COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN II)
Northern And Central California, Nevada, And Utah
Contract No. N62474-94-D-7609
Contract Task Order No. 369

Prepared for

DEPARTMENT OF THE NAVY
Jim Sullivan, Remedial Project Manager
Naval Facilities Engineering Command
Southwest Division
San Diego, California

QUALITY ASSURANCE PROJECT PLAN ADDENDUM

INDOOR AMBIENT AIR INVESTIGATION OF THE FORMER STORAGE YARD INSTALLATION RESTORATION SITE 12

NAVAL STATION TREASURE ISLAND SAN FRANCISCO, CALIFORNIA

DS.0369.15350

FINAL

October 4, 2000

Prepared by

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DEPARTMENT OF THE NAVY

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TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N62474-94-D-7609 Document Control No. DS . 0369 . 15350

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DATE: 10/12/00
CTO: 0369
LOCATION:
NAVSTA Treasure Island, San Francisco

FROM: **Daniel Chow,** Program Manager

DOCUMENT TITLE AND DATE:
Final Quality Assurance Project Plan Addendum, October 4, 2000

TYPE: ☐ Contractual Deliverable ☒ Technical Deliverable ☐ Other

VERSION: Final (e.g., Draft, Draft Final, Final) REVISION #:

ADMIN RECORD: Yes ☒ No ☐ CATEGORY: Confidential ☐

SCHEDULED DELIVERY DATE: 10/12/00 ACTUAL DELIVERY DATE: 10/13/2000

NUMBER OF COPIES SUBMITTED TO NAVY: O/5C/6E

O = original transmittal form
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October 4, 2000

Mr. James Sullivan
Remedial Project Manager
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Subject: **Final Field Sampling Plan and**
Quality Assurance Project Plan Addendum for the
Indoor Ambient Air Investigation of the Former Storage Yard
Installation Restoration Site 12
Naval Station Treasure Island, San Francisco, California
CLEAN II Contract No. N62474-94-D-7609, Contract Task Order 369

Dear Mr. Sullivan:

Enclosed for your use are copies of the final field sampling plan (FSP) and quality assurance project plan (QAPP) for the indoor ambient air investigation of the Former Storage Yard, Installation Restoration Site 12, Naval Station Treasure Island. The FSP has been revised in accordance with the responses to regulatory comments from the Department of Toxic Substances Control and the Regional Water Quality Control Board, which are included as Appendix C. The QAPP has been revised in accordance with the responses to regulatory comments from the Regional Water Quality Control Board, which are included as Appendix 2. Copies of the final documents have also been sent to the individuals on the distribution list indicated on the Navy cover letter for these documents.

If you have any questions or comments, please call me at (415) 222-8207.

Sincerely,

Jerry T. Wickham
Project Manager

Enclosures

cc: Michael Bloom (1)(enclosed)
COTAR (1)(enclosed)
Administrative Record (3)
John Baur, IT
Ron Ohta, TtEMI
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FINAL
QUALITY ASSURANCE PROJECT PLAN
INDOOR AMBIENT AIR INVESTIGATION
OF THE FORMER STORAGE YARD
INSTALLATION RESTORATION SITE 12

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Tables

ACRONYMS AND ABBREVIATIONS

CLEAN II	Comprehensive Long-term Environmental Action Navy, Contract No. N62474-94-D-7609
COC	Chain of custody
CTO	Contract task order
DQO	Data quality objective
EPA	U.S. Environmental Protection Agency
FSP	Field sampling plan
GC/MS	Gas chromatography/mass spectroscopy
HRGC/HRMS	High resolution gas chromatograph/high resolution mass spectroscopy
LCS	Laboratory control sample
NAVSTA TI	Naval Station Treasure Island
PARCC	Precision, accuracy, representativeness, completeness, and comparability
PCB	Polychlorinated biphenyl
PRC	PRC Environmental Management, Inc.
PRG	Preliminary remediation goal
PUF	Polyurethane foam
QA	Quality assurance
QAPP	Quality assurance project plan
QC	Quality control
Site 12	Installation Restoration Program Site 12
Site 12 QAPP	Quality Assurance Project Plan for Installation Restoration Program Site 12 Additional Characterization
SWDIV	Southwest Division, Naval Facilities Engineering Command
TtEMI	Tetra Tech EM Inc.

