	75-125	75-125	85-115	--	35	35	
Cadmium	6010	75-125	75-125	91-127	--	35	35	
Chromium (total)	6010	75-125	75-125	75-108	--	35	35	
Cobalt	6010	75-125	75-125	86-115	--	35	35	
Copper	6010	75-125	75-125	81-117	--	35	35	
Lead (total)	7421, 6010	75-125	75-125	68-127	--	35	35	
Mercury	7470	75-125	75-125	82-121	--	35	35	
Molybdenum	6010	75-125	75-125	95-130	--	35	35	
Nickel	6010	75-125	75-125	86-115	--	35	35	
Silver	6010	75-125	75-125	91-132	--	35	35	
Selenium	7740	75-125	75-125	56-121	--	35	35	
Thallium	7841	75-125	75-125	68-104	--	35	35	
Vanadium	6010	75-125	75-125	69-119	--	35	35	
Zinc	6010	75-125	75-125	93-141	--	35	35	
Pesticide/PCBs	8080							90
Dieldrin		31-134	52-126	65-130	70-130	38	18	
Endrin		41-139	56-121	60-140	70-140	45	21	
Heptachlor		35-130	40-131	60-130	50-120	31	20	
g-BHC		46-127	56-123	50-110	60-110	50	15	
Aldrin		34-132	40-120	60-125	60-120	43	22	
4,4-DDT		23-134	38-127	60-120	60-120	50	27	
Surrogate								
Dibutychlorendate		20-150	24-154	20-150	24-154	NA	NA	

TABLE 7-4
SUMMARY OF INTERNAL QUALITY CONTROL ANALYTICAL PARAMETERS

Parameter	Method	Duplicate	Spike	Matrix Spike	Matrix Spike Duplicate	Fortified Blank or Check Sample	Prep Blank	Analytical Spikes or MSA	Internal Standard	Surrogate	Zero and Span Gas	External QC Sample	Other
• TCLP	1311	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	TCLP Spike (1 per Matrix)
- Volatile Organics	8240	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Semivolatile Organics	8270	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Herbicides	8150	NA	NA	1:20	1:20	NA	1:20	NA	External	NA	NA	NA	NA
- Pesticides	8080	NA	NA	1:20	1:20	1:20	1:20	NA	External	Yes	NA	NA	NA
- Metals	6010/7470	1:20	1:20	NA	NA	NA	1:20	No	NA	NA	NA	NA	NA
• PCB	8080	NA	NA	1:20	1:20	1:20	1:20	NA	External	Yes	NA	NA	NA
• Total Toxic Organics	624 625 608	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
• Ignitability, Corrosivity, Reactivity	SW-846	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
• Airborne PCBs	NIOSH 5503	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 7-5
SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES
ANALYTICAL PARAMETERS

Parameter	Sample Type	Sample Container	Preservative	Holding Time
Ignitability	Soil	1 x 25 mL amber glass	4°C	N/A
Corrosivity	Soil	1 x 25 mL amber glass	4°C	Immediate
Reactivity	Soil	1 x 2 mL amber glass	4°C	Analyze as soon as possible
TCLP				
- Volatile organics	Soil	2 x 60 mL glass	4°C	14 days to TCLP, 14 days to analyze
- Semivolatile organics	Soil	1 x 250 mL amber glass	4°C	14 days to TCLP, 7 days to extract, 40 days to analyze
- Pesticides	Soil	1 x 250 mL amber glass	4°C	
- Herbicides	Soil	1 x 250 mL amber glass	4°C	
- Metals	Soil	1 x 250 mL amber glass	4°C	180 days to TCLP, 180 days to analyze
Total PCB	Soil	1 x 250 mL amber glass	Cool 4°C	14 days to extract, 40 days to analyze, 7 days to extract, 40 days to analyze
Airborne PCB	Air	Filter	None	24 hours
Total Toxic Organics				
- Purgeable organics	Water	6 x 40 mL glass	4°C .008% $NA_2S_2O_3$	14 days
- Base neutral and acid extractable organics	Water	2 x 1 liter glass	4°C .008% $NA_2S_2O_3$	7 days to extract, 40 days to analyze
- PCBs	Water	1 x 1 liter glass	4°	7 days to extract, 40 days to analyze

TABLE 7-6
QUALITY CONTROL SAMPLE REQUIREMENT
ANALYTICAL PARAMETERS

Sample Type	Required Frequency	Analytical Program
Trip Blank	1 per cooler	Volatile organics
Equipment Rinsate	1 per day	Same as field samples
Field Blank	1/event	Same as field samples
Field Duplicate[a]	10 percent	Same as field samples
Laboratory QC	10 percent	Same as field samples

[a]The duplicate must be taken from the same sample which will become the laboratory matrix/spike duplicate for organics or for the sample used as a duplicate in inorganic analysis. One field duplicate will be collected at each site for every ten samples collected or every set of samples.

8.0 VERIFICATION AND VALIDATION OF CHEMICAL DATA

Chemical Data Quality management will be performed in accordance with the CQC Plan (IT, 1992), prepared for Contract N47408-D-92-3056. All raw data collected from the sampling tasks and used in the report will be identified and included in appropriate appendices with the reports. Data will be reported in units, with accuracy and precision, in accordance with industry or regulatory agency(ies) standards. Reduction and validation procedures for laboratory analytical data will be performed by IT.

8.1 Data Reporting

The laboratory will report the method blanks, blank/spike surrogates, matrix spikes, matrix spike duplicates, duplicates, and initial and continuing calibration.

8.2 Data Assessment

The project team will assess precision, accuracy, and completeness of data generated during the field activities. The accuracy of field data will be assessed by spiking samples with known standards. The precision of field data will be assessed through the use of field duplicate, equipment rinsate, and trip blank samples, as discussed in Section 7.0.

Laboratory analytical data will be assessed by the project manager for precision and accuracy. The data will be checked for completeness, compared to field blank and sample duplicate results, evaluated in context to the field conditions defined in the field notes and other documentation, and compared to the overall completeness goal of this project.

Data accuracy, precision, and completeness values will be summarized in the assessment report. Data verification requirements are presented in Table 8-1. The quantitative definition of accuracy, precision, and completeness is presented in the CQC Plan.

8.3 Performance and System Audits

To verify compliance with the CQC Plan, the QC Representative or designated audit leader will coordinate planned and documented audits in accordance with the CQC Plan. These audits will consist of an evaluation of the implementation of project procedures, an evaluation of work areas and activities, and a review of activity documentation, as appropriate. Audits will be conducted at the level of detail necessary for the activity audited and will be

completed using written checklists. Audit results will be formally documented and submitted to appropriate management personnel for review. Audits will be performed in accordance with the CQC Plan.

TABLE 8-1
SUMMARY OF DATA VERIFICATION REQUIREMENTS FOR CHEMICAL DATA

DATA USE	VERIFY CHAIN-OF-CUSTODY	VERIFY HOLDING TIME	VERIFY CALIBRATION	CALIBRATION CHECK PERFORMED	REVIEW OF INTERNAL QC SAMPLES	REVIEW OF NONCONFORMANCE REPORTS	CLP DATA PACKAGE REQUIRED	CERTIFICATE OF ANALYSIS REQUIRED	NUMERICAL LISTING OF DATA ONLY
Borrow Analysis	X	X	X	X	X	X		X	
Verification of Extent of Excavation	X	X	X	X	X	X		X	
Measurement of Airborne PCB Concentrations	X	X	X	X	X	X		X	
Measurement of Airborne Particulates			X	X		X			X
Verify Decontamination of Heavy Equipment	X	X	X	X	X	X		X	
Analysis of Excavation/ Decontamination Water for Discharge Requirements	X	X	X	X	X	X		X	

9.0 PREVENTATIVE MAINTENANCE

9.1 Field Measurement Equipment

Per the requirements of the CQC Plan, the measurement equipment used in support of the QC program will be subject to a preventative maintenance program. The field measurement equipment includes, when applicable, metal detector for scanning of subsurface soils, nuclear gauge for in-place density and moisture content, etc. Maintenance of the field measurement equipment will be performed in accordance with manufacturers' recommendations based on the degree and frequency of use and the sensitivity of the equipment to environmental conditions such as mechanical shock, temperature, and atmospheric moisture. Records of operation and maintenance, including calibration, of the field measurement equipment used in support of this Construction Quality Control Plan Addenda will be maintained on site and will be available within a reasonable time to the Navy, or its representative, for inspection or auditing during the construction period.

9.2 Laboratory Equipment

Maintenance of laboratory equipment used in support of this Construction Quality Control Plan Addenda will be conducted by the laboratory(ies) in accordance with the laboratory QC procedures and/or quality assurance and QC requirements stipulated by the data quality objectives in this plan. The laboratory analyses performed during the remedial action will include chemical and geotechnical analyses for characterization and verification of borrow soils, excavation, and waste disposal in accordance with the Removal Action Work Plan and Contract specifications. Records of laboratory equipment maintenance will be available within a reasonable time to the Navy, or its representative, during any laboratory inspection or auditing in compliance with government regulations.

10.0 CONSTRUCTION/REMEDIATION VERIFICATION AND QUALITY CONTROL

10.1 Data Quality Objectives

DQOs have been developed for construction/remediation verification inspection and testing of the work activities associated with the removal action as required by the delivery order and contract specifications. Development of DQOs was performed in two stages as described in Section 9.0 of the CQC Plan. The first stage of the DQO development process consisted of a review of delivery order specifications and information to determine the following activities:

- Site Preparation
  - Mobilization
  - Site trailer setup
  - Decontamination facilities setup
  - Clearing and grubbing
  - Temporary access road and equipment/material storage area construction
  - Erosion and sedimentation control installation
  - Water treatment plant setup

- Contaminated Soils Excavation and Loadout
  - Waste soil excavation and removal
  - Excavation dewatering
  - Dexsil field screening
  - Confirmatory and waste profile sampling and analysis
  - Transportation and disposal

- Site Restoration
  - Backfilling
  - Grading
  - Topsoil placement
  - Revegetation, including wetland restoration at Site 5.

The DQOs for these work activities, if applicable, are presented in Table 10-1 and are based on data use, specifications, regulatory guidelines, performance criteria, and NEESA quality level requirements.

The second stage of DQO development includes an evaluation of sample types, test methods, frequency, QC samples, and verification schedule. Verification inspection and testing will be required during the following remedial activities.

10.2 Inspection of Construction/Remediation Activities

Inspections will be performed to verify compliance with the contract and delivery order plans, specifications, and drawings and standard engineering practice. Inspections will be performed for each definable feature of work in accordance with inspection procedures described in the CQC Plan. A four-phase inspection system will be implemented consisting of preparatory, initial, follow-up, and completion inspections. The Site Superintendent and/or QC Representative will be responsible for scheduling and documenting these inspections.

10.2.1 Removal Action Inspection Requirements

The primary construction/remedial activities for the removal action are site preparation, waste removal and disposal, and site restoration. Each of these work activities has several definable features of work which will require performance monitoring. The following sections outline the four phases of inspection and associated inspection items for these work activities.

Site Preparation

Site preparation will consist of mobilization, site trailer setup, clearing and grubbing, temporary access road and equipment/material storage area construction, equipment decontamination pad construction, personnel decontamination facility setup, water treatment plant setup, and erosion and sediment control installation.