A1 INTRODUCTION

Tetra Tech EM Inc. (TtEMI), formerly known as PRC Environmental Management, Inc., received Contract Task Order (CTO) 369 under Comprehensive Long-term Environmental Action Navy Contract No. N62474-94-D-7609 (CLEAN II) from the Department of the Navy (Navy), Naval Facilities Engineering Command, Engineering Field Activity West. The CTO entails additional site characterization at Installation Restoration Site 12 (Site 12) at Naval Station Treasure Island (NAVSTA TI), San Francisco, California.

Polychlorinated biphenyls (PCB) have been detected in soil in the eastern portion of the Former Storage Yard. The highest concentrations of PCBs have been detected adjacent to Building 1100. The investigation proposed under this CTO will provide data to determine whether PCBs in the soil can volatilize into soil gas and enter Building 1100 through the concrete slab foundation. Concentrations of PCBs in the soil adjacent to the other buildings in the Former Storage Yard are significantly lower than the concentrations of PCBs in soil adjacent to Building 1100. The potential for PCBs to volatilize and enter buildings other than Building 1100 may be investigated if the results of this proposed investigation indicate that PCBs in the soil are volatilizing into soil gas and entering Building 1100. This quality assurance project plan (QAPP) addendum was prepared in support of this investigation as an addendum to the "Quality Assurance Project Plan for Installation Restoration Program Site 12 Additional Characterization" that was approved by Southwest Division, Naval Facilities Engineering Command (SWDIV) on April 14, 2000 (Site 12 QAPP).

The Site 12 QAPP documents policies, project organization, and quality assurance and quality control (QA/QC) measures to be implemented for field activities at Site 12. This QAPP addendum addresses matters not discussed in the Site 12 QAPP. The accompanying field sampling plan (FSP) fully describes the project data quality objectives (DQO), which have been developed through the seven-step DQO process (U.S. Environmental Protection Agency [EPA] 1994, 1999).

A1.1 DOCUMENT REQUIREMENTS AND FORMAT

This QAPP addendum is based on Requirements for Quality Assurance Project Plans, EPA QA/R-5 (EPA 1999). EPA QA/R-5 states that the requirements for QAPPs include (1) evaluating DQOs for the project. (2) ensuring that intended measurements and data to be acquired are appropriate, (3) ensuring

that QA/QC procedures are adequate for confirming data quality, and (4) identifying limitations on the use of the data. The following table provides a summary of the elements contained in this QAPP addendum.

QUALITY ASSURANCE PROJECT PLAN ELEMENTS

SITE 12 ADDITIONAL CHARACTERIZATION

A. Project Management	
Element/Content	**Report Section**
A1 Title and approval sheet	Not applicable
A2 Table of contents	Not applicable
A3 Distribution list	Not applicable
A4 Project/task organization	A2
A5 Problem definition/background	A3
A6 Project/task description	A4
A7 Quality objectives and criteria for measuring data	A5
A8 Special training and certification	A2.3
A9 Documentation and records	A6
B. Measurement/Data Acquisition	
Element/Content	**Report Section**
B1 Sampling process design (experimental design)	B2
B2 Sampling methods	B3
B3 Sample handling and custody	B4
B4 Analytical methods	B5
B5 Quality control	B6
B6 Instrument/equipment testing, inspection, and maintenance	B7
B7 Instrument calibration and frequency	B7
B8 Inspection/acceptance of supplies and consumables	B8
B9 Nondirect measurements	B9
B10 Data management	B9
C. Assessment/Oversight	
Element/Content	**Report Section**
C1 Assessments and response actions	C1
C2 Reports to management	C1.3
D. Data validation and usability	
Element/Content	**Report Section**
D1 Data review, validation, and verification	D1.1
D2 Validation and verification methods	D1.2
D3 Reconciliation with user requirements	D2

A1.2 USE OF THE DOCUMENT

Each element of the QAPP addendum is discussed in this document as it pertains to the ambient air investigation at the Former Storage Yard. The QAPP addendum provides specific guidance and QA/QC criteria for collecting, evaluating, and submitting data while completing the project. All personnel working on the project are required to read and comply with the procedures defined in this document to ensure the quality and usability of the data collected.

A1.3 BACKGROUND

This QAPP addendum amends the "Quality Assurance Project Plan for Installation Restoration Program Site 12 Additional Characterization" that was approved by SWDIV on April 14, 2000 (Site 12 QAPP). The background and history of NAVSTA TI and the Former Storage Yard are discussed in detail in the accompanying FSP and the Site 12 QAPP (TtEMI 2000).

A1.4 DATA QUALITY OBJECTIVES

In support of these sampling efforts, the DQO process, as presented in the following section, has been completed. The steps of the DQO process are presented in the accompanying FSP. Specific DQOs for the ambient air sampling effort are presented in the accompanying FSP. A summary of the DQOs for the ambient air sampling effort is presented in Appendix 1.

DQOs are qualitative and quantitative statements developed through the seven-step DQO process (EPA 1994, 1999). The primary outputs of that iterative methodology are definition of the problem under investigation (Step 1), identification of the decisions that require inputs and resolution (Step 2), identification of those inputs (Step 3), delineation of the study boundaries (Step 4), development of decision rules (Step 5), specification of tolerable limits on errors (Step 6), and optimization of the sampling design (Step 7).

A2 PROJECT AND TASK ORGANIZATION

The project and task organization is described in detail in the Site 12 QAPP (TtEMI 2000).

A2.4 PROJECT SCHEDULE

The implementation schedules for sampling, analysis, and associated reporting are presented in the accompanying FSP.

A3 SITE BACKGROUND AND PROBLEM DEFINITION

Previous investigations at Site 12 have detected PCBs in soil samples collected at the site. Previous investigations at the Former Storage Yard have detected PCBs at high concentrations in soil adjacent to Building 1100. PCBs were detected in almost all samples from areas adjacent to Building 1100 and are probably present in soil beneath the building. The purpose of the work defined in this study is to evaluate whether PCBs are volatilizing into soil gas and entering Building 1100 through the concrete slab foundation. Data obtained during the ambient air survey will be used to evaluate whether vapor concentrations are within limits that are protective of human health. The investigation detailed in the accompanying FSP is intended to provide information about whether PCBs are present in indoor ambient air in the targeted area.

A4 PROJECT AND TASK DESCRIPTION

The following paragraphs summarize the objectives of and the tasks necessary to complete the ambient air investigation at the Former Storage Yard. The primary objectives, types of data to be collected, data quality standards and criteria, and project documentation are discussed in the following sections. The DQO steps are presented in the accompanying FSP. A summary of the DQO steps is provided in Appendix 1.

A4.1 PROJECT OBJECTIVES

The overall project objective is to evaluate whether the PCBs are volatilizing into soil gas and entering Building 1100 through the concrete slab foundation at concentrations that pose a human health risk. Specific project objectives, as related to resolution of specific study questions, are detailed in the accompanying FSP.

A4.2 PROJECT MEASUREMENTS

Analytical methods were selected to provide data of the quality necessary to meet the DQOs for this project. The data collected will be compared to EPA preliminary remediation goals (PRG) for ambient air.

A4.3 PROJECT QUALITY STANDARDS AND CRITERIA

To promote quality of, and consistency in, data acquisition and evaluation during this project, all project activities will be completed in accordance with the Site 12 QAPP, this QAPP addendum, and the accompanying FSP. This document describes the technical and quality objectives for the project, the intended data collection methods that are appropriate for achieving project objectives, the assessment procedures adequate for confirming that data of the type and quality needed and expected are obtained, and any identified limitations on the use of those data.

Analytical data generated during this project will undergo validation and verification to ensure defensible and acceptable quality. Data validation and usability are discussed further in Section D1 of the Site 12 QAPP (TtEMI 2000). An independent, third-party contractor will validate data in accordance with SWDIV Environmental Work Instruction 4EN.1 (SWDIV 1999). At a minimum, 10 percent of the analytical data will be randomly selected and fully validated. All remaining analytical data will undergo cursory validation.

The assessment tools needed to verify that data quality is maintained throughout the study activities include QC reviews of project documents, such as technical, editorial, and QC coordinator reviews; performance and system audits; and laboratory QA/QC procedures. Project audits are described further in Section C1.1 of the Site 12 QAPP. Laboratory QA/QC procedures are addressed in Section B6 of this QAPP addendum.