Preparatory inspections for site preparation activities at Sites 5 and 17 will consist of:

- Confirmation that the preconstruction site walk was conducted with the Navy and IT personnel, to inspect the waste areas, identify equipment lay-down and material storage areas, and discuss MCAS Cherry Point regulations, construction schedule, health and safety coordination and quality assurance.

- An inspection of the site to confirm that the exclusion, contamination reduction, and support zone are properly delineated.

- A review of the delivery order plans, specifications, and drawings which detail the contract and delivery order requirements

- Confirmation that all project personnel have satisfied MCAS Cherry Point security requirements and have attended the preconstruction safety meeting

- Verification that sufficient labor, material, and equipment are available to perform site preparation tasks

- An inspection of the material and equipment mobilized to confirm that it is in compliance with delivery order specifications and MCAS Cherry Point regulations and is in satisfactory condition or good working order

- Verification that the proper permits are in place to perform site preparation

- An inspection of the areas designated for clearing and grubbing to determine the nature and extent of operations required and that site features requiring protection have been marked accordingly by the MCAS Cherry Point and IT personnel during the preconstruction meeting

- An inspection of the site trailer to confirm that it meets delivery order specifications and is located properly (Site 5 only)

- An inspection of the decontamination facilities to confirm that they are located properly and satisfy the delivery order requirements

- An inspection of the alignments for the temporary construction entrances/access roads, sediment fence, drainage swales, and areas designated for temporary storage of material and equipment to verify locations and dimensions are as shown in the drawings and field referenced accordingly

- An inspection of the designated waste areas to take photographs and verify that all areas have been identified as shown in the drawings

Initial inspections will be conducted during the early stages of each site preparation activity at Sites 5 and 17 and will consist of:

- An inspection of the site preparation activities to verify that the work is being performed in accordance with the delivery order plans, specifications, and drawings

- An inspection of the site trailer to make sure it is furnished, equipped with a sign, and anchored as specified and required utility connections have been made or are being arranged (Site 5 only)

- An inspection of the decontamination facilities to confirm that they are constructed properly

- An inspection of temporary construction entrance and access road construction to confirm the alignments are stripped of vegetation and roadways are constructed as detailed in the drawings using the specified road construction materials

- An inspection of the temporary equipment and material storage area construction to verify the areas are constructed as detailed in the drawings using the specified materials

- An inspection of erosion and sedimentation control installation to ensure that the specified installation procedures are being followed along the designated alignments

- Verification that the health and safety plan is being implemented.

Follow-up inspections will be performed for each site preparation activity on a daily basis to verify continued compliance with delivery order plans, specifications, and drawings. Inspection items for each site preparation activity will be similar to those required for the initial inspections. Note that sediment fence will be monitored even after completing installation to check the integrity and initiate maintenance, as required.

A final completion inspection will be conducted at the conclusion of each site preparation activity to verify and document that the work is complete and is in compliance with the delivery order plans, specifications, and drawings.

Waste Removal and Disposal

Waste removal and disposal activities will consist of the excavation of soil using conventional earthmoving equipment, excavation dewatering, as required, sampling and analysis, and transportation and disposal.

Preparatory inspections for waste removal and disposal activities at Sites 5 and 17 will consist of:

- A review of delivery order plans, specifications, and drawings to determine:
  - Removal limits of waste area
  - Procedures for removing soil
  - Method for field screening limits of excavation
  - Method of dewatering excavations
  - Program for confirmatory and waste profile sampling and analysis
  - Requirements for disposal.

- An inspection of the waste areas to verify that the boundaries have been defined using wooden stakes and flagging as detailed in the drawings.

Initial inspections will be conducted during the preliminary phase of removal for each waste area to confirm that work being performed is in accordance with delivery order plans, specifications, and drawings. In general, inspections will be comprised of verifying that the removal procedures for each type of waste material are being implemented accordingly. Specific inspections will include:

- An inspection of soil removal operations to verify that:
  - The excavations are performed in a stable and safe manner
  - The excavations are properly dewatered
  - The excavation of contaminated soils is not advanced beyond the proposed limits
  - The excavated contaminated soils are properly stored in DOT-approved roll-off containers and covered accordingly
- General inspections at each site to verify that:
  - The health and safety plan is being implemented accordingly.
  - Dust suppressors are being used as specified and in accordance with manufacturer's guidelines.
  - Dewatering equipment is in place and functioning properly.
  - Equipment used to perform waste removal operation is decontaminated, as required.

Follow-up inspections will be performed as the waste materials are removed to verify continued compliance with delivery order requirements. In addition to the inspection items required for initial inspection, the follow-up inspections will include confirming that the field screening and confirmatory sampling and analysis are being implemented accordingly and the contaminated soils are being transported and disposed of properly.

Final completion inspections will be conducted at the conclusion of the waste removal operations to verify and document that the work is complete and in compliance with the delivery order plans, specifications, and drawings. In addition, excavation surveys will be conducted at the site to document removal volumes.

Site Restoration

Site restoration will consist of backfilling, grading, topsoil placement, and revegetation (wetland restoration at Site 5), as appropriate, of all areas disturbed during the performance of the removal action.

Preparatory inspections for site restoration activities will include:

- A review of the delivery order plans, specifications, and drawings which detail the contract and delivery order requirements
- An inspection of the materials and equipment to verify it is in compliance with delivery order plans and specifications and is in satisfactory condition or good working order
- A review of the borrow material (i.e., soil backfill and topsoil) certifications which detail the chemical analyses and geotechnical test results to confirm the materials are not hazardous and meet the following geotechnical requirements:
  - Soil backfill must be reasonably free of roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable material with a classification of GC or SC, a maximum liquid limit of 35, a maximum plasticity index of 12 and a maximum of 25 percent by weight passing No. 200 sieve
  - Topsoil must be natural, friable, and well drained soil materials representative of the surrounding area and free of subsoil, stumps, irreducible material greater than 1 inch, brush, weeds, and other deleterious material. The pH of the topsoil must be maintained between 5.5 and 7.

Initial inspections will be conducted during the start-up of the site restoration activities to verify that work is being performed in accordance with delivery order plans, specifications and drawings. The initial inspections for site restoration will consist of the following components:

- An inspection of soil backfill placement operations to verify the material is placed in 6-inch maximum compacted lifts meeting compaction requirements listed in Section 2.10.1.2 of the work plan
- Confirmation that trees designated by the site superintendent and/or MCAS Cherry Point representative are not damaged or destroyed during backfilling and grading operations
- An inspection of waste areas to verify that they are backfilled and graded to match existing contours and to provide positive drainage and prevent ponding of precipitation

- An inspection of topsoil placement operations to confirm a minimum of 4 inches of topsoil is placed prior to seeding the disturbed areas
- An inspection to confirm that the topsoil is prepared for revegetation
- An inspection of revegetation operations to verify that the proper seed, fertilizer, lime, mulch and water, are applied at that specified rates using seeding techniques to provide uniform coverage
- An inspection of wetland restoration operations at Site 5 to verify proper vegetation, soils, fertilizer, lime, mulch, and water are applied
- Monitoring of dust conditions to verify that dust suppression methods are being employed, as necessary.

Follow-up inspections will be performed for the site restoration activities on a daily basis to verify continued compliance with delivery order plans, specifications, and drawings.

A final completion inspection will be conducted at the conclusion of site restoration to verify and document that the work is complete and is in compliance with the delivery order plans, specifications, and drawings. This inspection will document "As-Built" conditions.

10.2.2 Detailed Inspection Information

Detailed information for the following removal action activities has been provided to facilitate performance of the four phases of inspection.

- Preconstruction Site Walk - The preconstruction site walk will be conducted with Navy personnel, the site superintendent, and appropriate construction personnel. Each area in which waste materials will be removed will be inspected. Other items discussed in the preconstruction site walk will be the location of equipment lay down and material storage areas, MCAS Cherry Point regulations, the construction schedule, health and safety coordination, and construction quality assurance
- Site Trailer - The site trailer will be located at Site 5 in the area shown on the drawings. The actual location of the trailer will be determined in the field. The location of utility hook-ups will be identified by the MCAS Cherry Point. Utility hook-ups will be performed by IT or it's subcontractor. A generator will be used if emergency power is needed or if adequate utilities are not available. The trailer will be in accordance with the delivery order specifications. A sign (24 inches by 24 inches) will be placed on the trailer depicting the contractor's name, business phone number, and emergency phone

number. The trailer will be anchored to resist high winds and will meet applicable state or local standards for anchoring mobile trailers.

- Site Security Requirements - Security requirements are presented in Section 01010 § 3.2.2 of the delivery order specifications. Prior to the start of work, IT will submit personnel information, and proof of citizenship. This information will be submitted within 10 working days of the preconstruction site walk.

  Equipment regulations are presented in Section 01010 § 3.2.3 of the delivery order specifications. Prior to use, MCAS Cherry Point must inspect and approve the use of electric motors, internal combustion engines, and radio transmitting equipment. The equipment can not be used without prior approval.

- Dust Suppression - Dust suppressants will be used, where appropriate, in accordance with manufacturer's guidelines or the delivery order specifications. The Site Superintendent will specify the application of the dust suppressant as required to control dust emissions. The dust suppressants will be applied on unsurfaced base, subbase, and other unsurfaced travel ways. The surface will be wetted prior to application. The treated areas will be protected from traffic for a minimum of 2 hours. During excavation activities, the soil will be wetted to control dust emissions. If water is to be used as the dust suppressant, no protection time will be required.

- Erosion and Sediment Control - Erosion and sediment control will comply with the North Carolina Erosion and Sediment Control Planning and Design Manual. Sediment fences and temporary diversion dikes will be constructed during the removal action activities. The sediment fence will be manufactured by Mirafi, Inc. or an equivalent and will be installed in accordance with manufacturer's recommendations. The sediment fence will consist of a reinforcement netting and sediment control fabric that are stitched together at the top and bottom.

  The sediment fences will be inspected immediately after a rainfall event and at least daily during prolonged rainfall. If required, repairs will be made immediately. Sediment deposits will be removed when the deposits are approximately one-half the height of the barrier. The sediments will be placed into a roll-off bin and disposed accordingly.

  Temporary diversion dikes will be constructed, as necessary, to limit water from entering the excavations. The location of the diversion dikes are shown on the construction drawings.

- Surface and Subsurface Excavation - Inspection of the excavation will be performed to verify that the run-on diversion berms are intact, that areas to receive fill are properly prepared in conformance with the delivery order specifications, and that precipitation has not ponded within the excavation. The method of excavation will be observed to

verify that the excavation meets OSHA standards and to verify that the utilities are clearly marked and avoided. Dust suppression operations during excavation will also be observed.

- Heavy Equipment Decontamination - Equipment coming in contact with waste materials during the construction/remediation activities may include trucks and conventional earthmoving equipment, such as backhoes. Equipment will be decontaminated as described in Section 12.2 of the work plan.

- Excavation Dewatering and Disposal - The excavations will be dewatered, as necessary, using a pump. Water entering the excavations will be collected and pumped from the excavations to minimize standing water. The water inlets will be covered with a filter to prevent removal of fines from the excavations. A sump pit will be excavated, if required, and the excavations sloped to drain to the sump.