A4.4 PROJECT DOCUMENTATION

Field documentation and records maintenance are described fully in the Site 12 QAPP. Additional information about sample and location nomenclature is provided in the accompanying FSP. Sample documentation, such as sample labels, chain-of-custody (COC) procedures, and packaging and shipping, are discussed in Section B4 of the Site 12 QAPP.

A4.4.1 Field Forms

In addition to the field forms listed in the Site 12 QAPP, a field data sheet for ambient air sampling will be used. The form is presented as Appendix B in the accompanying FSP and will be used as a source document in support of the NAVSTA TI database.

A5 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

Specific quality objectives and criteria for measurement data, as they apply to this project, are discussed in the following sections.

A5.1 PROJECT SCOPE AND ENVIRONMENTAL MEDIA

As noted in the FSP, samples will be analyzed for PCBs using EPA Method 1668.

A5.2 INTENDED DATA USERS AND USES

Data users include stakeholders, such as regulatory agencies, the Navy, subcontractors to the Navy, and the public. Definitive data, as outlined in Section A5.3 of the Site 12 QAPP, will be required to allow comparison with PRGs for PCBs in ambient air.

A5.3 DATA TYPE AND QUANTITY

The data obtained from laboratory analysis can best be categorized as definitive. Definitive data are described in detail in Section A5.3 of the Site 12 QAPP.

A5.4 ACCEPTABLE LEVEL OF CONFIDENCE IN THE DATA

Determining acceptable limits on decision errors (DQO Step 6) will limit the uncertainty in the data set obtained from this project. Step 6 of the DQO process quantifies the acceptable limits on decision errors. Those limits are needed to define the uncertainty that will be acceptable to all stakeholders (such as regulatory agencies, citizens, and site owners).

The quality of the analytical data will be assessed in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC), as detailed in Section A5.5 of this QAPP addendum. In addition, professional judgment will be used to assess the practical versus the statistical significance of the data collected (EPA 1998). Decision errors based on sample design, and data interpretation will be minimized through multiple internal and external reviews of project data and conclusions. Validation and verification of data generated during field activities are essential to obtaining data of defensible and acceptable quality. Verification methods for field and laboratory activities are presented in Section D of the Site 12 QAPP. Results of the data validation will play a major role in the acceptance or rejection of the data.

A5.5 SPECIFYING PERFORMANCE CRITERIA: PARCC PARAMETERS

All analytical results will be assessed according to the PARCC parameters described in the Site 12 QAPP, as amended below.

A5.5.1 Precision

Precision is the degree of mutual agreement between individual measurements of the same property under prescribed similar conditions. Data precision is affected by field sampling precision and laboratory analytical precision. It is evaluated by collecting and analyzing field duplicates at a frequency of 10 percent. Laboratory analytical precision is evaluated by analyzing laboratory duplicates at a rate of 5 percent of the total samples collected. The results of the duplicate analysis are used to calculate the relative percent difference used in evaluating precision.

A5.5.2 Accuracy

Accuracy is the degree of agreement between an analytical measurement and a reference accepted as a true value. The accuracy of a measurement system is affected by errors introduced through the sampling

process by field contamination and sample collection and sample handling practices. Other factors that may affect accuracy are sample matrix, sample preparation, and analytical techniques. The analytical laboratory will conduct a program of sample spiking to evaluate laboratory accuracy. That program will include analysis of laboratory control samples (LCS), surrogate standards, and method blanks. LCSs are analyzed at a frequency of 5 percent, and surrogate standards are added to every sample analyzed.

A5.6 DETECTION AND QUANTITATION LIMTS

Sample results will be reported as estimated values if concentrations are less than the laboratory reporting limit but greater than the method detection limit.

A6 DOCUMENTATION AND RECORDS

Required documentation, including electronic data deliverables and data package requirements, is fully described in the Site 12 QAPP.

B1 MEASUREMENT AND DATA ACQUISITION

The following sections describe requirements for:

- Sampling process design (Section B2)
- Sampling methods (Section B3)
- Sample handling and analysis (Sections B4, B5)
- QC samples and procedures (Section B6)
- Instrument calibration and maintenance (Section B7)
- Analytical supplies and miscellaneous equipment (B8)

These sections provide adequate detail to evaluate whether the methods used for this project have been verified and documented.