  The water collected will be transferred to a temporary holding tank (i.e., Frac Tank or equivalent) and commingled with the decontamination water. The commingled water will be treated using activated carbon techniques and analyzed to verify that the MCAS Cherry Point Federally Owned Treatment Works (FOTW) discharge limits are met. The water will then be transferred to the FOTW for disposal.

- Backfilling and Site Grading - Soil material will comply with the delivery order specifications. The soil material will be free of roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. The topsoil will consist of natural, friable, and well-drained soil materials representative of the surrounding area. The topsoil will be free of subsoil, stumps, irreducible material greater than 1 inch, brush, weeds, and other deleterious material as determined by the Site Superintendent or the NTR. The topsoil will be amended as necessary to maintain a pH between 5.5 and 7.

  Backfill material will be placed in 6-inch maximum compacted lifts. A minimum of 4 inches of topsoil will be placed over waste removal areas to bring the areas to final grade.

- Revegetation - Revegetation will be performed using hydroseeding techniques or equivalent. The hydroseed equipment will have a built-in agitation system and operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing not less than 40 pounds of mulch, and a combined total of 7 pounds of fertilizer solids for each 100 gallons of water.

  The seed applications will be in accordance with Navy guidelines. These guidelines specify seed application rates based on the time of year. The application rates and seed mixtures are detailed in the Construction Work Plan. Fertilizer and lime will be applied in accordance with the delivery order specifications.

10.4 Field Documentation

Field documentation will be performed in accordance with the CQC Plan. Documentation requirements for inspection of construction/remediation activities include the following, when applicable:

- Field Activity Daily Logs (FADL)
- Sample Collection Logs
- Request for Analysis and Chain-of-Custody Records
- Field Work Variance Reports
- Nonconformance Reports
- Noncompliance Check-Off List
- Daily Construction Quality Control Reports
- Daily Report to Inspector.

Standard forms for the above-mentioned documentation requirements are presented in Appendix C of the SAP.

TABLE 10-1
DQO SUMMARY, CONSTRUCTION

SPECIFICATION REQUIREMENT	DATA USE	MATRIX	METHOD OR PROCEDURE	FREQUENCY	ESTIMATED NUMBER OF FIELD TESTS	ESTIMATED NUMBER OF LAB TESTS	PERFORMANCE SPECIFICATION	SAMPLE TYPE
General excavation, filling, backfilling	Material verification	Backfill	ASTM D 2487 ASTM D 4318 ASTM D 1140	1 per 25 cy	—	18	Classification of GC, SC Max LL=35, Max PI=12 25% passing #200 sieve	Composite
		Backfill Topsoil Wetland Soil	TCLP I.C.R. TPH PCB	1 per source	—	3	Nonhazardous	Composite
		Topsoil	Visual	Continuous	—		Natural, friable soils, free of deleterious materials greater than 1-inch diameter	N/A
		Wetland soil	ASTM D 2487	1 per 25 cy	—		Classification of SM or SC	Composite
Erosion and sediment control	Material verification	Silt Fence	Supplied by vendor	At delivery	—		As per Section 01561 of the specifications	N/A
		Aggregate	Supplied by vendor	At delivery	—		Verify AASHTO 57 gradation for construction entrance	N/A
		Aggregate	Supplied by vendor	At delivery	—		Verify ASTM D 448 size 1, 2, or 3 stone for construction entrance	N/A
		Aggregate	Supplied by vendor	At delivery	—		Verify NCDOT ABC stone for access roads	N/A
Dexsil field screening tests	Verification that remaining in situ soils are below 10 ppm PCBs	Soil	Dexsil L2000 Analyzer	As per grid shown on Figure 1 of SAP	77	—	Must be < 10 ppm PCBs	Discrete
Confirmatory sampling	QA for field screening method	Soil	EPA Method 8080	—	—	8	Must agree with field screening result	Discrete
Chain link fencing	Material verification	Fencing	Visual	—	—	—	As per Section 02931 of the specifications	N/A
	Installation verification	Fencing	Visual	—	—	—	As per Section 02931 of the specifications	N/A

11.0 PEER REVIEW OF CONSTRUCTION/REMEDIATION VERIFICATION INFORMATION

11.1 Peer Review

The project manager will determine when peer review is required and will select the individual(s) who will perform the review. The extent and importance of peer review for a specific project phase will generally be based on the following criteria:

- Technical complexity of the work
- Difficulty of implementing and fulfilling the methods/procedures to be used in the project
- Complexity of the logistics required to perform the work
- Effect upon project schedule and succeeding project stages if part of the work does not meet project goals, such that either project goals/objectives must be revised or the work repeated.

11.2 Corrective Action

Corrective action may be implemented if DQOs are not met. Such corrective actions will be developed on a case-by-case basis and may include altering the field sampling or construction procedures. The Project Manager will work with the QC Representative, Site Superintendent, and the NTR or designee to assess what corrective action should be taken. The Project Manager will be responsible for initiating the corrective action; the Site Superintendent and the QC Representative will be responsible for ensuring that the corrective action is implemented. All corrective actions will be approved by the NTR.

Appendix A

QC Representative Letter of Appointment

INTERNATIONAL TECHNOLOGY CORPORATION

January 4, 1995

Project No. 760798

Mr. Walter Weick
IT Corporation
2790 Mosside Boulevard
Monroeville, PA 15146-2792

Contract No.: N47408-92-D-3056
Delivery Order No.: 0011 - Removal Action Sites 5 and 17
Marine Corps Air Station (MCAS) Cherry Point
Cherry Point, North Carolina

Letter of Appointment

Dear Mr. Weick:

You have been appointed the Quality Control (QC) Representative for the Removal Action at Sites 5 and 17, MCAS Cherry Point, in Cherry Point, North Carolina. As the QC Representative for this delivery order, you will be responsible for all IT quality-related activities as outlined in the Contract, Contractor Quality Control Plan (CQCP), and Construction Quality Control Plan Addenda. You will have access to all personnel and project records to perform your duties. You are granted authority to stop work activities if, in your opinion, nonconforming work will adversely impact the quality, performance requirements, or regulatory compliance of the project. In your capacity as QC Representative, you will report directly to the Quality Assurance Manager, Construction and Remediation Division, or his designee.