B2 SAMPLING DESIGN (EXPERIMENTAL DESIGN)

The accompanying FSP describes the sampling design for the PCBs in ambient air investigation.

A summary of the number of samples to be collected and the analyses required can be found in the accompanying FSP. The analytical method that will be used to analyze samples is presented in Section B-5.

Sampling and analysis will be conducted in accordance with this document, the Site 12 QAPP, the approved FSP, and the health and safety plan.

B3 SAMPLING METHODS

This discussion describes the procedures for collecting samples and includes:

- Identification of all sampling methods to be used
- Implementation requirements

- Decontamination procedures
- Materials required

B3.1 SAMPLE COLLECTION AND DECONTAMINATION

The following subsections describe procedures for sample collection, as well as decontamination and disposal of investigation-derived waste.

B3.1.1 Sample Collection Procedures

Standard procedures are to be followed for sampling and data collection at NAVSTA TI. The task manager will define and use the specific sampling procedures presented in the accompanying FSP after approval by the project QA officer. When possible, TtEMI standard operating procedures for field work, as amended in this QAPP addendum or the FSP, will be followed in conducting the sampling activities.

Samples will be collected using the method described in Section 4.2 of the accompanying FSP.

B3.1.2 Decontamination and Disposal Procedures

Dedicated sampling equipment will be used for ambient air sampling; therefore, equipment decontamination or disposal of potentially hazardous material will not be necessary.

B3.2 SAMPLE CONTAINERS AND HOLDING TIMES

The analytical method, type of sampling device to be used, and maximum holding times prior to analysis are presented in Table B-1. All samples to be analyzed for PCBs in ambient air will be collected using polyurethane foam (PUF) cartridges.

B4 SAMPLE HANDLING, CUSTODY, AND SHIPPING PROCEDURES

Documentation and records, including field forms and field logbooks, are discussed in Section A4.4 of the Site 12 QAPP. Sample handling and custody requirements for samples collected at Site 12 are discussed in Section B4 of the Site 12 QAPP, and supplemented in the following sections.

B4.1 SAMPLE HANDLING

Sample handling procedures are described in detail in Section 4.2 of the accompanying FSP.

B4.1.4 Shipping Procedures

The shipping procedures outlined in the Site 12 QAPP will be followed.

B4.1.5 Cooler Receipt

Upon receiving a cooler, laboratory personnel will review the contents, sign the COC form and airbill, and retain both documents for their records.

B5 ANALYTICAL METHODS

Table B-2 presents the method that will be used to analyze samples collected for analysis for PCBs in ambient air. The analytical method was selected to provide data of the quality necessary to meet the DQOs for this project. Samples will be analyzed by EPA Method 1668 for PCBs. This method will be used because it is adequate to meet reporting limits required for comparison with ambient air PRGs. The contract-required reporting limits and a comparison with PRGs for ambient air are listed in Tables B-3 and B-4.

The following subsections provide details about the specific procedures that will be used to analyze samples.

B5.1 METHODS FOR AMBIENT AIR ANALYSIS

The following subsections discuss preparation and analytical methods for ambient air analyses.

B5.1.2 Analytical Methods

EPA 1668 - PCBs

EPA Method 1668 involves high resolution gas chromatography/mass spectroscopy (GC/MS) analysis of total PCBs and select PCB congeners in ambient air samples collected on PUF cartridges. Adsorbent PUF cartridges are cleaned using solvents and vacuum dried. Cartridges are sent to the field wrapped tightly in aluminum foil to prevent degradation by ultraviolet light. PUF cartridges are batch-certified for cleanliness and pre-spiked before shipment. In addition, the laboratory analyzes one clean PUF cartridge for each extraction batch to serve as a laboratory blank.

After sampling, the PUF cartridges are subjected to soxhlet extraction using methylene chloride and the extract is concentrated. Analysis is performed using high resolution GC/MS.

B6 QUALITY CONTROL

The primary functions of any sampling and analysis program are to obtain accurate, representative environmental samples and to provide defensible analytical data. A program to evaluate field and laboratory data was developed to achieve those goals. Quality of the field data will be assessed through the collection and analysis of field QC samples on a regularly scheduled basis. Laboratory QC samples will also be analyzed in accordance with referenced analytical method protocols to ensure that laboratory procedures and analyses are conducted properly.