Respectfully submitted,

IT CORPORATION

Raymond J. Pompe
Vice President
Construction and Remediation Division
Executive Sponsor - NEESA Program

Appendix B

Forms for Quality Control Activities

INTERNATIONAL TECHNOLOGY CORPORATION

DAILY LOG	DATE			
	NO.			
	SHEET		OF	

FIELD ACTIVITY DAILY LOG

PROJECT NAME	PROJECT NO.
FIELD ACTIVITY SUBJECT:	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:	

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

IT PERSONNEL ON SITE:	
SIGNATURE	DATE:

INTERNATIONAL TECHNOLOGY CORPORATION

DATE	
TIME	
PAGE ____ OF ____	
PAGE	
PROJECT NO.	

SAMPLE COLLECTION LOG

PROJECT NAME _____

SAMPLE NO. _____

SAMPLE LOCATION _____

SAMPLE TYPE _____

COMPOSITE _____ YES _____ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED	AMOUNT COLLECTED

COMMENTS:

PREPARED BY: _____

COMMENTS: (Continued)

DATE	
TIME	
PAGE ____ OF ____	
PAGE	
PROJECT NO.	

PREPARED BY: _____

LEGEND

1. A SAMPLE COLLECTION LOG IS TO BE COMPLETED FOR EACH SAMPLE.
2. ALWAYS COMPLETE BOTH SIDES. IF SECOND SIDE IS NOT USED, DRAW A LINE THROUGH IT AND MARK N/A. FILL IN CONTROL BLOCK AND PREPARED BY.
3. ALL ENTRIES ON LOG ARE TO BE COMPLETED, IF NOT APPLICABLE MARK N/A.
4. DATE: USE MONTH/DAY/YEAR; I.E., 10/30/85
5. TIME: USE 24-HOUR CLOCK; I.E., 1835 FOR 6:35 P.M.
6. PAGE: EACH SAMPLE TEAM SHOULD NUMBER PAGE _____ OF _____ FOR THE DAY'S ACTIVITIES FOR ALL SHEETS PREPARED ON A SINGLE DAY, I.E., IF THERE ARE A TOTAL OF 24 PAGES (INCLUDING FRONT AND BACK) NUMBER 1 OF 24, 2 OF 24, ETC.
7. SAMPLE LOCATION: USE BORING OR MONITORING WELL NUMBER, GRID LOCATION (TRANSECT), SAMPLING STATION I.D., OR COORDINATE TO PHYSICAL FEATURES WITH DISTANCES. INCLUDE SKETCH IN COMMENT SECTION IF NECESSARY.
8. SAMPLE TYPE: USE THE FOLLOWING - SOIL; WATER (SURFACE OR GROUND); AIR (FILTERS, TUBES, AMBIENT, PERSONNEL); SLUDGE; DRUM CONTENTS; OIL; VEGETATION; WIPE; SEDIMENT.
9. COMPOSITE TYPE: I.E., 24-HOUR, LIST SAMPLE NUMBERS IN COMPOSITE, SPATIAL COMPOSITE.
10. DEPTH OF SAMPLE: GIVE UNITS. WRITE OUT UNITS SUCH AS INCHES, FEET. DON'T USE ' OR ".
11. WEATHER: APPROXIMATE TEMPERATURE, SUN AND MOISTURE CONDITIONS.
12. CONTAINERS USED: LIST EACH CONTAINER TYPE AS NUMBER, VOLUME, MATERIAL (E.G., 2 - IL GLASS; 4 - 40 ML GLASS VIAL; 1 - 400 ML PLASTIC; 1 - 3 INCH STEEL TUBE; 1 - 8 OZ. GLASS JAR).
13. AMOUNT COLLECTED: VOLUME IN CONTAINERS (E.G. 1/2 FULL).

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 472301
Page 1 of ____

Project Name/No. [1] _____ Samples Shipment Date [7] _____ Bill to: [5] _____

Sample Team Members [2] _____ Lab Destination [8] _____

Profit Center No. [3] _____ Lab Contact [9] _____

Project Manager [4] _____ Project Contact/Phone [12] _____ Report to: [10] _____

Purchase Order No. [6] _____ Carrier/Waybill No. [13] _____

Required Report Date [11] _____

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): _____

1. Relinquished by [28] (Signature/Affiliation) Date: Time:	1. Received by [28] (Signature/Affiliation) Date: Time:
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments: [29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