The following subsections discuss the types of QC samples to be collected and analyzed for the PCBs in ambient air investigation and their role in the assurance of acceptable project data. Additional QC procedures are not limited to those discussed in this section. Field and laboratory personnel, in accordance with specific method protocols, may implement additional procedures. The following

subsections discuss field QC samples, field measurement QC procedures, laboratory QC samples, and laboratory QC procedures.

B6.1 FIELD QUALITY CONTROL SAMPLES

QC samples are collected in the field and used to evaluate the validity of the field sampling effort. Field QC samples are collected for laboratory analysis to check sampling and analytical precision, accuracy, and representativeness. Because dedicated sampling equipment will be used, the only field QC samples required for the ambient air investigation are field duplicates. The type and frequency of field quality control samples is presented in Table B-5.

B6.1.1 Field Duplicates

Field duplicates are taken to obtain precision data on handling, shipping, storage, preparation, and analysis of ambient air samples. The duplicate samples will be collected by placing two PUF cartridges side by side in one of the housing units at a frequency of 1 for every 10 indoor air samples.

B6.2 LABORATORY QUALITY CONTROL SAMPLES

Laboratory QC samples are analyzed to evaluate the quality of preparation and analysis of field samples. Laboratory QC samples are prepared and analyzed at the laboratory to assess analytical precision, accuracy, and representativeness. The types of laboratory QC samples that will be used are discussed in the Site 12 QAPP, as amended in the following sections. Precision and accuracy goals for laboratory QC elements are presented in Table B-6.

B6.2.1 Method Blanks

Method blanks are prepared to determine whether contamination of the field sample is occurring in the laboratory during sample preparation or analysis. A method blank consists of a clean PUF cartridge and is prepared and analyzed using the same methods and procedures and for the same parameters as field samples. Method blanks are prepared and analyzed using the same procedures as field samples, at a frequency of one per batch of 20 samples or less.

B6.2.2 Laboratory Control Samples

An LCS is a clean PUF cartridge that has been spiked with standard reference materials of known concentration prior to extraction. An LCS is analyzed to verify the accuracy of the analytical system. LCSs are prepared and analyzed using the same procedures as field samples, at a frequency of one per batch of 20 samples or less.

B6.2.4 Surrogate Standards

Surrogate standards consist of known concentrations of nontarget analytes that are added to each sample, method blank, and LCS prior to extraction. The surrogate standard measures the efficiency of the analytical method in recovering target analytes from an environmental sample matrix.

B6.3 LABORATORY CONTROL PROCEDURES

The laboratory will conduct quality control procedures as described in the Site 12 QAPP.

B7 INSTRUMENT AND EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Section B7 of the Site 12 QAPP discusses regularly scheduled preventive maintenance and calibration procedures that are used to keep all field and laboratory equipment in good working condition.

B8 INSPECTION AND ACCEPTANCE OF SUPPLIES AND CONSUMABLES

Analytical laboratories are required to provide certified-clean containers for all analyses. The subcontract laboratory will maintain an inventory of analytical supplies required for analytical procedures, as described in Section B5.1.

B9 NONDIRECT MEASUREMENTS

The Site 12 QAPP outlines data management in the field and laboratory.

C1 ASSESSMENTS AND RESPONSE ACTIONS

Oversight of QA activities will be completed using three types of audits (performance, system, and field), as described in Section C1 of the Site 12 QAPP.

D1 DATA VALIDATION AND USABILITY

Section D1 of the Site 12 QAPP (TtEMI 2000) discusses the requirements and methods for data review, verification, and validation.

D2 RECONCILIATION WITH USER REQUIREMENTS

The overall purpose of the work defined in this study is to evaluate whether PCBs in soils near residential buildings are volatilizing into soil gas and entering the buildings through the slab foundations at concentrations that pose a risk to human health. The sampling and laboratory methods and procedures detailed throughout this QAPP addendum should provide data of adequate quality to assess the concentrations of PCBs in indoor ambient air in the Former Storage Yard. Detected concentrations of site-related chemicals will be compared with PRGs for ambient air to determine whether the chemicals are present at concentrations that may pose a human health risk.

E1 REFERENCES

U.S. Environmental Protection Agency (EPA). 1994. "Guidance for the Data Quality Objectives Process." EPA QA/G-4. September.

EPA. 1998. "EPA Guidance for Quality Assurance Project Plans." EPA QA/G-5. February.

EPA. 1999. "EPA Requirements for Quality Assurance Project Plans." Quality Staff. Washington, DC. EPA QA/R-5. Interim Final. November

Southwest Division, Department of the Navy, Naval Facilities Engineering Command. (SWDIV) 1999. Environmental Work Instruction 4EN.1 (EW #1)

Tetra Tech EM, Inc. (TtEMI). 2000. "Draft Quality Assurance Project Plan Installation Restoration Program Site 12 Additional Characterization." Naval Station Treasure Island, San Francisco, CA

APPENDIX 1

DATA QUALITY OBJECTIVES TABLE

TABLE 1

DATA QUALITY OBJECTIVES SUMMARY
NAVAL STATION TREASURE ISLAND

Step 1 State the Problem	Step 2 Identify the Decision	Step 3 Identify Inputs to the Decision	Step 4 Define the Study Boundaries	Step 5 Develop Decision Rules	Step 6 Specify Acceptable Tolerable Limits on Decision Errors	Step 7 Optimize the Sampling Design
• PCBs may be present in the soil beneath Building 1100. The PCBs could volatilize into soil gas and enter Building 1100 through its concrete slab foundation.	• Are PCBs present in indoor ambient air at concentrations that could pose a human health risk in Building 1100? • Are PCBs present in indoor ambient air at concentrations that could pose a human health risk in other buildings in the Former Storage Yard? • Are PCBs present in control samples at concentrations that could pose a human health risk?	• Site history • Concentrations of PCBs in soils adjacent to the buildings • Results from the Johnson-Ettinger model for subsurface vapor intrusion into buildings • Validated, defensible baseline analytical data for PCBs from ambient air ambient air inside of Building 1100 and a control building • Validated, defensible analytical data for PCBs from ambient air outside of Building 1100 and a control building	• The horizontal limits of the study are the areas of PCB contamination in soil. • The vertical limits of the study area are the floors of the housing units.	• If PCBs are detected in indoor ambient air in Building 1100 at concentrations exceeding the ambient air PRG for PCBs, then the Navy will discuss further sampling with the BCT. • If PCBs are not detected at concentrations exceeding ambient air PRGs in Building 1100, then no indoor air sampling will be conducted in other buildings in the Former Storage Yard. • If PCBs are present in control samples at concentrations exceeding ambient air PRGs, then sources other than the volatilization of PCBs in soil will be evaluated.	• False negative error will be minimized by adherence to the selected sampling and analytical methods. • False positive error will be minimized by the proper application of the selected sampling and analytical methods.	• Indoor air samples will be collected from each of the six housing units in Building 1100 and analyzed for PCBs. • Indoor ambient air samples will be collected from two housing units in a control building outside the area of PCB soil contamination to help determine the source of any PCBs detected in indoor air. • The samples will be collected in rooms in which pipes enter the slab foundation or in which there are cracks in the slab to represent the potential worst-case scenario for intrusion of soil gas from beneath the slab. • Two outdoor ambient air samples will be collected, one near Building 1100 and one near the control building, to help determine the source of any PCBs detected in indoor air. • All samples will be analyzed for PCBs using EPA Method 1668.

Notes: ARAR = Applicable or relevant and appropriate requirement
BCT = Base Realignment and Closure Cleanup Team
EPA = U.S. Environmental Protection Agency
PRG = Preliminary remediation goal

APPENDIX 2

RESPONSE TO AGENCY COMMENTS

RESPONSE TO CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD COMMENTS ON THE DRAFT QUALITY ASSURANCE PROJECT PLAN FOR THE INDOOR AMBIENT AIR INVESTIGATION OF THE FORMER STORAGE YARD INSTALLATION RESTORATION SITE 12 NAVAL STATION TREASURE ISLAND SAN FRANCISCO, CALIFORNIA

This document presents the Navy's responses to comments from the California Regional Water Quality Control Board (RWQCB) on the Draft Quality Assurance Project Plan (QAPP), Indoor Ambient Air Investigation of the Former Storage Yard, Installation Restoration Site 12, Naval Station Treasure Island, San Francisco, California dated July 28, 2000. The comments addressed below submitted by Sarah Raker of the RWQCB on August 22, 2000.