INSTRUCTIONS FOR COMPLETING THIS FORM

1. **Project Name/Number:** Record the name of the project or client/site location, and the billing number of the project (Example - 613215; XYZ Chemical Co. WA).
2. **Sample Team Members:** List the names of all the members of the team taking these samples; team leader's name first.
3. **Profit Center Number:** For intra company work, indicate the originating profit center number.
4. **Project Manager:** Record the project manager's name.
5. **Bill to:** Non-IT personnel should indicate the correct billing address and the person to whom the invoice should be sent. IT personnel and IT subcontractors should fill in IT office responsible for project accounting (if known).
6. **Purchase Order No.:** Non-IT personnel should use this space to record the purchase order number authorizing the analysis of these samples. IT personnel and IT subcontractors should leave this space blank if a project number has been given for billing.
7. **Samples Shipment Date:** Indicate the date these samples are shipped to the laboratory.
8. **Lab Destination:** Indicate the laboratory designated for sample shipment. Do not list more than one lab on this form. Be certain before sending samples that the laboratory you are designating is aware of the shipment and is capable of accepting these sample types and has available capacity.
9. **Lab Contact:** Give the name of the laboratory contact (typically the Lab Project Manager).
10. **Send Lab Report to:** Give the name, address and phone number of the person to receive the data report for these samples.
11. **Required Report Date :** Record the date which you and the laboratory contact have determined the results will be reported (include verbal or final report as appropriate).
12. **Project Contact/Phone:** Indicate the name of the project person to be contacted in case of any questions regarding these samples and the phone number where the contact may be reached the day the samples arrive in the laboratory.
13. **Carrier Waybill Number:** If you are sending the samples by a commercial carrier such as Airborne or Federal Express, record the courier company name and the waybill or airbill number under which these samples will be shipped (Example - Fed-Ex/ #513631771).
14. **Sample Number:** List the complete, unique, identification number of each sample. These numbers must correspond with the identification numbers on the sample containers and the field sample collection document(s).
15. **Sample Description/Type:** Provide a short physical description of the sample and the sample type such as soil, sediment, sludge, water, wipe, air, concentrated waste or bulk.
16. **Date/Time Collected:** Record date and exact time each sample was collected. Use a 24-hour clock; i.e.,1645 not 4:45 p.m.
17. **Container Type:** Indicate the volume, color and type of the sample container used (Example - 1 gallon amber glass, 1 liter clear plastic, 40 milliliter clear glass).
18. **Sample Volume:** Estimate the amount of sample in the container. For air samples, indicate the volume of air sampled.
19. **Preservation:** Indicate what type of preservative, if any, has been used for the samples (Examples - ice to 4°C nitric acid, hydrochloric acid).
20. **Requested Testing Program:** List the analyses to be performed on each sample by method number.
21. **Condition on Receipt:** Before a custody transfer the intended recipient should verify all samples are present and in good condition. This column may be used by the recipient to record any abnormalities found at the time of the transfer (Examples - jar lid cracked, sample bottle leaking).
22. **Disposal Record No.:** Used by the laboratory to record requisite disposal information. Not used when samples are returned to client.
23. **Special Instructions:** Use this space to record any special instructions to the lab regarding the processing of these samples.
24. **Possible Hazard Identification:** Indicate all hazard classes associated with the sample(s).
25. **Sample Disposal:** Indicate how the samples should be disposed of following analysis. All samples are held six weeks and then disposed of unless other arrangements for storage have been previously requested. Lab will charge for packing, additional archiving and disposal.
26. **Turnaround Time Required:** Check "Normal" or "Rush" as determined by the Project Manager and the laboratory contact. Rush samples are subject to a surcharge.
27. **QC Level:** These are ITAS QC levels and should not be confused with USEPA Analytical Levels.

    Level I: ITAS standard practice. Use available analytical procedures. Fifteen percent quality control (QC) samples (blank/spike/duplicate) for every 20 samples. QC samples may not be performed for a specific project but as part of compiled sets of samples. QC data not reported with analytical results. ITAS published rates apply to client samples tested.

    Level II: Use available analytical methods. Fifteen percent QC samples minimum (blank/duplicate/spike or duplicate spike) QC samples are project or client-specific. QC summary report include with analytical results. No raw data are included. Each QC sample billed as real analytical sample.

    Level III: Uses referenced regulatory procedures, and/or established/verified procedures using confirmatory techniques. Method blank plus 20 percent or tow QC summary minimum per each matrix. QC summary report supplied with supporting data. Where applicable, this is USEPA Contract Laboratory Program (CLP) package. Surcharge is added and/or QC samples are billed at sample rates. Costs based on analytical program required.

Project-specific: Defined in QAPjP, Work Plan, or other specific plan or procedure. Project documentation must be submitted to the laboratory before beginning work. Project requirements for QC samples cannot be less than Level I.

28. **Signatures:** When releasing custody of these samples, use the "Relinquished By" space to sign your full legal name, company name, date and time of release. After verifying that all samples are present, the person receiving the samples must sign the "Received By" space to take custody of the samples.
29. **Comments:** Provide any additional explanatory information that may be required (Example - samples stored overnight in temperature controlled, secure refrigerator).

INTERNATIONAL TECHNOLOGY CORPORATION

Report No. _____
Date: _____

DAILY CONSTRUCTION QUALITY CONTROL REPORT

Contract No.
Delivery Order No. _____

Project : _____
Proj. No.: _____
Proj. Loc.: _____

WEATHER: ( ) Clear ( ) P. Cloudy ( ) Cloudy Wind_____
Temperature: High _____ Low _____
Precipitation: Today _____ Previous Period (i.e. weekend) _____
Site Conditions: _____
Lost time Due to Inclement Weather: _____%

PRIME CONTRACTOR/SUBCONTRACTORS AND AREAS OF RESPONSIBILITY/LABOR COUNT:

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____

WORK PERFORMED: (Indicate location and description of work performed including equipment used. Refer to work performed by prime and/or subcontractors as previously designated by letter above.) _____

MATERIALS AND/OR EQUIPMENT DELIVERED: (Include a description of materials and/or equipment, quantity, and supplier.) _____

RESULTS OF SURVEILLANCE: (Include satisfactory work completed, or deficiencies with action to be taken.)

a. Preparatory Inspection: _____
b. Initial Inspection: _____
c. Follow-up Inspection: _____
d. Safety Inspection (Include safety violations and corrective actions taken): _____

QC TESTS PERFORMED AND RESULTS: (As required by scope and/or project plans.) _____

VERBAL INSTRUCTIONS RECEIVED OR GIVEN: (List any instructions received from government personnel or given by IT on construction deficiencies identified, required retesting, etc., and the corresponding action to be taken.)

CHANGED CONDITIONS/DELAYS/CONFLICTS ENCOUNTERED: (List any conflicts with the delivery order [i.e., scope and/or project plans], any delays to the project attributable to site and weather conditions, etc.)_____

MEETINGS: (List the meetings i.e., Health and Safety, Site Operations, Cost/Schedule, etc.) _____

VISITORS: (List name and affiliation). _____

REMARKS: (Any additional information pertinent to the project not defined by the previous entries.) _____

CONTRACTOR'S VERIFICATION : The above report is complete and correct.

_____ _____

IT QA/QC Representative Date

INTERNATIONAL TECHNOLOGY CORPORATION

VARIANCE LOG

PROJECT NUMBER _____ PAGE _____ OF _____

PROJECT NAME _____

DATE	VARIANCE GRANTED AND APPLICABLE DOCUMENT	RESPONSIBLE INDIVIDUAL

Initial Inspection Checklist

ITEM:				Date:
Contract Specifications:				
Material	**Qty**	**Condition**	**Testing**	**Comment**

STORAGE CONDITIONS:

MATERIAL/EQUIPMENT CERTIFICATIONS:

SITE CONDITIONS:

Initial Inspection Checklist (continued)

CONTRACT VARIANCE:
COMMENTS:

PREPARATORY INSPECTION FORM

DATE:

PAGE _____ OF _____

CONTRACT NO.:	TITLE AND LOCATION:	DELIVERY ORDER NO.:
CONTRACTOR: IT CORPORATION	NAME OF SUPERINTENDENT:	

REVIEW OF CONTRACT/DELIVERY ORDER REQUIREMENTS (list specification references as appropriate):

LIST APPLICABLE DRAWINGS AND SUBMITTALS:

CONTROL TEST	TEST PROCEDURE	FREQUENCY

MATERIAL/ EQUIPMENT NEEDED	AVAILABLE	RECEIVING INSPECTION COMPLETED

HAVE SUBCONTRACTORS BEEN NOTIFIED OF REQUIREMENTS? YES _____ NO _____

SUBCONTRACTOR	WORK ACTIVITY

HAS ALL PRELIMINARY WORK BEEN COMPLETED? YES _____ NO _____

_____

Site Superintendent Date

Daily Followup Inspection Form

Feature:	**Inspection Date:**
Installation Date:	
Description:	
Reference of Applicable Specification or Drawing:	
Remarks:	

FINAL INSPECTION FORM	DATE:	PAGE _____ OF _____

CONTRACT NO.:	TITLE AND LOCATION:	DELIVERY ORDER NO.:
CONTRACTOR: IT CORPORATION	NAME OF SITE SUPERINTENDENT:	

INSPECTED WORK:	COMPLETION DATE:

PERFORMANCE SPECIFICATION BY CONTRACT DELIVERY ORDER REFERENCE	STATUS OF INSPECTION

On behalf of IT Corporation, I certify that the work inspected is complete and meets the performance specifications cited above and that all material and equipment used and work performed was completed in accordance with approved plans and work instructions and meets contract delivery order requirements.

_____ _____

QA/QC Representative Date

Non-Conformance Report

1	**PROJECT NAME:**			2	**JOB NO.**
3	**LOCATION:**	4	**DATE:**	5	**NCR NO.**

6 **DESCRIPTION OF NON-CONFORMANCES:**

PREPARED BY: _____ DATE: _____
Quality Control Representative

REVIEWED BY: _____ DATE: _____
Quality Control Manager

7 **DISPOSITION:**

RECOMMENDED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____
Quality Control Representative

8 **ACTION VERIFICATION:**

IMPLEMENTED BY: _____ DATE: _____

VERIFIED BY: _____ DATE: _____
Quality Control Representative

9 **NCR CLOSE-OUT** _____ **DATE:** _____
Quality Control Manager

NON-COMPLIANCE CHECK-OFF LIST

Project Name: Removal Action of Sites 5 and 17 **Page**___ **of**___

Contract No.: N47408-92-D-3045 **Contractor:** IT CORPORATION

Delivery Order: 0011

DATE NON-COMPLIANCE IDENTIFIED	ITEM	CONTRACT REQUIREMENT (Spec. Section and Para. No., Draw. No., and Detail No., etc.)	ACTION TAKEN BY QC REPRESENTATIVE	RESOLUTION	DATE RESOLVED

DAILY REPORT TO INSPECTOR

DATE

CONTRACT NO. N47408-92-D-3056	TITLE AND LOCATION	
CONTRACTOR	NAME OF SUPERINTENDENT OR FOREMAN	

PRIME CONTRACTOR NUMBER	TRADE	SUBCON. HOURS	WORKFORCE EMPLOYER	LOCATION AND DESCRIPTION OF WORK PERFORMED

TOTAL WORK HOURS ON JOB SITE THIS DATE	
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	
TOTAL WORK HOURS FROM START OF CONSTRUCTION	

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?

_____ YES _____ NO

IF "YES" A COPY OF THE COMPLETED OSHA REPORT IS REQUIRED

CONSTRUCTION AND PLANT EQUIPMENT — LEFT ON JOB SITE UNTIL USE IS COMPLETED

DESCRIPTION	DATE FIRST ON JOB	HOURS WORKED THIS DATE	HOURS IDLED	DATE OF FINAL REMOVAL FROM JOB SITE

SPEC. PARA. AND/OR DRAWING NO.	EQUIPMENT/ MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (Description, Sizes, Quantity)	SUBMITTAL NO. OR CERTIFICATION	DATE APPROVED

REMARKS (Include directions received from RO/CC/ARO, visitors, compliance notices received, errors omission in P/S, pertinent information)

_____

CONTRACTORS SUPERINTENDENT DATE