RESPONSES TO RWQCB COMMENTS

1. **Comment:** **Page A-1, Section A3 Site Background and Problem Definition – Please note the typographical error in the last sentence: "This FSP (should be QAPP)..."**

   Response: The sentence in Section A3 has been modified to read, "The investigation detailed in the accompanying FSP is intended to provide information about whether PCBs are present in indoor ambient air in the targeted area."

2. **Comment:** **Page B-4, Section B6.1 Field Quality Control Samples and Table B-5, Field Quality Control Samples for Ambient Air Sampling – Please check this section and Table B-5 for consistency. The only field QC samples required for the ambient air investigation are field duplicates yet Table B-5 indicates a PUF field blank will be collected.**

   Response: Reference to the field blank has been removed from Table B-5, and the field duplicate sample has been added.

3. **Comment:** **Page D-1, Section D2 Reconciliation with User Requirements – What is meant by the following statement: "The sampling and laboratory methods and procedures detailed throughout this QAPP addendum should provide data of adequate quality to assess the concentrations of chemicals of concern throughout Site 12"? Do you mean throughout the Former Storage Yard?**

   Response: This sentence has been revised to read, "The sampling and laboratory methods and procedures detailed throughout this QAPP addendum should provide data of adequate quality to assess the concentrations of PCBs in indoor ambient air in the Former Storage Yard."

TABLES

TABLE B-1

SAMPLE CONTAINER AND HOLDING TIME REQUIREMENTS FOR AMBIENT AIR SAMPLES SITE 12 – NAVAL STATION TREASURE ISLAND

Parameter	Method Number[a]	Sample Container	Holding Time
Polychlorinated biphenyls (PCB)	EPA 1668	PUF cartridges	7 days

Notes:

EPA U.S. Environmental Protection Agency

PUF polyurethane foam

[a] Complete method references are presented in Section B5

TABLE B-2

ANALYTICAL METHODS FOR PCBS IN AMBIENT AIR
SITE 12 – NAVAL STATION TREASURE ISLAND

Parameter	Method Number	Analyte List	Technique
Polychlorinated biphenyls	EPA 1668	TCL	HRGC/HRMS

Notes:

EPA	U.S. Environmental Protection Agency
HRGC/HRMS	High resolution gas chromatography/high resolution mass spectroscopy
TCL	Target compound list

TABLE B-3

REQUIRED REPORTING LIMITS FOR TOTAL PCBS IN AMBIENT AIR
SITE 12 - NAVAL STATION TREASURE ISLAND

	Reporting Limit (ng/sample)
EPA Method 1668	
Total PCBs	0.5

Notes:

EPA U.S. Environmental Protection Agency
ng/sample Nanograms per sample

TABLE B-4

COMPARISON OF AMBIENT AIR PRELIMINARY REMEDIATION GOALS AND LABORATORY QUANTITATION LIMITS

Compound	Analytical Method	RL	Screening Criterion /Criterion Type		RL Below Criterion?
POLYCHLORINATED BIPHENYLS (ng/m^3)					
PCB (total congeners)	EPA 1668	0.50	3.4	PRG	Yes

Notes:

ng/m^3 -- nanograms per cubic meter of air

RL -- Reporting limit

Notes - Screening Criteria:

PRG -- Preliminary remediation goal for ambient air.

TABLE B-5
FIELD QUALITY CONTROL SAMPLES FOR AMBIENT AIR SAMPLING

Sample Type	Frequency of Analysis
Duplicate samples	1 for every 10 samples collected

TABLE B-6

PRECISION AND ACCURACY GOALS FOR PCBS IN AMBIENT AIR
SITE 12 – NAVAL STATION TREASURE ISLAND

QC Check	Minimum Frequency	Acceptance Criteria
Surrogate	Every sample, blank, and standard	50-150%
Method blank	1 per batch of 20 samples extracted	< RL
Laboratory control sample (LCS)	1 per batch of 20 samples extracted	50-150%

RPD Relative percent difference
RL Reporting limit